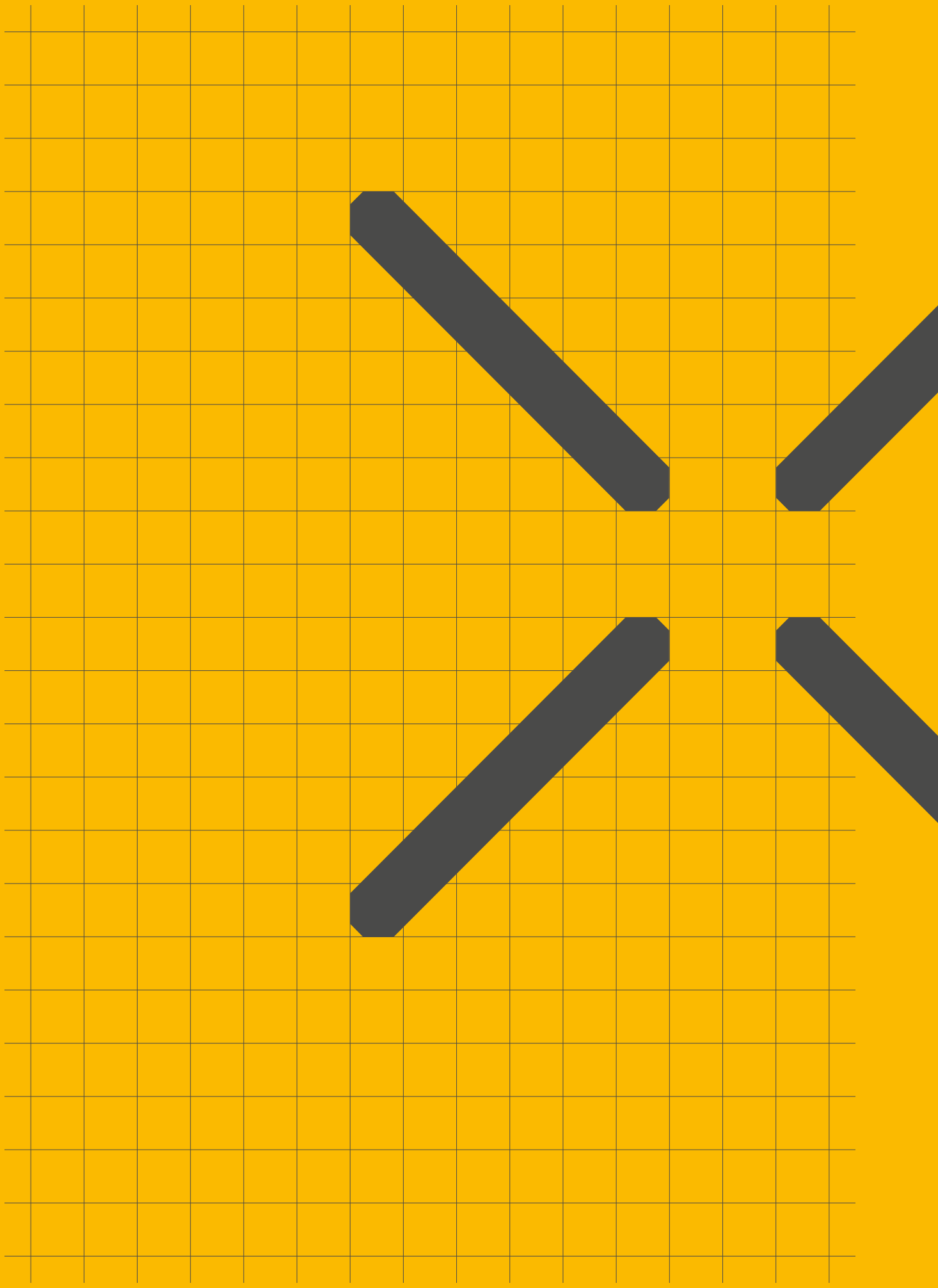
EWELLIX

MAKERS IN MOTION

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

Control unit - SCU



Contents

⚠ WARNING

Read this manual before installing, operating or maintaining this actuator. Failure to follow safety precautions and instructions could cause actuator failure and result in serious injury, death or property damage.

1.0 General information

1.1 Information on this manual

This manual provides important information on how to work with the actuator (also called the device) safely and efficiently. The manual is part of the device, must always be kept 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. For better representation of circumstances, the illustrations in this manual are not necessarily to scale and may vary from the actual design of the device. All information and notes in this manual were compiled with due consideration given to applicable standards and regulations, the present status of technology and our years of knowledge and experience.

Summary of contents

The operation manual serves as a reference work. The information therein is organized into four task- and theme-related parts:

Basic Principles The Basic Principles section gives the basic knowledge that every user should have.

Normal Operation The Normal Operation section contains information needed for operating the product under normal conditions, i.e. undisrupted operation for use according to its intended application.

Special Operations The Special Operations section describes all jobs deviating from normal operation, such as installation, initial start-up, maintenance, fixing faults and doing repairs.

Appendix The Appendix contains information that the user has to be able to access at any time. This includes information on using the operation manual (indexes) as well as data concerning the product itself (technical data).

Aids for accessing information

This manual has access aids that make it easier for you to quickly access the desired information:

- You can most easily find all information on a given topic in the Table of Contents, as a result of the task and theme-related organization of the operation manual.
- Information on a specific activity or a special topic can be found most quickly through the Index.
- Within the chapters of the operation manual, you can orient yourself with the help of the margin notes.

1.2 Explanation of symbols and signal words

Safety precautions are identified by symbols and signal words defined on the right hand side of this page.

These signal words indicate the severity of the hazard. Adhere to these safety precautions and take caution in order to avoid accidents that may result in personal injuries or damage to property.

1.3 Limitation of liability

All information and notes in this manual were compiled under due consideration of valid standards and regulations, the present status of technology and our years of knowledge and experience. The manufacturer will not be liable for damage resulting from:

- disregarding this manual
- unintended use
- employment of untrained personnel
- unauthorized conversions
- unauthorized technical modifications
- manipulation or removal of the screws on the device.

Where the device has been customized, the actual product delivered may be different from what is described in this manual. In this case, ask Ewellix for any additional instructions or safety precautions relevant to these actuators.

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

Validity

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

- Manufacturer: Ewellix
- Product name: SCU control unit
- Type designation: SCU1, SCU5, SCU9 (SCU4, SCU8 on request); ↳ **technical data chapter 3** and **Appendix chapter 11**)
- Year of manufacture: from 2010
- CE-Mark: according technical documentation
- Serial number: from L04330000.

When the device has been customized by Ewellix, the actual product delivered may be different from what is described in the manual. In this case, ask Ewellix for any additional instructions or safety precautions relevant to these.

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

Target audience and obligation to read

The operating manual is intended for technical personnel and authorized users who use the SCU control unit in their products and work with them. The operating authority determines who is authorized as a user. We distinguish between different user groups, as the requirements on the users vary, depending on the activity they perform.

⚠ DANGER

Indicates a dangerous situation, which will lead to death or serious personal injury, if the precautionary measures are ignored.

⚠ WARNING

Indicates a dangerous situation, which can lead to minor or moderate injury or property damage, if the precautionary measures are ignored.

⚠ CAUTION

Indicates a dangerous situation, which can lead to minor or moderate injury the precautionary measures are ignored.

NOTICE

Indicates information considered important, but not hazard-related (e.g. messages relating to property damage).

NOTE

Emphasizes useful hints and recommendations as well as information for efficient and trouble-free operation.

1.4 Copyright

This manual is protected by copyright law and to be used exclusively by Ewellix customers internal purpose Passing this manual on to third parties, duplication of any kind – even in the form of excerpts – as well as the use and/or disclosure of the contents without the written consent of the manufacturer is not permitted, except for internal purposes.

Violation of Ewellix's copyright may become the subject of a future claim for damages.

1.5 Spare parts

This control unit is not designed for repair work by the owner/operator. All warranty and service claims are void if repairs are not performed by the manufacturer or another entity approved by the manufacturer.

Battery (underfloor) with battery-charging-board: ZDV-160208 (2x 12V/2.8Ah)

Ext. Battery charging box: ZDV-160207
Ext. Battery: ZDV160209 (2x 12V/4.5Ah)

Sealing stoppers for sockets "actuator outputs": ZDV-160307-0008

Sealing stoppers for socket "operating elements": ZDV-160308-0015.

Accessories:

Mains cable: 3pol Schuko	ZKA-160637-3500
Mains cable: 3pol SEV	ZKA-160638-3500
Mains cable: 3pol UL	ZKA-160639-3500
Mains cable: 3pol UL hospital grade	ZKA-160640-3500
Mains cable: 3pol UK	ZKA-160609-3500.

⚠ WARNING

Safety hazard caused by wrong spare parts

Wrong or faulty spare parts can adversely affect safety and cause damage, malfunctions or total failure.

Therefore:

- Use only genuine spare parts from the manufacturer.
- Spare parts in/on the device may only be replaced by the manufacturer.

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

1.6 Warranty terms

The warranty terms are included in the manufacturer's terms and conditions contained in the Ewellix sales contract that governs this sale.

1.7 Customer service

Ewellix Customer Service is always available to provide technical information and to answer questions. The contact information for Ewellix Customer Service can be found on **www.ewellix.com.**

In addition, our employees are always interested in acquiring new information and experience gained from practical application; such information and experience may help improve our products.

2.0 Safety

This section provides an overview of important safety aspects of installing, operating and maintaining this device.

Disregarding this manual and safety regulations specified therein may result in considerable danger and possible serious injury or death or damage to device or equipment.

The SCU control unit was designed and build in accordance with the latest technical standards and accepted rules.

EU-Conformity is documented with the technical documentation.

2.1 Use

2.1.1 Intended Use

The SCU control unit was designed and built in accordance with the latest technical standards and accepted safety rules.

The intended purpose is described in these instructions.

The authorized use of the SCU control unit is:

“Control up to six actuators for push- or pull loads”.

NOTICE

The control unit can only be parametrized for the actuators of Ewellix. Please contact customer services to find out which actuators are approved for the SCU!

NOTE

For the operations data, please see the Appendix of this operating manual.

If you use the SCU control unit for any use other that cited, the manufacturer cannot be held the responsibility for defect or damage resulting from this.

It is only intended for interior use and is implemented in medical devices as well as in industrial and construction technology.

Range of environmental conditions:

- Ambient temperature: 5°C to 40 °C
- Relative humidity : 5% to 85%
- Atmospheric pressure: 700 hPa to 1060 hPa
- Use and operate at an altitude of 3000m (MOPP)
- Overvoltage category II
- Pollution degree classification 2.

2.1.1.1 Product life time

The SCU control unit is designed for a service life of 10 years or at least 100’000 cycles of operation per channel.

2.1.1.2 User groups

The organization and implementation of the operation manual takes into account the different user groups

To ensure safety, we place requirements on the users of the SCU control unit that must be adhered to under all circumstances. Only persons who meet the requirements are entitled to use the SCU control unit.

We refer to all persons who operate, use, commission the control unit, process it further or pass it on for further processing as user groups. As the requirements of these user groups strongly depend on their role, we distinguish between the following user groups:

The **operating authority** is the contractual partner of the person doing the further processing or the reseller. They can impose legal conditions on the operating authority when purchasing the control unit. The operating authority ensures that the user is instructed in the authorized use of the equipment.

The **processor** is the contractual partner of the reseller or the manufacturer. He assembles the control unit into a total device. He is authorized by the manufacturer of the SCU control unit to use the control unit in accordance with the regulations and has the necessary expert knowledge.

The **technician** has the professional technical training to implement the SCU control unit according to its authorized use. Apart from the chapter on Safety, he is also familiar with the chapter on Special operating modes. He will find the required technical data in the Appendix.

The **reseller** forwards the machine. Every other person who uses the SCU control unit we define as an **operator**. The operator must have read the Safety chapter in this manual before using the machine. Moreover, he must be instructed about the normal operation by the operating authority.

2.1.1.3 Types of operation

The SCU control unit is exclusively intended for intermittent operation (↳ **Technical data, page 43**).

2.1.1.4 Danger zones

We differentiate between two danger zones that must be observed, depending on user role.

The danger zone covering **persons** includes, aside from the actual user, third persons as well (other personnel, visitors, patients etc.) In case of injury, the operating authority is responsible.

The danger zone **device** comes under the user group Executor and Technician and covers the SCU control unit and all the mounted-on elements.

2.1.2 Unintended Use

Any use other that the intended use, or modifications to the device without the manufacturer's written agreement, or operation beyond the technical limits, is considered unauthorized.

See technical operating limits in the technical data of this manual and on the label of the SCU.

NOTE

Any unauthorized use of the device can cause personal injury and property damage. Always adhere to the instructions given in this manual.

The SCU control unit is suitable only for internal use and must not be subjected to weathering, strong UV radiation or explosive atmospheric media. Specific application exemptions are:

- Flammable anesthetic mixture with air
- Flammable anesthetic mixture with oxygen or nitrous oxide
- Increased radiation.

⚠ WARNING

Risk from misuse

Any utilization of this device beyond its intended purpose may lead to potentially hazardous situations.
Therefore:

- Strictly adhere to all safety precautions and instructions in this operating manual.
- Do not make this device subject to weather conditions, strong UV rays, corrosive or explosive air media as well as other aggressive media.
- Do not modify, retool or change the structural design or individual components of the actuator.
- Never use the device outside of the technical application and operational limits.

2.1.3 Essential performance

Supply electromechanical actuators / pillars by command.

2.2 Responsibility of the owner and processor

The device is designed for commercial applications by its owner or processor. The processor is the contracting partner of the reseller or the manufacturer. The processor installs the device in a complete system (application).

The owner or processor of the system is therefore subject to the requirements of the Occupational Health and Safety Act. In addition to the safety instructions in this manual, the owner or processor must do the following concerning these safety and accident prevention guidelines and environmental protection regulations applicable to the site of the system's installation:

- Inform themselves of applicable industrial safety regulations. They must also determine additional hazards that arise due to the specific working conditions prevailing at the site where the device is installed using risk assessment. The risk assessment must be implemented in the form of work instructions for device operation.
- Confirm that the work instructions created for the system, including the device satisfy current legal requirements and must alter the instructions accordingly.
- Clearly regulate and specify the responsibilities for installation, operation, maintenance, and cleaning.
- Ensure that all employees who deal with the device have read and understood this manual.
- Provide personnel with the required protective equipment.
- Provide training for personnel at regular intervals and inform personnel of the hazards.

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

- Ensure that the maintenance intervals described in these instructions are complied with.
- Have all safety devices inspected regularly for function and completeness.

Areas of responsibility

Different areas of responsibility, corresponding to the different user groups, arise.

The Operating Authority has the responsibility for the danger zone covering persons and ensures that only authorized and instructed users work with the SCU control unit. He or she is responsible for the following:

- Determining the persons who may use the SCU control unit (authorized persons).
- Instruction of the users.
- Complying with all relevant legal conditions and regulations.

NOTICE

The Operating Authority may only authorize such persons for using the SCU control unit, who conform to the requirements for the user roles.

The **processor** is responsible for:

- Generation of a CE-conformant operation manual of the device in which the SCU control unit has been integrated.
- Adherence to the safety regulations in accordance with this operating manual.

The **technician** is responsible for:

- Observing the manufacturer's instructions and the safe-set-up of interfaces with other equipment.
- Installation and use of the SCU control unit in accordance with its intended purpose-conformant use.
- Installation of optional modules and connecting cables.

The **reseller** is responsible for:

- Passing on this operating manual and the SCU control unit to the executor.
- Passing on of a CE-conformant operating manual and the device in which the SCU control unit has been integrated to the Operating Authority.

The operator is responsible for:

- Ensures that nobody is endangered owing to the operation of the SCU control unit.
- Operation of the SCU control unit in normal operation.
- Immediate and appropriate reaction to malfunctions.

2.3 Personnel requirements

⚠ WARNING

Improper installation, operation and maintenance can result in serious injury, death or property damage.

Use only qualified, instructed, or trained personnel (as described below) who have read, understand and follow these instructions.

2.3.1 Qualifications

The following qualifications are specified for different areas of activity listed in this manual:

- **An instructed person (operator)**: Instructed by the customer in an orientation session on the assigned tasks and possible dangers arising from in case of improper behavior.
- **Qualified personnel:** Based on their professional training, know-how and experience as well as knowledge of the applicable standards and regulations are able to independently perform assigned work activities and to detect and avoid possible dangers.
- **Professional electrician**: Based on his/her professional training, know-how and experience as well as knowledge of the applicable standards and regulations is able to independently perform work on electrical systems and to detect and avoid possible dangers.
  In addition, the professional electrician has been trained for the special location where he/she works and knows the relevant standards and regulations.

Only persons who can be expected to perform their tasks reliably are permitted as personnel. Persons whose reaction capabilities are impaired, e.g. through the use of drugs, alcohol or medication for example, are not permitted.

2.4 Specific dangers

The manufacturer has constructively, and with protective measures, minimized the effects of existing hazards. Pay attention to the residual hazards and potential countermeasures described and the warnings in the following chapters.

2.4.1 Residual hazards to people, objects and property

Keep in mind the following residual dangers and the possible countermeasures in handling the SCU control unit.

⚠ DANGER

Danger to life caused by electric current.

Touching conductive parts causes a direct danger to life.
Damage to insulation or individual components can cause danger to life.
Therefore:

- In the event of damage to insulation, switch off the power supply immediately and have the defective parts repaired.
- Work on the electrical system must he carried out only by skilled electricians.
- De-energize the machine for all work on the electrical system.
- Before maintenance, cleaning or repair work, switch off the power supply and perform lockout procedures so it cannot he turned on again.
- Do not bridge fuses or make them ineffective. When changing fuses, make sure you use the correct amperage.
- Keep moisture away from conductive parts. If you do not, this can cause short circuit.

⚠ WARNING

Electrical shack hazard

Check the mains voltage corresponds to the nominal values on the product label.

- Ensure that power cables cannot become pinched or damaged.
- Warning regarding electrical shock owing to damaged plugs or damaged network cables. Never touch a damaged network plug or a damaged network cable when the SCU control unit is running, since the SCU control unit is supplied with 120 VAC or 230 VAC.
- Ensure, before you pull a defective plug out of the plug socket, that the SCU control unit is disconnected from the power supply.

⚠ WARNING

Unintended, uncontrollable movement

- Due to a defect of a component, an uncontrollable movement of the connected actuator[s] can occur.
- In worst case RAM or ROM failure can lead to a false or auto motion. This kind of failure has a low failure probability and it occurs in such a way that a motion is started.
- If the button of the hand switch sticks when releasing it and the user doesn't press the button for the opposite direction (↳ **chapter 7.3**) then an auto motion occurs.

⚠ WARNING

Specific dangers during cleaning or washing the control unit SCU

The control units are designed to comply with IPX4.
The cleaning or washing with water including chemical additives must be pH-neutral. Excessively acidic or alkaline washing water can destroy metal and plastic components of the control unit.
Manually and mechanically operated high-pressure steam cleaners must not be used. Only isopropyl alcohol cleaning agent may be used for disinfecting by manual wiping.
A SCU control unit must never be washed in a washing machine or other equipment. The control unit would be destroyed by the penetration of liquid.
The plastic housing must be checked periodically (every six months) for mechanical damage (cracks).

⚠ WARNING

Injury due to cracks and related openings in the housing of the actuator and/or its accessories:
If the housing is damaged due to stock, breakage or heavy wear, stop using the device and follow the dismantling instructions.

⚠ CAUTION

Please be aware of damage to people or property as the result of incorrect operation. Incorrect operation can endanger people in the danger zone or objects.

- Before pressing a button on the operating device, ensure that you press the right button.
- Take appropriate measures to ensure that the operating device cannot be operated.

⚠ CAUTION

No function is considered as a safe condition.

⚠ CAUTION

The SCU control unit is only suitable for interior applications and must not be subjected to weathering, strong UV radiation or corrosive or explosive air (↳ **Ambient conditions**).
The SCU control unit may only be operated when the safety protective cover (↳ **fig 8**) is mounted.

⚠ CAUTION

Failure of the control unit due to interruption to the mains power or an electronic defect should not pose any hazard to the patient, to the operator or to the servicing personnel.
Ewellix actuators should be operated in accordance with the application specified on the type label.
The nominal data for the actuators and the control unit must be verified at the same time of installation. The ratings on the data should not be exceeded. If this information is disregarded, the actuator and the control unit will be damaged irreparably. Risk of personal injury remains.

⚠ CAUTION

Any overload on the control unit will trip a temperature switch in the mains transformer. After cooling of the transformer, the thermal protector will reset, so the control unit SCU is ready again to control the actuators.

⚠ CAUTION

Electric shock hazard
Take care about damage to the SCU from water sprays. The control unit SCU is splash-proofed according to IPX4. Prevent the SCU from being subjected to water sprays or hosing during the operation time.

NOTICE

Prolonged overload will result in irreparable damage to the control unit.

2.4.2 Specific dangers SCU with batteries

Replacement batteries should only be ordered from Ewellix, since they are a special type. The old batteries must be properly disposed of. The user's maintenance personnel must be given instructions by the ultimate manufacturer on opening and closing the battery compartment lid and on replacing the batteries.

⚠ WARNING

If unintended movements can cause serious injury, additional protective means must be installed to stop or avoid such movements.

⚠ WARNING

Disconnection from the mains power supply will not prevent movement of the actuators in case of an electric defect while batteries are connected.

2.5 Safety equipment

⚠ WARNING

Danger due to malfunctioning safety equipment
For safe operation, be sure all safety equipment is in good working order.
Therefore:

- Always check functionality of safety equipment according to the maintenance plan.
- Never disengage safety equipment.
- Safety equipment may never be by-passed or modified.

Integration in an emergency-stop system required (for certain applications)

⚠ WARNING

Electric shock hazard
The SCU control unit do not have an on/off switch. If required to be switched off, for example in an emergency, the control unit must be disconnected from the power supply. Only this measure will de-energize the control units. Applications where the control units are built in must provide an emergency stop switch or isolation from the power supply on all poles. Additional protective means might be necessary in case of battery options.

The device is only intended for installation into an application or system. It does not have its own operating control elements and does not have an independent emergency-stop-function. Install the device so that it is part of an emergency shut-off system and can be stopped if necessary.

The emergency shut-off system has to be connected in such a way that a disruption of the power supply or the reactivation of the power supply after a power disruption cannot cause a hazardous situation for persons and objects.

The emergency shut-off systems must always be freely accessible.

2.6 Safeguard against restart

To secure the SCU control unit against unintentional restart:

Pull the power line plug off the control unit from the main supply.

⚠ DANGER

Life-threatening situation through unauthorized restart
For work in hazard zones, there is a risk that the power supply is turned on without prior authorization. This presents a life-threatening situation for people in the hazard zone.
Therefore:

- Follow the information concerning the safeguarding against re-starting of the power supply in the chapters of this operating manual.
- Always follow the process to safeguard against a restart as described below.

Protect the SCU control unit against restart:

0.1. Pull the power line plug out of the power outlet.

0.2. In case the SCU control unit is equipped with a battery, ensure to remove the battery.

2.7 Modification & Information of device

⚠ WARNING

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

2.7.1 Warning labels

For SCU control units no special warning labels are applied.

⚠ WARNING

Danger of injury because of illegible symbols
Over the course of time stickers and decals may become dirty or illegible for various reasons.
Therefore:

- Keep any safety, warning and operation related decals in legible condition at all times.
- Replace damaged decals or stickers immediately.

2.7.2 Information labels & lights

Labels

On the back side of the SCU control unit are two labels (↳ **fig. 1**):

- Type label (↳ **chapter 3.2 Product label**)
- Software parameter label (↳ **fig. 2**).

Fig. 1

Location of type label and SCU parameter label

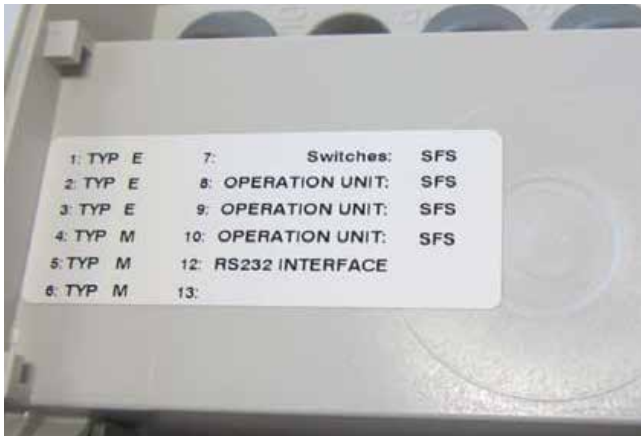
Fig. 2

Example “Smart Control Parameter” (SCP-Label)

An additional label (inside, under the case cover, ↳ **fig. 3**) shows the socket pin assignment inputs / outputs (linear actuators, telescopic pillars, switches, operating elements, battery, etc.)

Fig. 3

Example SCU socket pin assignment



For detailed information about the SCP-label (↳ **fig. 2**) and the corresponding description label of the SCU sockets (label ↳ **fig. 3**) see type key (**chapter 11.2.3**) or contact Ewellix business support!

Power indicator light

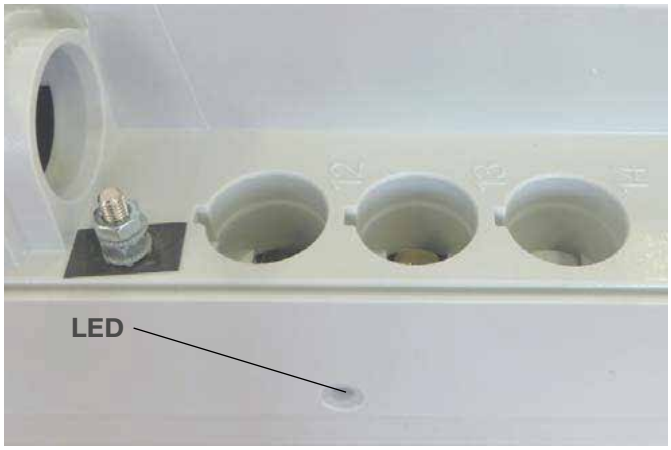
The indicator light secures the visualization of the readiness of the control unit SCU (↳ **fig. 4**).

NOTICE

The SCU control unit is equipped with a green indicator light LED to indicate ready for normal use.

Fig. 4

Power indicator light



In addition to that a LED on the connected operating element (ex. hand switch) shows the status of the functionality and the status about the SCU and the connected actuators and gives (optional) information about the loading capacity of a used battery.

⚠ CAUTION

Push-to-run operation (recommended):
The connected actuators, pillars operate as long as the button on the hand switch is pressed. A green pilot lamp indicates the actuation. The relevant function (up/down) is determined and triggered by the button actuation.
If the actuator does not have signals to indicate operation, depending on the application, it is recommended to have an operational signal installed in the application.

Protective Earth, metal pin

The SCU control units SCU5 & SCU9 are defined as class I devices. These models are connected to PE (protection earth) on side of main supply. This PE is also connected to the metal pin next to the main supply connector (↳ **fig. 5**) on the SCU. This bolt pin can also be used to connect the final application to ground (PE) with a protection earth conductor (green/yellow).

Fig. 5

Protective earth, metal pin

At this pin there is a possibility to connect other devices from the applications to earth ground. This can also help in case of improvements with EMC measurements.

NOTE

Take care! The maximum torque for the 6 edge screw is 0,8 Nm.

2.8 Manufacturer‘s declaration of EMC compliance

This section is only mandatory, if the devices are approved and attended for use in medical applications or environment (according IEC60601-1-2 ed. 4) This chapter shows the results and potential about EMC issues.

2.8.1 Instructions for use

Professional healthcare facility environment

Physician offices, dental offices, clinics, limited care facilities, freestanding surgical centers, freestanding birthing centers, multiple treatment facilities, hospitals (emergency rooms, PATIENT rooms, intensive care, surgery rooms, except near HF SURGICAL EQUIPMENT, an MR system outside a RF shielded room of an ME SYSTEM for magnetic resonance imaging).

Essential performance

The essential performance about the SCU control unit is „supply of electro-mechanic actuators and pillars on command”. The risk management (Document L5678,0002) identifies the functions about safety of these control units. All features or functions are performed properly. Unacceptable risks for patients, operators or others are performed and assessed to prevent or reduce harm. The follow points identify and describe the EMC-risks about the SCU control unit according the EMC-measurements:

Warning against the stacking of equipment

⚠ WARNING

Stacked with other equipment

Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.

List of cables, length of cables, accessories

⚠ WARNING

Use of accessories, transducers and cables

The use of accessories, transducers and tables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.

Power cables (Main <-> SCU control unit)

Description	Plug	Country	Drawing-No	Length	Comment
Power cable, straight	Schuko	Euro	ZKA-160637-3500	3,5 m	
Power cable, straight	SEV	CH	ZKA-160638-3500	3,5 m	
Power cable, straight	UL/CSA (NEMA 5-15p)	USA/CAN	ZKA-160639-3500	3,5 m	SJT-cable
Power cable, straight	UL/Hospital grade (NEMA 5-15p)	USA/CAN	ZKA-160640-3500	3,5 m	SJT-cable
Power cable, straight	British plug	UK	ZKA-160609-3500	3,5 m	

Connection cable (SCU control unit <-> Operating elements / RS232)

Description	Plug	Drawing-No	Type	Length
Connecting cable coiled: SCU – Hand switch	HD 15p	160600-1350	15 x AWG30	1,3/2,3 m
Connecting cable straight: SCU – Foot switch	HD 15p	160632-2500	10 x AWG28	2,5 m
Connecting cable coiled: SCU – Foot switch	HD 15p	160633-2500	10 x AWG28	1,2/2,5 m
Connecting cable straight: SCU – Desk switch	HD 15p	160634-2500	10 x AWG28	2,5 m
Communication cable	HD 15p / USB	160679-1500	3 x AWG24	1.5 m

Connection cable (SCU control unit <-> Linear Actuators / Pillars)

Description	Plug	Drawing-No	Type	Length
Connecting cable straight:SCU – MD	DIN 8p			
Connecting cable straight: SCU – CAMT	DIN 8p – Molex 6p DIN 8p – open wire	777400-1000 777400-2300	2 x AWG16 & 4 x AWG24	1 m 2,3 m
Connecting cable straight: SCU – RU		160601		
Connecting cable straight: SCU – MAX1, MAX3	DIN 8p	160622	2 x AWG18 & 5 x AWG24	1,5 m
Connecting cable straight: SCU – THG,TLG,TLT	DIN 8p			1 m 2,3 m
Connecting cable straight: SCU – TFG10	DIN 8p			

RF Communication Equipment

⚠ WARNING

Portable RF communications equipment

Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should he used no closer than 30 cm (12 inches) to any part at the SCU, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

2.8.2 Technical description

Requirements applicable to all ME equipment and ME systems

This chapter describes precautions to be taken to prevent adverse events to the patent and operator due to electro-magnetic disturbances.

2.8.2.1 Compliance for each Emissions and Immunity standards

The SCU control unit is intended for use in the electromag-netic environment specified. It complies with the standard for emission class and group and immunity test level as follows.

CISPR 11 Gr. 1 Cl. B

The SCU is intended for use in the electromagnetic environment specified below. The customer or the user of the SCU should assure that it is used in such environment.

Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The SCU uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The SCU is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonie emissions IEC 61000-3-2	[Class A, B, C, D, Not applicable or No power network input]	
Voltage fluctuations / flicker emissions IEC 61000-3-3	[Complies, Not applicable, No power network input]	

Electromagnetic immunity environment tested

The SCU is intended for use in the electromagnetic environment specified below. The customer or the user of the SCU should assure that it is used in such environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment-guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 8 kV contact ± 2, ± 4, ± 8, ± 15 kV air	± 8 kV contact	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%
Electrical fast transient/bust IEC 61000-4-4	± 2 kV, 100 kHZ for power supply lines ± 1 kV, 100 kHZ for input/output lines	± 2 kV, 5 and 100 kHZ for power supply lines ± 1 kV, 100 kHZ for input/output lines	Mains power quality should be that of typical commercial or hospital environment. Not applicable for DC and I/O if cable <3 m
Surge IEC 61000-4-5	± 0,5 , ±1 kV line(s) to line(s) ± 0,5, ±1, ± 2 kv line(s) to earth	± 0,5 , ±1 kV line(s) to line(s) ± 0,5, ±1, ± 2 kv line(s) to earth	Mains power quality should be that of typical commercial or hospital environment. Not applicable for DC and I/O if cable <3 m
Voltage dips, short interruptions and voltage variations on power supply inputs lines IEC 61000-4-11	0% U_T: 0,5 cycle At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° 0% U_T: 1 cycle at 0° 0% U_T: 250/300 cycle At 05 0% U_T: 25/30 cycle At 0°	0% U_T: 0,5 cycle At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° 0% U_T: 1 cycle at 0° 0% U_T: 250/300 cycle At 05 0% U_T: 25/30 cycle At 0°	Mains power quality should be that of typical commercial or hospital environment. Not applicable for DC and I/O if cable <3 m. If the user of the SCU requires continued operating during power mains interruptions, it is recommended that the SCU be powered from an uninterruptible power supply or batery. UT is the a.c. mains voltage (120V/230V AC) prior to application of the test level
Power frequency (50/60 HZ) magnetic filed IEC 61000-4-8	30 A/m 50/60 HZ	30 A/m 50/60 HZ	Power frequency magnetic fields should be at levels characteristics of a typical location in a typical commercial or hospital environment.

Electromagnetic immunity environment tested

Portable and mobile RF communications equipment should be used no closer to any part of the SCU, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.

These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people. Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment
Conducted RF IEC 61000-4-6	3 V... 150 kHz to 80 MHz outside ISM bands and radio amateur band* 6 V... 150 kHz to 80 MHz in ISM bands and radio amateur band*	10 Vrms 150 kHz to 80 MHz outside ISM bands and radio amateur band* 10 Vrms 150 kHz to 80 MHz in ISM bands and radio amateur band*	If the measured field strength in the location in which the SCU is used exceeds the applicable RF compliance level, the SCU should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such us reorienting or relocating the SCU.
Radiated RF IEC 61000-4-3	10 V/m 80 MHz to 2.7 GHz 80% AM at 1 kHz	10 V/m 80 MHz to 2.7 GHz 80% AM at 1 kHz	Minimum separation distance shall be calculated by following equation: $E = \frac{6}{d}\sqrt{P}$ E is the immunity test level in [V/m] d is the minimum separation in [m] P is the maximum power in [W]
Proximity field from RF wireless communication equipment IEC 61000-4-3	27 V/m 380-390 MHz 50% PM 18 Hz 28 V/m 430-470 MHz FM ±5 kHz devation, 1kHz sine 9 V/m 704-787 MHz 50% PM 217 Hz 28 V/m 800-960 MHz 50% PM 18 Hz 28 V/m 1700-1990 MHz 50% PM 217 Hz 28 V/m 2400-2570 MHz 50% PM 217 Hz 9 V/m 5100-5800 MHz 50% PM 217 Hz	27 V/m 380-390 MHz 50% PM 18 Hz 28 V/m 430-470 MHz FM ±5 kHz deviation, 1kHz sine 9 V/m 704-787 MHz 50% PM 217 Hz 28 V/m 800-960 MHz 50% PM 18 Hz 28 V/m 1700-1990 MHz 50% PM 217 Hz 28 V/m 2400-2570 MHz 50% PM 217 Hz 9 V/m 5100-5800 MHz 50% PM 217 Hz	**RF wireless equipment maximum output power and separation distance tested (at 30 cm):** 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: 

*The ISM (industrial, scientific and medical) bands between 150 kHz and 80 MHz are 6.765 - 6.795 MHz, 13.553 - 13.567 MHz, 26.957 - 27.283 MHz and 40.66 - 40.7 MHz. The amateur radio bands between 0.15 MHz and 80 MHz are 1.8 MHz - 2 MHz, 3.5 - 4.0 MHz, 5.3 - 5.4 MHz, 7 - 7.3 MHz, 10.1 - 10.15 MHz, 14 - 14.2 MHz, 18.07 - 18.17 MHz, 21.0 - 21.4 MHz, 24.89 - 24.99 MHz, 28.0 - 29.7 MHz and 50.0 - 54.0 MHz.

If the measured field strength in the location in which the CAMT is used exceeds the applicable RF compliance level above, the CAMT should be checked to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the CAMT.

Recommended separation distances between portable and mobile RF communications equipment and the SCU

The SCU is intended for use in the electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the SCU can help prevent electromagnetic.

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

Recommended separation distances between portable and mobile RF communications equipment and the CAMT

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

Rated maximum output power of transmitter [W]	Separation distance according to frequency of transmitter [m]		
	150 kHz to 80 MHz outside ISM and radio amateur bands *	150 kHz to 80 MHz in ISM and radio amateur bands *	80 MHz to 2700 MHz (for define RF Wireless transmitters see table before)
	d = 0,35√P **		
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 rated at a maximum output power not listed above, the recommended separation distance d in meters [m] can be determined using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts [W] according to the transmitter manufacturer.

$$E = \frac{6}{d}\sqrt{P}$$

*The ISM (industrial, scientific and medical) bands between 150 kHz and 80 MHz are 6.765 - 6.795 MHz, 13.553 - 13.567 MHz, 26.957 - 27.283 MHz and 40.66 - 40.7 MHz. The amateur radio bands between 0.15 MHz and 80 MHz are 1.8 MHz - 2 MHz, 3.5 - 4.0 MHz, 5.3 - 5.4 MHz, 7 - 7.3 MHz, 10.1 - 10.15 MHz, 14 - 14.2 MHz, 18.07 - 18.17 MHz, 21.0 - 21.4 MHz, 24.89 - 24.99 MHz, 28.0 - 29.7 MHz and 50.0 - 54.0 MHz.

**Formulas coming from Ed.3 of the IEC 60601-1-2

2.8.2.2 Results and Deviations from Standards and allowances used

There are no deviations (↳ **chapter 2.8.2.1**)

Type of measure	Requirement - Test	Result/Comment	Verdict
Emission	Class	Class B	–
	Group 1 or 2	Group 1	–
	CISPR 11,14-1, or…	CISPR11	–
	Conducted RF Emission	–	P
	Radiated RF Emission	–	P
	Disturbance Power /if applicable)	–	N/A
	Harmonic Distortion per IEC 61000-3-2 (Class A,B,C,D)	Class A	P
	Voltage Fluctuation and Flicker per 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 Proximity Wireless 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 120Vac/60Hz)	P
	Rated Power-frequency Magnetic fields	IEC 61000-4-8	P

2.8.2.3 Maintaining BASIC Safety and Essential performance

Its mandatory to maintain the SCU control unit to save the essential performance for the expected Service life.

One time approved in the final application no change is allowed due to the EMC influence.

NOTE

Do not change the once installed final application due to EMC view.

⚠ WARNING

This product was tested against actual conditions of frequency wireless environment present in Europe.

2.8.3 Environment final application

In dependence of the final application and the Environment EMC-Tests (Immunity and Emission) are necessary to be in accordance with the standards:

- Medical electrical equipment:
  - Emission: IEC / EN 60601-1-2 (4th ed.)
  - Immunity: IEC / EN 60601-1-2 (4th ed.)
- Industrial environment (Generic Standards):
  - Emission: IEC / EN 61000-6-2
  - Immunity: IEC / EN 61000-6-4
- Residential, commercial and light-industrial environments (Generic Standards):
  - Emission: IEC / EN 61000-6-3
  - Immunity: IEC / EN 61000-6-1.

3.0 Technical data

NOTE

The technical data (dimensions, weight, output, connection values etc.) can be found in the enclosed drawings and data sheets (↳ **Appendix**).

The datasheet of the SCU control units (↳ **chapter Appendix 11**) provides information on the product types SCU1 (DC supply), SCU5 and SCU9 (AC supply, class I). Other models are SCU4 and SCU8; these control units are similar to SCU5 and SCU9, but are defined as device class II (without connection to protective earth, but designed with double insulation from main supply).

For detailed Information contact business support of Ewellix.

Content

- Features
- Technical data
- Dimensional drawing
- Connecting diagram
- Suitable actuators, pillars and accessories
- Pinning of limit switch connection
- Accessories (cables, batteries)
- Type key SCU - Model
- Type key SCU Software Parameter.

3.1 Ambient conditions

The SCU control unit are suitable for indoor use only and must not be exposed weathering, strong UV-radiation fields or corrosive or explosive atmospheric media.

- Ambient condition
- Temperature range: +5 °C to +40 °C
- Atmospheric humidity: 5% to 85%
- non-Condensing
- Atmospheric pressure: 700 to 1 060 hPa
- IPX4
- Height above sea level: 3 000 m (MOPP)
- Overvoltage category II
- Pollution degree 2.

Table 1

Duty cycle

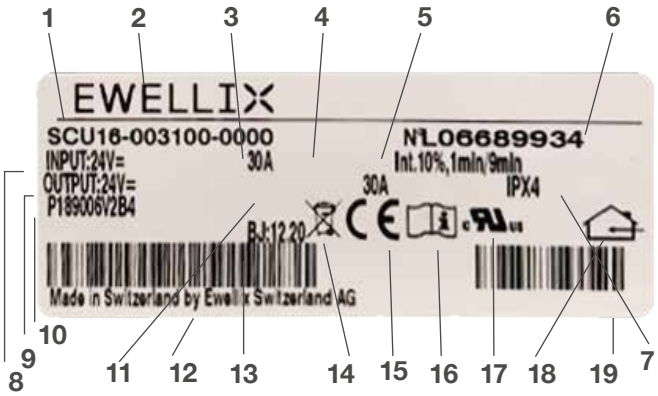
Information	Value	Unit
ON/OFF		
Maximum operating time	1	min
Break until next operation	9	min
Short time operation		
Maximum operating time	2	min

3.2 Product label

The product label provides the following Information:

Fig. 6

Type label



Type Label:

1. Type designation
2. Manufacturer
3. Frequency
4. Maximum current consumption
5. Duty cycle of operation
6. Serial number
7. IP protection class
8. Input Voltage
9. Output Voltage
10. Software number & Version
11. Maximum output current
12. Manufacturer's address
13. Date of manufacture (month, year)
14. Disposal information
15. CE mark
16. Recommendation to read operating manual
17. UL mark
18. For indoor use only
19. Designation of origin

4.0 Structure and function

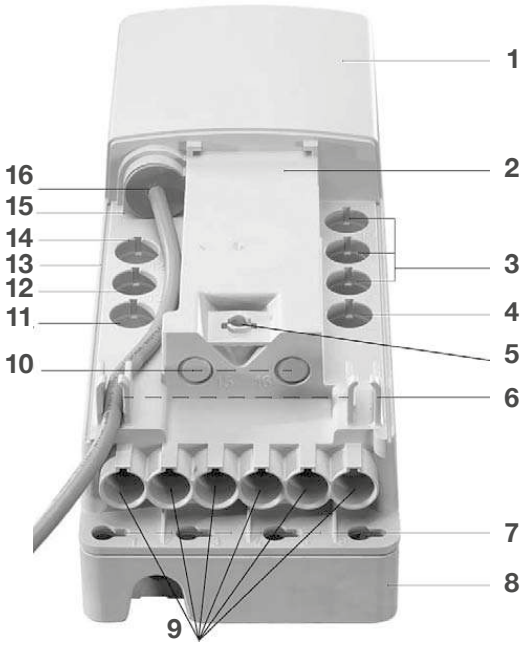
4.1 Overview

4.1.1 View SCU control unit

The following figures will give you an overview of the SCU control unit, its connections and operating devices.

Fig. 7

Overall view from above with underfloor rechargeable battery, without protective cover



1. Housing
2. Space for software data label
3. Connection for operating elements (sockets **8**, **9**, **10**)
4. Connection for 4 external end switches (socket **7**)
5. Fastening for safety protective cover
6. Cable guides
7. Installation holes (**4**)
8. Under-floor rechargeable battery (ZBA-160208)
9. Connection for operating actuators and pillars (sockets **1** to **6**)
10. Not occupied (sockets **15**, **16**)
11. Not occupied (socket **14**)
12. Optional rechargeable battery connection (socket **13**)
13. Operational voltage indicator (not visible on this image)
14. Communication interface (socket **12**)
15. Operational earthing bolt (not visible on this image)
16. Mains connection or connection for source of DC voltage (socket **11**).

Fig.8

Side view with under floor rechargeable battery and closed safety protective cover

17. Safety protective cover
18. Locking button for safety protective cover.

Operating elements

To drive the linear actuators or telescopic pillars the following operating elements are suitable for the SCU control unit (↳ **chapter 11.3**): Please consult the corresponding user manuals of these devices!

EHA

STJ

STE

Actuators

The following Ewellix-Actuators can be connected and run with the SCU control unit (↳ **Chapters 6.4** and **11**):

- Linear actuators: MD, RU, MAX10, MAX30, ECO, CAJA
- Telescopic pillars: THG10, TLG10, CPMT1, TLT10, TFG10.

4.1.2 Dimensional drawing

PUB IL-06008-EN-October 2019 Control units catalogue

For further technical information please contact Ewellix.

Fig. 9

Dimensions (side view with underfloor rechargeable battery and closed safety cover)

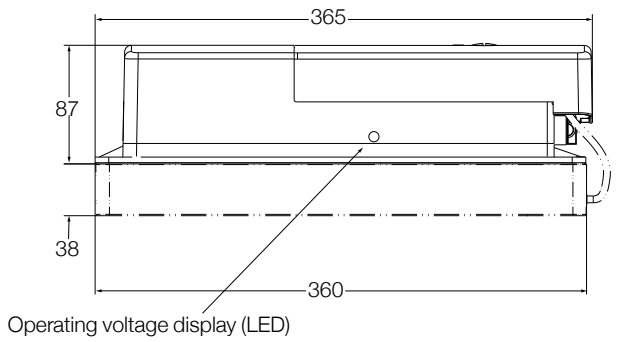
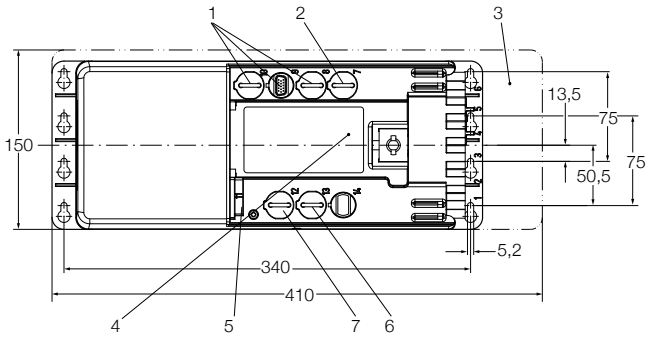


Fig. 10:

Dimensions and connections (top view without safety cover)



1. Three connections for HD15 operating devices
2. HD15 limit switch connection
3. Additional space for mounting
4. Data plate software
5. Mains connection
6. D-Sub 9 battery connection (optional)
7. Communication interface (optional).

4.2 Brief description

The description of the function will make it possible for you to understand the tasks of the SCU control unit, its operating devices and its options.

NOTE

Please note that the functions, plug layouts and options of the control unit are configured ex-works according to the requirements and cannot be changed subsequently.

4.2.1 Principles

The principle of functioning of the SCU control unit is based on controlling a maximum of six connected actuators/pillars. The functions present in the control program are actuated by means of manual switches or other operating devices. The SCU control unit is configured by the manufacturer.

The SCU control unit must be equipped with one operating device and at least one actuator/pillar unit. The DC design requires a source of DC voltage.

The **operating voltage indicator** (↳ **position 13,** ↳ **fig. 3-1**, **page 9**) indicates whether the device is being supplied energy.

In the standard configuration the SCU control unit is **failsafe**. Here the device checks safety-relevant electronic system parts and if a defect occurs moves to the safe status in which no actuator movements are possible until the defect has been removed (↳ **6.1 Malfunctions, page 18**). The maximum error tolerance period is one second.

NOTE

Please note: If a connected actuator/pillar does not have an internal end switch or an internal thermo-switch this reduces the system's failsafe system. Actuators/pillars without internal end switches are switched off with over-current. If an actuator/pillar does not have an internal thermo-switch and there is a defect, the actuator/pillar could overheat and be damaged.

NOTE

Please note: The system's failsafe mechanism is reduced if an operating unit without failsafe is connected.

The SCU control unit has **functional single error security**, i.e. the operation of the SCU control unit is monitored. Apart from a few exceptions this also affects all the function of the SCU control unit.

Only for DC design

A “smoothed” power unit can used as a **DC voltage source**. But it must be noted that during operation (actuator is moving) the nominal voltage permitted for the drives may not be exceeded (please note the other details in the **Appendix** / refer to **Technical data chapter 11.1**).

The **safety protective cover** protects the cable connections from being pulled out accidentally.

The SCU control unit has a **lock function**. When using an appropriate operating unit with corresponding functional buttons it is possible to lock or release individual control unit functions. The signal is passed on to the control unit – the lock function of the SCU control unit takes on the locking or unlocking function. This ensures that there is no risk from several operating devices used at the same time.

If necessary locked functions are indicated by a yellow LED.

The software with its integrated **over-current cutoff** switches off the SCU control unit in case of overload and protects the connected actuator units. The factory must parameterize the appropriate power-down values for the connected actuator.

The software with integrated **overtemperature protects** several components from overheating by stopping the running of the actuators and thus prevents the control units from being damaged.

4.3 Special features

The SCU control unit is developed to operate Ewellix linear actuators and Ewellix telescopic pillars. The device fulfil the requirement of medical standard IEC 60601-1. The secondary circuit of the SCU is separated from main supply with a double isolation.

4.4 Requirements for 3rd party power supply

N/A.

4.5 Connections

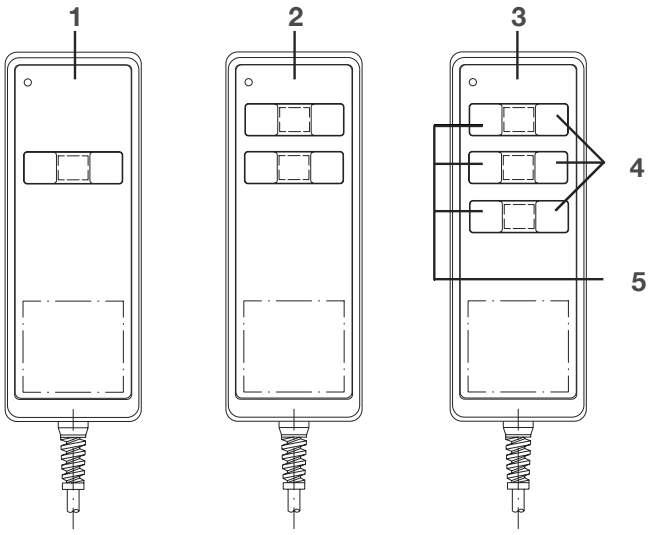
The SCU control units are equipped with clearly marked ports (↳ **fig. 7**) for

- Mains cable
- Operating device
- Actuators, telescopic pillars
- Ground terminal (optional: to connect further equipment)
- Optional Accessories (limit switches)
- Rechargeable batteries.

4.5.1 Connection to main power

For connecting the SCU control unit to main power select the correct cable matches the requirement in the application. (Therefore ↳ **chapter 4.8** and **11.3**).

4.5.2 Connection to operating element



1. Manual switch EHA31 for 1 operating function
2. Manual switch EHA32 for 2 operating functions
3. Manual switch EHA33 for 3 operating functions
4. Operating switch right-hand row «move actuator unit in» (standard configuration)
5. Operating switch left-hand row «move actuator out» (standard configuration).

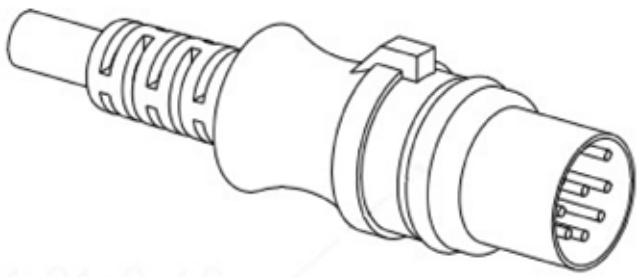
4.5.3 Connection to actuators/ telescopic pillars

The SCU control unit can run up to 6 actuators. They devices must have connecting cables with DIN8 plug (↳ **fig. 11**). Suitable actuators (linear actuators and telescopic pillars) ↳ **chapter 4.1.1** and SCU datasheet.

See also the different user manuals and type keys of the relevant actuators for the application.

Fig. 11

DIN 8 plug



4.5.4 Connection to limit switches

The SCU control unit enables to connect 4 external switches (limit switches).

Therefore socket nr. 7 is intended for this purpose (↳ **fig. 7**). This technical function needs a customized SCP (parameterized) For details see the connecting diagram (**chapter 11.2**).

4.5.5 Connection to PE (earth ground)

Only SCU5 and SCU9 are provided to connect a protective earth wire. These SCU's are defined as class I. The metallic pin can used in the final application as protective earth connection.

4.6 Operating elements

Following operating elements are suitable for the SCU control unit:

The Ewellix operating devices are available as accessories for control units SCU.

For details see the manual PUB MT/I4 00000EN – August 2017 about installation, operation and maintenance.

Overview operating elements:

Hand switch:

EHA: all SCU

Foot switch:

STJ: all SCU

Desk switch:

STE: all SCU

4.7 Options

Options can be recognized from the type designation on the type plate.

Battery

The SCU control unit may be fitted with a battery connection or a pre-installed underfloor battery.

The unused battery connection is equipped with a sealing stopper by the factory.

Rechargeable batteries are available as spare part or as accessories (↳ **chapter 4.8 and 11.3**).

NOTE

Please note: without an external battery the connection socket must be equipped with the factory-supplied sealing stopper for IPX4 protection to be guaranteed. Please note the special requirements for handling rechargeable batteries. Only batteries authorized by the manufacturer may be used.

End switches

The connection for the end switch is available for all version of the SCU control unit. But this must be set by the manufacturer in the factory.

Here the end switches can take on various functions.

The connection socket is equipped with a sealing stopper by the factory.

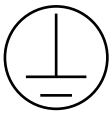
NOTE

Please note: without an end switch the connection socket must be equipped with the factory-supplied sealing stopper for IPX4 protection to be guaranteed.

Protective Earth (ground terminal)

SCU5 and SCU9 are prevented to connect protective earth.

These types are defined as protection class I; therefore use a three-core mains supply cable to connect the green/yellow wire to the ground terminal on the housing, marked with the following symbol:



SCU16: functional earth terminal on the housing marked with the following signal:

4.8 Accessories

Rechargeable battery

The authorized batteries or underfloor batteries are screwed to the underside of the SCU control unit.

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

Operating element

In addition to the hand switch other operating elements are available as accessories on request from a reseller.

The operating elements create a function in the control unit.

This function depends on the type of control unit (parameterization) and usually allows the actuator to move in or out.

The operating elements are not contained in the supply schedule and must be ordered separately. Only operating elements that have been authorized for the SCU control unit can be used.

Mains cable:

Order the mains cable with the plug that are correct for your country and the appropriate class of the SCU control unit.

It is only permitted to use Ewellix main cables with the label ZKA-160xxx-xxxx.

The connection cable is provided for the DC version.

The plug types are Schuko, SEV, UK, UL and UL hospital grade.

5.0 Transport, packaging and storage

5.1 Safety information for the transportation

⚠ CAUTION

To prevent damage due to improper transport:

- Proceed carefully during the delivery and unloading of the packaged items, as well as during transport to final destination. Comply with the symbols and information shown on the packaging.
- Do not remove the operating elements and accessories from its packaging until just before installation.
- Note storage requirements for return transport of the device to the manufacturer.

5.2 Transport inspection

The SCU control and battery boxes are delivered as one packaged unit in a plastic bag, box or on pallets.

Check the delivery immediately upon receipt of the delivery, for completeness and any signs of damage incurred during transport.

Check delivery for:

- A complete device, with all packaged parts present
- Any signs of damage to the plastic casing, such as cracks. If there is a crack or damage evident, the protection will not be in accordance with standard IEC 60529, so the IP class is not guaranteed and the relevant device must be returned to the manufacturer
- Enclosed as well the document “brief instructions for initialization” (↳ **chapter 6.8.4.1**).

If exterior transport damage is evident:

- Do not accept delivery or accept with exceptions (due to fulfill orders)
- Record scope of damage on the transport documents or bill of delivery of the shipping company
- Initiate complaint.

Check completeness of delivery for:

- A complete SCU unit
- If cracks in the plastic casing were caused during the transport, the protection of accordance with rated IP class can no longer be guaranteed
  The SCU control unit must be sent back to the manufacturerw
- Installed cable and a low-voltage plug.

NOTE

Report any damage as soon as it has been recognized. Damage claims can only be asserted within the transporter’s applicable complaint period.

5.3 Return to the manufacturer

If device is damaged, arrange for return transport as follows:

1. Dismantle the device if necessary (↳ **chapter 10 Dismantling**)
2. Pack device in its original packaging. Follow storage conditions (↳ **chapter 5.5 Storage**)
3. Send to manufacturer. The address is listed on the cover back.

5.4 Packaging

Requirements:

All parts are packaged appropriately for anticipated transport conditions, using only environmentally-friendly packaging materials. The packaging is intended to protect the individual components from damage caused during transport, or by corrosion and other potential hazards, until the components are ready for installation.

Only remove packaging shortly before installation.

Handling with packaging:

The packaging should not be destroyed, but kept for possible return shipment to the manufacturer.

If the packaging is to be disposed of, please note and adhere to the following notices!

NOTE

In case of dispose packaging material respect the following rules:

- Dispose packaging material in an environmental correct way.
- Comply with locally applicable disposal regulations.

NOTE

Packaging material consist of valuable raw materials, much of which can effectively be recycled and reused.
Therefore:

- Re-Use: The packaging can also be reused, for instance return shipment in case of repairs. Comply with locally applicable disposal regulations
- Re-Cycle: Follow and be comply with the locally applicable environmental regulations.

5.5 Storage

Ewellix products can be stored during a shipment from the manufacturer to the customer in an intermediate storage or/ and finally at the customer on the storage. Pack the SCU control unit in its original packaging for storage. Observe the following values when selecting a storage location.

- Do not store outside
- Dry and dust-free storage
- Keep away from any aggressive media
- Protect from UV radiation
- Avoid mechanical vibrations.

Observe the following values when selecting a storage

- Location
- Storage temperature: +5 to +40 °C
- Atmospheric humidity: 5 to 85%, non-condensing
- Pressure: 700 to 1 060 hPa
- For storage longer than three months, check the general condition of all parts of the packaging on a regular basis.

For specific storage conditions contact Ewellix.

NOTICE

Additional storage
There may be notices on the packaging concerning additional storage requirements not listed here. If so, follow these.

5.5.1 Batteries

The Lead Acid batteries in the SCU Control Unit (optional)

The lead batteries mounted in the control unit is submitted to an automatic discharge during storage.

The ambient temperature affects the discharging time.

NOTE

Storage of SCU control units with batteries:
Note that for SCU control unit using batteries special attention to the discharge must be given.

NOTICE

Rechargeable batteries
Rechargeable batteries can discharge even when stored and can be destroyed if discharged completely. Please ensure that you connect the battery to the mains occasionally,
When stored the underfloor battery ZBA-160208 must be connected to the mains for 12 hours every four months.

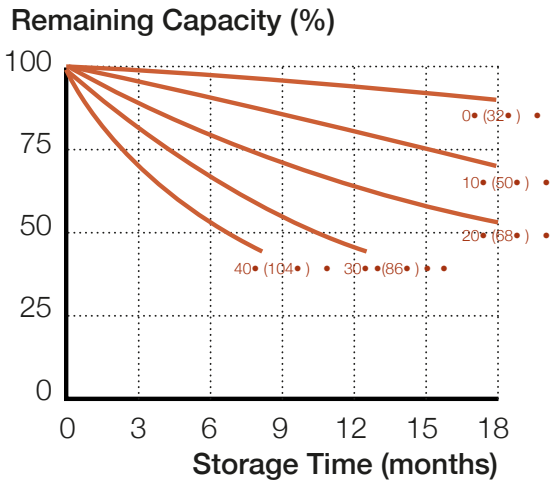
Storage of SCU control unit with batteries

The relation between battery capacity and storage temperature and time is as follow:

The above data is shown in the following graph **fig. 12**:

Time / Temperature	1 month	3 month	6 month	12 month
0• •~ 5• •	96%	93%	90%	80%
5• •~ 20• •	92%	90%	80%	65%
20• •~ 30• •	90%	80%	65%	50%
30• •~ 40• •	83%	70%	50%	Not allowed

Fig. 12:
Diagram battery capacity retention



Batteries stored longer than three months should be re-charged f or minimum 12 hours before shipping!

WARNING

Discharge, charge batteries for SCU
Prior to delivery all batteries are charged by the manufacturer.
Recommendation:

- The SCU control unit can be stored up to max. 9-10 months at 20 °C ambient temperature without charging (remaining capacity ≥ 70%)
- While charging the batteries hydrogen gas can be built up (explosion danger). Charge only in ventilated rooms
- There is no warranty covered by Ewellix.

6.0 Installation and first operation

This chapter is intended for technicians and those involved with further processing. It provides the information needed to assemble, connect and start up the device.

Qualification (↳ **chapter 2.3.1 Qualifications**).

Authorized personnel

- The installation and first start of operation may only be conducted by qualified persons
- Work on the electrical system may only be performed by trained professional electricians.

⚠ WARNING

Electric shock and moving parts hazards
Serious injury or death can be caused by touching live electrically connected control units and by unexpected movement of an actuator. Be sure the system's power supply is off and the actuators are locked out before installing the operating elements and accessories.

⚠ WARNING

Danger if restarted
When correcting faults in the system, there is a risk of the energy supply being switched on without authorization. This poses a life-threatening hazard for persons in the danger zone (-> safety). Therefore:

- Prior to starting work, switch off the system and be sure it is locked out.

⚠ WARNING

Incorrect installation of optional devices
Risk of injury and device damage due to incorrect installation of the optional devices.
Therefore:

- Optional devices, in particular components that are part of retrofit, may only be installed in accordance with their respective instructions (circuit diagram).

⚠ WARNING

Installation adjacent to other equipment
The device should not he installed adjacent to or stacked with other equipment. If adjacent or stacked is necessary the control unit should be under observation (check functionality, operating temperature) to verify normal operation in the configuration which it will be used.

⚠ WARNING

Special precautions regarding EMC
The SCU control unit requires special precautions regarding EMC requirements and must be installed and put into service in the final application according to the EMC-information provided in this manual in **chapter 2.8**.

6.1 Installation location

Adhere to the technical data in accordance with operating conditions.

Install in a location according to the ambient operating conditions and where the devices are not exposed to strong UV radiation or corrosive or explosive air media.

(↳ **chapter 3.1 Operating conditions**).

6.2 Inspections prior to first operation

Perform an installation check before you start up the system with operating devices for the first time.

- To be performed by a professional electrician
- Prior to first operation, a professional electrician must perform and document the following tests and readings:
  - Visual condition check
  - Function check of operating features and safety features
  - Reading of leakage currents
  - Reading of insulation resistance.

6.3 Installation

Installation

The devices must be attached using the mounting holes provided (↳ **chapter 11.2 Plans and diagrams**).

The devices can be installed in the provided positions.

The installation of the device and connections are shown in the following sections.

All points must be kept in mind as regards the installation of the SCU control unit.

Make sure that:

- the mains plug of the connection cable remains accessible at all times
- the mains, DC and rechargeable battery cables can not be bent or squashed

- the connecting cables to the actuators cannot get crushed or squashed
- The SCU control unit is set up on a level surface (if the casing is bent during setup the IP-protection is no longer guaranteed)
- The SCU control unit is set up properly and cannot loosen itself through impacts and vibrations.

Interfaces and connections

NOTICE

To prevent damage to the devices owing to broken plugs or damage cables, ensure that the plugs remain freely accessible and all tables remain safe and hidden.

NOTICE

Broken plugs could cease the water tightness, which would lead to the destruction of the connected control unit.

⚠ CAUTION

Warning regarding damage to the control unit owing to tilted plugs or damaged cables. Ensure that the plugs remain freely accessible and all cables remain safe and hidden.

The nominal values can be found in the Appendix (↳ **chapter 11.1**).

Check the following interfaces and connections and carry out the following processes:

1. Connect the operating devices (↳ **chapter 6.5**)
2. Connect the actuator units(s) (↳ **chapter 6.4**)
3. Connect the mains cable to the control unit (↳ **chapter 6.6**)
4. *Optional: connect the end switches (↳ **chapter 6.7**)
5. *Optional: connect the rechargeable battery (↳ **chapter 6.7**)
6. Mount the safety protective cover (↳ **chapter 6.7**)
7. Follow the warning on the type label
8. *Protection class I unit: Connect the ground wire (↳ **chapter 6.7**)
9. **a**) for AC-Design: Insert the mains cable plug into the mains plug
   b) for DC-design: close the stranded wires of the DC cable to a suitable voltage source
   (DC feed must be protected against short-circuiting etc.)
   Polarity: red + and blue -.

6.4 Connection to the actuators

Requirements: Only actuators with two hall encoders that have been approved by the manufacture may be connected.

Contact customer service (↳ **manufacturer address**) to ensure that the actuator unit used for this control unit is permitted.

1. Plug in the plug of the actuator in the corresponding connecting socket of the SCU control unit (↳ **fig. 6**)
2. Check whether the letter on the label clip on the actuator matches the letter on the data label (↳ **item 2 in fig. 6**) of the corresponding socket.

NOTE

Incorrectly inserted actuators can be damaged!

3. *Several drives of the same type: insert the correct drive for the desired function.

NOTE

Motor cables may not be prolongated so as not to have a negative effect on the pulse generator signals.

NOTE

The IPX4 protection is only guaranteed if the connecting sockets not being used are closed with a sealing stopper.
Two sealing stoppers are part of the scope of supply.

Fig. 13 shows the sealing stoppers for unused actuator output from the control unit.

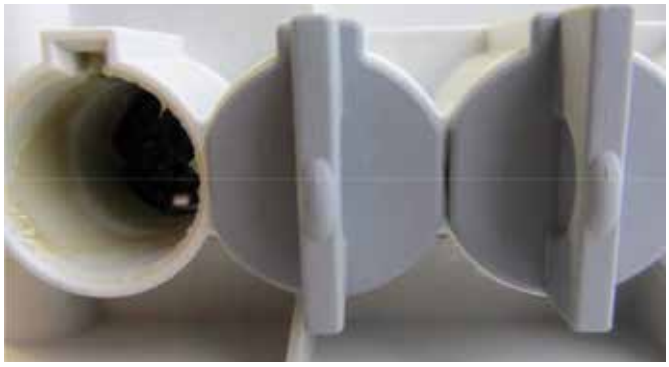


Fig. 13: Sealing stoppers unused actuator outputs

6.5 Connection to operating elements

The designation “operating element” stands for electrical hand switch, foot switch and desk switch.

1. Connect the HD15 plug of the operating device carefully and in the correct position to the corresponding socket of the SCU control unit (↳ **item 3 in fig. 6**)
2. Check that you have used the correct connection socket.
3. * repeat step 1) if necessary for a second or third operating unit.

NOTE

The IPX4 protection is only guaranteed if the connecting sockets not being used are closed with a sealing stopper.

Fig. 14 shows the sealing stoppers for unused SCU control unit inputs for operating elements.

Fig. 14: Sealing stoppers unused inputs operating elements

6.6 Connection to main power supply

See Accessories (↳ **chapter 11.3**) for the available power supply cords.

1. Insert the country-specific mains cable (↳ **refer to Accessories chapter 4.8**) in the correct direction in the corresponding connection socket of the SCU control unit.

6.7 Requirements concerning the installation of the actuators with options

6.7.1 Connect end switches

Requirements: The corresponding option must be factory.

Remove the sealing stoppers.

Tools:

To ensure safe operation only use check correct terminology is used.

Closing contacts are required to provide movement.

1. Plug in the plug of the actuator in the corresponding connecting socket of the SCU control unit.

NOTE

A diagram of the end switches connection is found in the Appendix (↳ **chapter 11.2**).

NOTE

A diode is required to check the line to the end switches (initial defect safety).
If parameterized appropriately 24 VDC signals (e.g. SPS) can processed by the SCU control unit.

6.7.2 Connect rechargeable batteries

Requirements: Optional rechargeable battery connection must be available (↳ **chapter 4.7 options**).

Remove the relevant sealing stoppers.

1. Fix the rechargeable battery to the control unit.

   1a) Underfloor rechargeable battery:
   Screw the underfloor rechargeable battery to the underside of the SCU control unit

   1b) Other permitted rechargeable battery packages:
   Screw the rechargeable batteries in the right direction to a suitable location

2. Check the plug of the rechargeable battery for damage

NOTE

Bent plug pins could result in a short circuit and damage the battery.

3. Plug in the battery plug in the corresponding connecting socket of the SCU control unit.

6.7.3 Mount the safety protective cover

Requirements: All plugs required are connected and all unused connections blocked with sealing stoppers.

Plug the safety protective cover to the rear-side of the SCU control unit till the fastening of the safety protective covers meshes (↳ **fig. 15**).

Close *Open*

Fig. 15: Safety protective cover (close / open)

NOTE

If it is not possible to place the safety protection cover properly the plugs may not be inserted properly.

NOTE

You can remove the safety protective cover only with a tool (↳ **chapter 7.6.1**).

6.7.4 Connect ground earth wire (PE) / Function earth (FE)

Requirement: Only SCU5 / SCU9 (with protective earth contact PE) and SCU16 (functional earth terminal FE).

1. Connect the cable shoe to the earth connection using the nut from the ground wire screw (↳ **fig. 16**).
2. Connect the protective earth at the metal pin wire in way that the safety protective cover can be closed properly.

Fig. 16: Metal pin (bolt) to connect devices to PE

NOTE

Important: The earth ground conductor must be firmly connected with an adequately small contact resistance that should under no circumstances become loose.

NOTE

Important: The nut may not be tightened too much because this could damage to the housing and the IPX4 protection could no longer be guaranteed.
The 1 Nm torque should not be exceeded.

⚠ WARNING

Warning regarding electrical shock owing to damaged plugs or damaged network tables. Never touch a damaged network plug or a damaged network cable when the SCU control unit is running, since the SCU control unit are supplied 120 VAC or 230 VAC.

Bolting

The SCU control unit must be screwed with the application. Fix the control unit such that the minimum of four fixing screws required can not loosen and slip through the screw holes.

6.8 Initial start-up

This chapter is intended for technicians and those doing the further processing. It contains all the information that is required for the erection, connection and commissioning of the SCU control unit.

A good preparation is part of efficient installation and start-up. This includes, among other things, clarification regarding the locations and the preparation of the energy supply.

Good preparation is part of efficient installation and start-up. This includes, among other things, clarifications regarding the locations and the preparation of the energy supply.

Before you make the SCU control unit operational, carry out the installation inspection.

6.8.1 Installation inspection

Check the following points before the initial start-up:

- Operating device connected (↳ **chapter 6.5**)
- Actuator unit connected (see connect the actuator(s) (↳ **chapter 6.4**)
- Mains cable connected to the control unit (↳ **chapter 6.6**)
- Optional: End switches connected (↳ **chapter 6.7**)
- Unused connecting plugs closed with stopper plugs (↳ **chapter 6.4**)
- Safety protective cover installed (↳ **chapter 6.7**)
- For AC-Design: Energy supply to mains plug guaranteed
- For AC-Design: Mains cable connected
- For DC-Design: DC cable connected to appropriate DC voltage source
- Free access to the mains plug ensured
- Operating voltage indicator lights up.

NOTE

Ensure that all unoccupied connection sockets that are not equipped with an appropriate plug have a sealing stopper. Otherwise IPX4 protection cannot be guaranteed.

Check the supply schedule

The SCU control unit consits of:

- A complete control unit
  - with safety protective cover
  - DC design with connection cable
  - Two sealing stoppers (pre-assembled by factory; article ZDV-160307-0008)
  - 3 or 4 (with optional rechargeable battery connection) sealing stoppers (pre-assembled by factory; article ZDV-160308-0015)
  - Optional 1 under-floor rechargeable battery.

(for sealing stoppers ↳ **fig. 13** and **fig. 14**).

Power Supply

The SCU control unit only requires electrical energy for operation.

Observe the connection values in the appendix of this manual (↳ **chapter 11.2**).

6.8.2 Commissioning

Before initial start-up, check that the following points have been dealt with:

- All instructions followed in the above sections of this chapter.
- All cables secured against pinching and trapping, and properly connected.
- Electrical supply secured.
- Operating device connected to the control unit.
- No persons or obstacles near any movement.

Initial start-up:

Prior to first operation, a professional electrician must perform and document the following test and readings:

- Visual condition check
- Function check of operating features and safety features
- Reading of leakage currents
- Reading of insulation resistance.

After the installation check has been completed, you can start up the device, the system.

Make sure that all functions are correctly operational.

After the installation inspection, you must carry out the system initializing and a comprehensive function check.

NOTE

Ensure that all plugs for the operating devices and the end switches are identical. Ensure they are working properly by undertaking the function check.

6.8.3 Initializing

Process: Initialize system

1. Move all drives connected to the SCU control unit to the zero value.

NOTE

Please note: The zero value varies with the actuator type. For pressurized actuator the zero value is usually at the bottom.

2. Test the initialization by moving all drives.
3. Beep sounds: Select the zero position again.

NOTE

Please note: The SCU control unit has a relative route measurement system that is undertaken by counting the actuator pulses. To initialize the route measurement system the actuators must be moved to the zero position.

NOTE

Please note: On delivery the motor outputs on the SCU control unit are not initialized. When moving actuators that have not been initialized a beep sounds for 3 seconds. The actuators then only move at half speed and the power limitation is reduced to half. In addition, certain functions are ignored.

NOTE

Please note: Depending on the parameterization, it is possible to add or remove an actuator after the first initialization. Connect or disconnect the corresponding actuator to the SCU control unit and initialize the system manually (↳ **chapter 9.1 malfunction**).

6.8.4 Carry out function check

Responsibility: Technicians and those doing the further processing.

Requirements: Newly installed system

1. Whenever the system is initialized carry out a comprehensive function check.
2. Using the function check test correct operation and check that all operating unit functions operate correctly.

NOTE

Please note. The plugs for the operating devices and end switches are identical.
The function check ensures that they are correctly connected.

NOTE

Check the process initialize system manually (↳ **chapter 9.1 malfunction table**)

Then you can commission the SCU control unit. To do so, press the corresponding actuation button of the operating element.

6.8.4.1 Brief instructions for initialization (enclosed by each delivery)

EWELLIX
MAKERS IN MOTION

INSTALLATION INSTRUCTIONS

SCU
Brief instructions for initialization

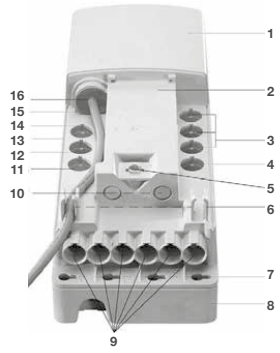
Safety

Before start-up, please read the operating instructions for the SCU control unit carefully and pay special attention to the safety notes. The relevant notes can be found at https://medialibrary.ewellix.com/asset/16222

Overview and connections for the SCU control unit

Fig. 1

Overview of SCU control unit, without protective cover



1. Housing
2. Space for software data label
3. Connection for operating elements (sockets 8, 9, 10)
4. Connection for 4 external end switches (socket 7)
5. Fastening for safety protective cover
6. Cable guides
7. Installation holes (4)
8. Under-floor rechargeable battery
9. Connection for operating actuators and pillars (sockets 1 to 6)
10. Not occupied (sockets 15, 16)
11. Not occupied (socket 14)
12. Optional rechargeable battery connection (socket 13)
13. Operational voltage indicator (not visible on this image)
14. Communication interface (socket 12)
15. Operational earthing bolt (not visible on this image)
16. Mains connection or connection for source of DC voltage (socket 11)

Initialization process (for standard parameters)

1. Connect operating element(s)

Insert the HD15 connector of the operating element carefully and correctly into the relevant socket of the SCU control unit (↳ **position 3** in **Fig. 1**).

2. Connect drive(s)

Insert the connector (DIN8) for the drive into the relevant socket on the SCU control unit (↳ **item 9** in **Fig. 1**). Check that the letter on the marker clip for the drive matches the letter on the data label (↳ **position 2** in **Fig. 1**) of the relevant socket.

When using several drives of the same type, the drives must be connected according to the desired function.

3. Connect supply voltage

For the AC version: Insert the country-specific mains cable correctly into the relevant socket (↳ **position 16** in **Fig. 1**) of the SCU control unit. For the DC version: Connect the wires of the DC cable to a suitable voltage source (the DC supply must be short-circuit- proof or suitably protected), polarity: red + and blue –.

4. Initialize the system

Press the Up and Down buttons of the first level operating element at the same time for 5 seconds. An intermittent signal confirms the action.

Move all the drives connected to the SCU control unit to the zero position by pressing the Down button.

⚠ WARNING

If initialization is not performed correctly, the system will not operate properly and this may lead to errors that only become apparent later.

5. Test initialization

To assure correct initialization, you have to move all actuators. There must not be any audible alarm and the speed of the actuators must comply with the specifications on the datasheet.

6. Note

After assembling components (with the power disconnected), make sure that the drives are reconnected to their original sockets.

⚠ WARNING

If drives are added, removed or replaced after initialization, the initialization process must be repeated.

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7.0 Operation

This chapter is directed at the user groups operator and operating authority. It contains all the information that is required for the safe and problem-free use of the SCU control unit in normal operation.

In normal operation the SCU control unit analyses signals from one operating device in order to actuate the printing or stroke movements with the appropriate actuator.

7.1 Safety

⚠ WARNING

Damaged plug or cables

Warning regarding electrical shock owing to damaged plugs or damaged network cables when the SCU control unit is running, since the SCU control unit is supplied 120 VAC or 230 VAC. Therefore:

- Ensure, before you pull a defective plug out or the plug socket that the power supply is cut off.
- Check the power cable regularly for damage.

⚠ CAUTION

Please be aware of damage to people or property as the result of incorrect operation. Incorrect operation can endanger people in the danger zone or objects.

- Before pressing a button on the operating device ensure that you press the right button.
- Take appropriate measures to ensure that the operating device cannot be operated unintentionally.

⚠ WARNING

There is a risk of injury through crushing in the operating environment of the device. Therefore:

- Ensure that no persons are in the stroke area of the device while it is operating.
- Take note of maximum permissible performance specifications for the device (↳ **chapter 11.1 Technical data**).
- Never tamper with the elements connected to the device while the device is in operation.
- Make sure that operating elements cannot be activated unintentionally.

⚠ WARNING

Risk of injury due to cracks and related openings in the housing of the control unit and/or its accessories.
If the housing is damaged due to shock, breakage or heavy wear, cease using the device and follow the dismantling instructions.

⚠ WARNING

Electric shock

Beware of electric shock due to squeezed cable. Ensure that cables cannot get pinched or damaged. Check that the mains voltage corresponds to nominal value on the product label. Ensure that the cabling is installed correctly in the cable channel.

7.2 Actions before use / Preconditions

The SCU control unit controls one to six actuator units. The safety protective cover must be closed and the power supply ensured (energy supply LED glows).

The optional rechargeable battery facilitates operation without connection to the power supply.

Operation with Rechargeable batteries

The rechargeable battery must be adequately charged for using it.

The following table (↳ **fig. 17**) gives an overview about the different operation modes.

Fig. 17

Operating mode	LED indicator	To be carried out by
Control powered by mains or DC feed	Lights up green	full
	Flashes green	charging mode
Control fed separately from mains via rechargeable battery	Lights green when you press a button on the operating unit; an acoustic signal also rings for 5 s.	weak, a full stroke with an actuator drive is still possible (approx. 2 minutes)
	Flashes orange when you press a button on the operating unit; an acoustic signal also rings	very weak, only one movement in counter-load direction possible

Status of the rechargeable battery in various operating modes with the corresponding LED indicator.

Check the following points and ensure that:

- no cable is squashed during operation
- installation is completed correctly
- all operating units are in the proper location
- no people are located in the danger zone
- the system is initialized (↳ **chapter 6.8**)
- the function check is done (↳ **chapter 6.8**).

7.3 Turn on

Before turn on, the installation (↳ **chapter 6**) and preconditions for operation (↳ **chapter 7.2**) must be fulfilled. Operation takes place using an operation device (↳ **Options and Accessories**).

After first operation, a comprehensive function check should be done before operation, by activating the corresponding functions via the connected hand, foot or desk switch.

NOTE

Please note: You can move the actuators in and out by pressing the appropriate button on the operating device. If the movement does not stop as soon as you release the button you must press the button for the opposite direction immediately to stop it.

NOTE

Please note: The connection to the operating device (5 VDC) and the actuator (24 VDC) is made via safety low voltage.

7.4 Turn off

The SCU control unit does not have an on/off-switch.

To de-energize, the control units must be disconnected from the main supply.

Shut down the SCU control unit by pulling the plug of the control unit from the socket.

7.5 Actions during the operation

The SCU control unit have been designed for intermittent or short term use (↳ **chapter 11.1 Technical data**).

If a higher duty cycle is used contact Ewellix.

7.5.1 Normal operation

For Normal operation of SCU control units use

the directional buttons up and down on the operating device to operate the actuators.

- Button up: The actuator extends / actuators extend
- Button down: The actuator retracts / actuators retract.

On the operating device there is a green LED indicating normal operation. The actuator(s) will stop if keep both buttons are pressed at the same time.

Before running SCU with actuator(s) it is necessary to reset (initialize) the system (↳ **chapter 6.8 Initial start-up**).

NOTICE

Initializing outputs
The delivery status of the SCU outputs of the actuators are not initialized. See **chapter 6.8** for initial start-up.
When moving actuators that have not been initialized, a beep sounds for 3 seconds. The actuators then only move at half speed and the power limitation is reduced to half.
In addition certain functions are ignored.

⚠ CAUTION

Excessive current consumption, unusual noises or an unwanted movement from the actuators, indicate damage or defect of the control unit cease operation and contact Ewellix immediately.

7.5.1.1 Move drives synchronously

Responsibility: Operator

Requirements:

- Parameterize SCU control unit appropriately
- Drives of the same type
- Establish preconditions for operation.

Control several drives synchronously using the SCU control unit operating unit.

NOTE

If the actuators are not of the same type the synchronous movement is not guaranteed. The synchronization is undertaken by analyzing the pulse generator signals that are integrated into the actuators.

NOTE

The SCU control unit compensates for different actuator speeds that occur for example at different loads by supplying the faster actuator with less power (PWM regulation).

NOTE

If an actuator is overloaded all the actuators assigned to this function stop immediately. If the maximum total power for the SCU control unit is exceeded all actuators stop.

NOTE

The actuator synchronization (speed regulation) is not secure against single errors. The actuators are stopped by releasing the function button and this also works if an error occurs.

7.5.1.2 Save memory positions

Responsability: Operator

Requirements: Suitable operating device

1. Move all drives to the desired position
2. Press the save button and the desired memory button within the next two seconds.

NOTE

The actual stroke for all connected and initialized actuators is saved in the control unit. The control unit accepts this process with a short beep.

NOTE

The control unit can manage up to 4 operating devices and each operating device can handle up to 4 memory positions.

NOTE

After the memory positions have been saved, you must check them. To check the saved position, it is necessary to move all actuators away from the saved position. Then move them to the memory position (see following process).

7.5.1.3 Move to memory positions

Responsibility: Operator

Requirements: Suitable operating device

1. Press the relevant memory button until all connected and initialized drives are at the saved position

NOTE

Actuators that reach the correct stroke measurement stop independently.

NOTE

At high loads for several actuators the SCU control unit may stop as a result at the high total power.

2. If the maximum total power is exceeded:
   Move the most loaded drives individually in the load direction via the desired stroke measurement
3. Then press the memory position button. The drives now move with lower total power against the direction of the load until they reach the relevant memory position.

NOTE

Blocked, not initialized or missing actuators are not considered when moving to memory position.

NOTE

Moving the actuators to memory positions is not secure against single errors. The actuators are stopped by releasing the function button and this also works if an error occurs.
Even if an error occurs, only the actuators that are assigned this function move.

7.5.2 Specific operating instruction

Details of specific operations can be found in the following sections:

- Installation and first operation
- Maintenance
- Malfunctions
- Dismantling.

7.6 Emergency disengagement

Pull the mains power cable from the socket of the control unit or actuator.

In hazardous situations, all movements of the application must be stopped as quickly as possible and the power supply turned off.

NOTE

The control units SCU do not have an on/off switch and must be disconnected from the power supply.
Only this measure will de-energize the control units! (see also **chapter 8 Maintenance**).

NOTE

The application, in which SCU control units are installed, may need to be equipped with an emergency stop switch or isolation from the power supply on all poles.
(see also **chapter 8 Maintenance**)

Procedure in hazardous situations:

1. Immediately engage emergency shut-off if present, or cut off power to the control unit.
2. Disconnect the actuators from control unit in the case of SCU with battery pack
3. Evacuate people from the hazard zone, initiate first aid measures.
4. Notify doctor and fire department, if necessary.
5. Notify responsible person on-site.
6. Keep access paths open for rescue vehicles.
7. Based on severity of emergency, notify the authorities if necessary.
8. Order specialized staff to repair malfunction.

Procedure after shut down (chapter 7.6.1), repair, before start (after hazardous situations):

1. Check the device and the application that uses the device, prior to restarting the operation.
2. In the case of SCU with battery pack see **chapter 9.1.1** for replacement prior to restarting the operation
3. Ensure that all safety equipment is installed and fully functional.

⚠ WARNING

Do not restart until all persons are outside the hazard zone.

⚠ WARNING

SCU control units with battery pack:
Before restart the system take care and pay special attention due to batteries. For replacement follow the steps in **chapter 9.1.1.**

7.6.1 Shut down

The SCU control unit must be shut down in the following sequence:

1a. AC-types SCU5, SCU9 (SCU4, SCU8):
Render the SCU control unit voltage-free (isolate it) by pulling the plug of the control unit from the socket

1b. DC-types SCU1:
Remove the DC feed cable from the source of DC voltage

2. remove the safety protective cover

2.1. Use a coin or large screwdriver to turn the locking button to open position

3. Pull out the plug for the connected components from the SCU control unit.

After that you can dismantle or re-install the SCU control unit (↳ **chapter 6 installation**).

7.7 Action after use

Secure the operating elements are properly located to avoid unintentional activation of a function switch.

If the battery is installed, connect the control unit to the mains supply to secure proper charging of the batteries.

8.0 Maintenance

The maintenance includes all the work that serves for the upkeep of the functional SCU control unit.

These operations include inspections, replacing consumables and cleaning.

Personnel

- The maintenance work described here can be performed by the operator unless otherwise indicated
- Some maintenance tasks should only be carried out by especially trained, qualified personnel, or exclusively by the manufacturer
- This will be indicated in the description of the respective maintenance tasks
- Only professional electricians should perform work on the electrical equipment
- Only professional trained personnel can substitute any electrical equipment, accessories and cables.

⚠ WARNING

Electric shock hazard

Incorrect maintenance can result in serious injury, death or damage.
Only professional electricians should work on electrical systems.

⚠ WARNING

Danger if restart is uncontrolled

When correcting faults, there is a risk of the power supply being switched on without authorization. This poses a life-threatening hazard for persons in the danger zone.
Prior to starting fault repair work, switch off the system and be sure it is locked out.

NOTE

It is recommended to comply with IEC 62353 (Medical electrical equipment - Recurrent test and test after repair of medical electrical equipment) regarding maintenance. (↳ **chapter 8 Maintenance**).

NOTICE

In case of unintended movement of the connected actuators, push the opposite button of the operating device to stop the movement.

8.1 Maintenance plan

Maintenance tasks that are required for optimal and trouble-free operation are described in the sections below.

If increased wear is detected during regular inspections, shorten the required maintenance intervals according to the actual indications of wear.

NOTICE

If the SCU control units are used outside the environmental conditions, specified earlier in this manual, check the device once a month for any changes, such as oxidation, sedimentation, cracks and functionality.

8.2 Maintenance work

The control units SCU are maintenance-free (excluding rechargeable battery) for their lifetime (Details can be found in **chapter 2.1.1.1 Product life time**).

Connection cables and housing must be checked for wear and tear at regular intervals.

In compliance with applicable regulations, safety inspections must be carried out on location, at regular intervals.

Check grounding and substitute leakage currents annually.

The housing, foils, keypads and the cables connected must be examined at regular intervals (every six months) for signs of mechanical damage. If any damage is revealed, the devices must be isolated from the control unit or actuator and any defective parts must be replaced.

Every six months, the devices must be checked by monitoring the actuators as they are retracted and extended.

The following points have to be checked regularly:

- Plug
- Housing
- Cable
- Protection earth
- Leakage current
- Function
- Protective foil/Key pads (with symbols) on the operating elements.

This regular check includes checking of all functions and safety measurements.

NOTICE

Damaged housing and cables
Damaged housing does not provide IP protection IPX4.
Damaged cables could result in a short circuit.

NOTICE

Rechargeable batteries
Rechargeable batteries must be connected to the mains or a source at DC voltage periodically for 12 hours in order to protect the battery from full discharging and therefore from destruction (this applies after 6 weeks for pre-assembled underfloor batteries with 2.7Ah).

8.2.1 Cleaning

The SCU control unit is manufactured to comply with the IPX4 degree of protection against spraying water, but not against water jets.

The control unit should be cleaned as soon as possible after use, in order to prevent any accretion of unwanted material.

⚠ CAUTION

Protection against water jets
Take care not to damage the SCU control unit with water jets.
The SCU control unit is protected against spraying water according IPX4, but not against water jets. Prevent the SCU control unit from being subjected to water jets.

NOTICE

The control unit should never be washed using a washing machine or similar device unless the actuators, operating device and mains cable have been connected properly.
The ingress or fluids could cause irreparable damage to the control unit.

NOTICE

The plastic housing of the control unit must be checked periodically (every six months) for mechanical damage (cracks).

Observe the following points when cleaning:

- Separate device from control unit or actuator. Unplug the cables from the socket
- Clean soiled parts immediately
- Use a damp cloth
- Wash water, including added chemicals, must be pH-neutral
- Acidic or alkaline wash water can destroy metallic and synthetic parts
- Disinfect by hand washing exclusively with isopropyl alcohol.

NOTICE

Washing / Cleaning:
High pressure steam cleaning machines must not be used.
Washing water containing chemical additives must be pH-neutral.
Excessively acidic or alkaline washing water can cause irreparable damage to the metal and plastic parts of the control unit.
Only isopropyl alcohol should he used for wiping over the control unit to disinfect it.

NOTICE

Cleaning agents other than those listed, or high pressure steam cleaners will damage the control units.
Always contact the manufacturer before using other cleaning agents.

8.2.2 Inspections and readings

- To be performed by a professional electrician
- To be conducted according to the applicable standards and regulations
- To be fully documented (↳ **Service Log, Manual**).

Complete the following entries in the service log:

- Name of the executing body (company, department)
- Names of the staff on duty
- Identification of the device/system (type, serial number, inventory number) and the respective accessories
- Completed inspections and readings
- Scope and results of the inspections
- Measuring method, measuring device, measurement readings
- Overall assessment / verification of all functions compared to specifications
- Date of inspection or reading and signature of the assessor; personal coding is a viable alternative for IT applications.

8.3 Measures following completed maintenance

Upon completion of the maintenance work, the following steps be performed prior to restarting the device.

1. Check all previously loosened screw connections for a tight fit
2. Ensure that all used tools, materials and other equipment have been removed from the work area
3. Clean work area and remove potential spills such as e. g. liquids, processing materials or similar substances
4. Ensure that all the system's safety measures are working satisfactorily
5. Check all functions against the product specifications
6. Document the inspections in the service log.

9.0 Malfunctions

This chapter describes potential causes of equipment malfunction and the work required to restore operation.

In the event of more frequent malfunctions, shorten the maintenance Intervals.

For any malfunction not resolved using the information provided here, contact the manufacturer. See service contact details listed on www.ewellix.com or the back cover.

Personnel

- Unless otherwise indicated, the work required to solve malfunctions may be performed by the operator
- Some work may only be carried out by qualified personnel, which is indicated in the description of the specific malfunction
- Work on the electrical system may only be performed by professional electricians.

⚠ DANGER

Danger if restarted without authorization
When correcting faults, there is danger of the power supply being switched on without authorization. This poses a life-threatening hazard for persons in the danger zone.
Therefore:

- Prior to starting work, switch off the system and safeguard it from being lockout.

⚠ WARNING

Risk of injury and material damage due to incorrect repair
Incorrect repair of a malfunction may lead to personal injury or device damage.
Therefore:

- Never loosen the screws on the device or try to open the device
- In the event of malfunction that cannot be fixed by adhering to the subsequent notices, dismantle the device and send it to the manufacturer for repair (↳ **chapter 5.0 Transport, Packaging and Storage**).

Actions during malfunctions

In principle:

1. In the event of a malfunction that may present an immediate danger to persons or assets, turn off the actuator or control unit immediately and safeguard against a restart
2. Determine cause of malfunction
3. Depending on the type of a malfunction, have it repaired by qualified personnel
4. Inform responsible party on-site concerning malfunction.

NOTE

The following malfunction table provides information on who is authorized to perform the repair.

9.1 Malfunction table

Malfunctions to the SCU control unit may only be resolved by the manufacturer. For this purpose, the SCU control unit must be shut down and send to the manufacturer (↳ **chapter 5**).

In the following sections, you will find hints on how you can recognize, remedy or handle malfunctions.

NOTE

Malfunctions to the SCU control unit may only be resolved by the manufacturer. For this purpose, the SCU control unit must be shut down and send to the manufacturer (↳ **chapter 5**).
In the following sections, you will find hints on how you can recognize, remedy or handle malfunctions.

9.1.1 Fault rectification

The fault rectification is shown in the 4 following Symptoms:

1 – Actuator does not move any more.

Hypothesis 1-A
a) No supply voltage, or wrong supply voltage, or missing plug contact or supply indicator lamp does not glow.

1. Check the operating voltage specification on the type plate and check whether the mains voltage of the socket corresponds to this value
2. Check the mains plug of the SCU control unit and insert it if required into a mains socket
3. Check the supply voltage and if required, change the fuse
4. Check the HD15-plug of the operating device and if required, insert it into the SCU control unit (↳ **Process Connect the operating device(s), chapter 6.5**)
5. Check the DIN8 plug of the actuator and if required, insert it into the SCU control unit (↳ **Process Connect the actuator unit(s), chapter 6.4**).

Are the supply voltage and the plug contacts intact?

Yes: **Normal Operation, (chapter 7.5.1).**

No: **Hypothesis 1-B.**

b) Hypothesis 1-B
The actuator was not automatically detected.

1. The SCU has not detected all connected actuators.

Was the actuator added or removed?

Yes: Initialize the system (**Process: Initialize system manually, chapter 6.8.3**).

No: **Hypothesis 1-C.**

c) Hypothesis 1-C
Control unit functions are blocked.

1. Unlock the function with an operating unit with an unlocking key.

Was the control unit function blocked?

Yes: **Normal Operation, (chapter 7.5.1).**

No: **Hypothesis 1-D2** Insert the mains plug into the mains socket.

d) Hypothesis 1-D
SCU control unit is overheated or the supply indicator lamp does not glow.

1. Pull the power plug of the SCU control unit out of the power socket and wait for about 30 minutes.
2. Insert the mains plug into the mains socket.

Was the SCU control unit overheated?

Yes: Report to the customer service (↳ **Manufacturer Address**).

No: **Hypothesis 1-E.**

e) Hypothesis 1-E
Actuator faulty.

1. Troubleshoot the actuator (refer to relevant operation manual).

Is the actuator defective?

Yes: Replace the actuator and report to the customer service (↳ **Manufacturer Address**) and carry out Diagnose 1 A.

No: **Hypothesis 1-F.**

f) Hypothesis 1-F
Life exceeded.

1. Check whether the SCU control unit is older than 10 years or has gone through more than 100 000 activations.

Has the life been exceeded?

Yes: **Manufacturer Address.**

No: **Hypothesis 1-G.**

g) Hypothesis 1-G
The actuator cannot be made to move again by any of the aforementioned measures.

1. Contact the manufacturer immediately (↳ **Manufacturer Address**).

h) Drives must be exchanged.

Diagnosis 1-A
Process: Initialize system manually.

Responsibility: Operator

Requirements: Drive position does not match control unit's counter (e.g. after changing a drive).

1. Press the up and down buttons on function 1 at the same time for 5 seconds
   An intermittent beep sounds for confirmation.
2. **Carry out process Initialize system, chapter 6.8.3**
3. When using the memory positions after initialization check whether the saved positions still match the drive's stroke height
4. **Carry out process Carry out function check, chapter 6.8.4.**

2 – Control unit works but it is not possible to operate it without connecting to the mains.

Hypothesis 2-A
a) SCU control unit is not equipped for rechargeable battery operation.

1. Remove the safety protective cover
2. Check whether the connection socket 13 is in place (↳ **refer to fig. 7**).

Is the control unit equipped for rechargeable battery operation?

Yes Hypothesis 2-B.

No Operation when not connected to the mains is no possible for this control unit (↳ **Manufacturer Address**).

b) Hypothesis 2-B
Rechargeable battery is not inserted correctly.

1. Check whether the cable of the rechargeable battery is correctly inserted into the socket 13 connection
2. * If unsure: Remove the sealing ring to reduce the insertion effort. After the attempt re-assemble the sealing ring.

Is the rechargeable battery correctly inserted?

Yes **Hypothesis 2-C.**

No Insert plug correctly and resume normal operation.

c) Hypothesis 2-C
Rechargeable battery is empty.

1. Connect the control unit to the mains voltage (operating LED lights up)
2. Operating unit with LED indicator flashes green, the rechargeable battery is being charged: Leave the control unit plugged in for at least 12 hours until the LED lights up green permanently.

Was the battery empty?

Yes **Normal Operation**, **chapter 7.5.1.**

No **Hypothesis 2-D.**

d) Hypothesis 2-D
Rechargeable battery is defective.

1. Check the life span of the rechargeable battery.

Has the life span of the battery been exceeded?

Yes Buy a new battery (↳ **Manufacturer Address**).

No Contact customer services (↳ **Manufacturer Address**).

3 – Drive only moves slowly and the SCU control unit beeps when the drive moves.

a) Hypothesis 3-A
Drive is not initialized.

1. Carry out the process Initialize system, **chapter 6.8.3.**

Does the drive move normally again and the SCU control unit no longer beeps?

Yes **Normal Operation**, (**chapter 7.5.1).**

No Contact customer services (↳ **Manufacturer Address**).

4 – SCU control unit carries out the wrong function or no function at all.

a) Hypothesis 4-A
Parameter set of the SCU control unit is not correct for the actuator unit.

1. Check the type plate of the SCU control unit and the parameter set SCP
2. Check the type plate of the actuator unit
3. Contact the manufacturer (↳ **Manufacturer Address**).

9.1.2 Repair

Repairs may only be carried out by the manufacturer.

In any case, contact customer service (↳ manufacturer address).

9.2 Start of operation after malfunction repair

To restart device following repair of the malfunction, perform the steps described in **chapter 6.3 Installation**.

10.0 Dismantling

This chapter is intended for technicians and those carrying out further processing. It provides all the information needed for removal the SCU control unit from service, including dismantling and disposal.

Personnel

- Dismantling may only be carried out by specifically qualified personnel
- Work on the electrical system may only be performed by professional electricians.

⚠ WARNING

Electric shock and moving parts hazards:
Serious injury or death can be caused by touching live electrical components and by unexpected movement of connected actuators.
Be sure power supply is off and actuators are locked out before dismantling.

⚠ WARNING

Risk of injury due to incorrect dismantling
Stored residual power, sharp-edged components, pins and corners on the individual components or on required tools can cause all serious injury.
Therefore:

- Ensure there is ample space for dismantling prior to starting work.
- Use caution when working with open, sharp-edged structural components.
- Ensure order and cleanliness at the dismantling site! Loosely stacked structural components or structural components and tools on the floor increase risk of accidents.
- Dismantle structural components professionally, in accordance with applicable local regulations.
- Secure structural components carefully, to ensure they cannot fall or tip over.
- Contact the manufacturer if you have any questions or concerns.

10.1 Dismantling

Before you start dismantling, shut down the SCU control unit.

The SCU control unit should be dismantled in the following sequence:

1. Separate device from energy supply
2. Secure elements of the application such that no loads can impact the actuator and the control unit
3. Loosen and remove fastening bolts from the mounting of the device
4. Separate devices from application elements
5. Pull the plug of the operating device out of its corresponding terminal
6. Clean the device
7. Carefully package for shipment to the manufacturer
8. For disposal, disassemble device according to applicable local occupational health and environmental regulations.

10.1 Disposal

The SCU control unit must be disposed of in a technically proper manner and in accordance with the local specifications.

Provided that no take-back or disposal agreement has been put in place, the disassembled components should be recycled.

- Dispose of metals and plastic components at an appropriate recycling center
- Please refer in particular to the disposal regulations for the rechargeable batteries
- Sort remaining components based on the respective materials and dispose of according to applicable local occupational health and environmental regulations
  The local municipal authorities or specialized waste management companies can provide information concerning environmentally appropriate disposal.

NOTICE

Damage can be caused to the environment by incorrect disposal. Electronic waste, electronic components, lubricants and other additives are subject to special waste treatment regulations and may only be disposed of by approved specialized companies.

11.0 Appendix

SCU control unit

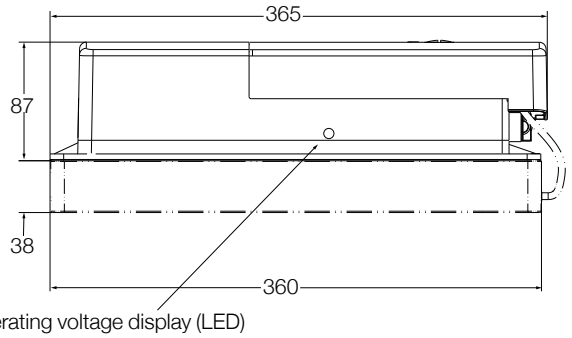
Benefits

- Compact 6-channel actuator control unit
- Single fault safety
- Overload and over-temperature protection
- Approved for medical applications
- Easy to clean
- Low standby current
- Remote control RS232

Technical data

	Unit	SCU 1	SCU 5	SCU 9
Motor ports (DIN8)	#	6	3 or 6	3 or 6
Operating device ports (HD15)	#	3	3	3
Battery ports (DSub9)	#	1	1	1
Limit switch ports (HD15)	#	4	4	4
Single fault safety	yes/no	yes	yes	yes
Encoder processing	yes/no	yes	yes	yes
Input voltage	V	24 DC	120 AC	230 AC
Frequency	Hz	N/A	60	50
Input current (max)	A	30	6,5	3,3
Standby power	W	0,8	4,3	4,3
Output voltage	V DC	24	24	24
Output current (max)	A	30	18	18
Duty cycle: intermittent	min.	1 min./9 min.	1 min./9 min.	1 min./9 min.
Duty cycle: short time	min.	2	2	2
Ambient temperature	°C	+5 to +40	+5 to +40	+5 to +40
Humidity	%	5 to 85	5 to 85	5 to 85
Type of protection	IP	×4	×4	×4
Approvals	EN/UL	EN 60601–1	EN 60601–1	EN 60601–1
		UL 60601–1	UL 60601–1	UL 60601–1
Weight without battery	kg	1,2	3,8	3,8
Weight with battery	kg	4,2	6,8	6,8

Dimensional drawing



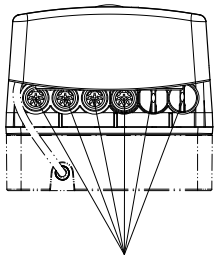
Operating voltage display (LED)

Suitable control units and accessories

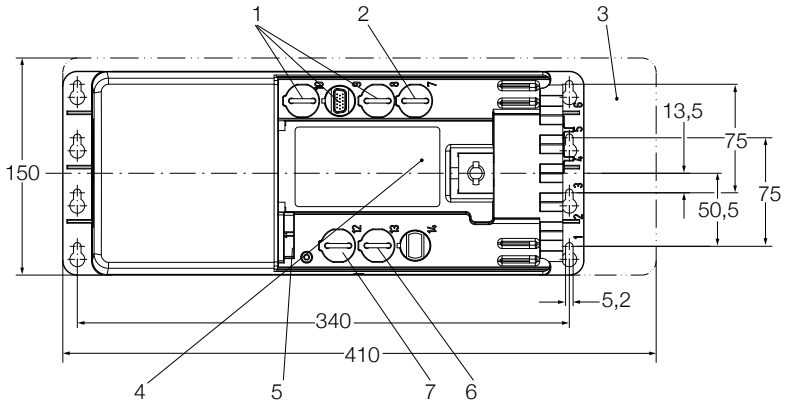
	Linear actuators						Pillars				Operating switches		
	Magdrive MD22, MD23	RU20, RU21, RU22	RU23, RU24, RU25	MAX 10, MAX 30	ECO4F, ECO5F, ECO8F, ECO9F	CAJA35C	THG 10	TLG 10	TLT 10	TFG 10	EHA3	STJ	STE
SCU 1	•	•	•	•	•	•	•	•	•	•	•	•	•
SCU 5	•	•	•	•	•	•	•	•	•	•	•	•	•
SCU 9	•	•	•	•	•	•	•	•	•	•	•	•	•

Hand switch Foot switch Desk switch

Connecting diagrams



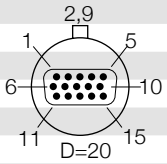
Up to 6 connections with DIN8 plug

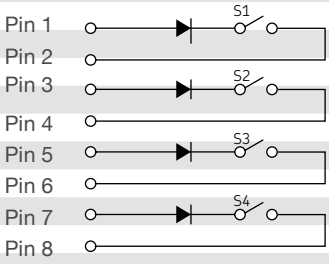


1. Two connections for HD15 operating devices
2. HD15 limit switch connection
3. Additional space for mounting
4. Data plate software
5. Mains connection
6. D-Sub 9 battery connection (optional)
7. Communication interface (optional)

Pinning of HD15 limit switch connection on request (needs a customized SCP)

Function	Pin	Wire color (ZKA-160627-2500)	Connecting diagram
Switch 1	2	brown/green	
Switch 2	4	red/blue	
Switch 3	6	violet	
Switch 4	8	red	
24 V DC (com)	1, 3, 5, 7	white/yellow, white/green, grey/pink, black	
Optional external power supply			
for binary outputs	9	blue	
Binary output 1 (22-40 V DC/1 A)	10	pink	
Binary output 2 (22-40 V DC/1 A)	11	grey	
GND for binary outputs	12	yellow	
20-24 V DC, max. 50 mA	13	green	
5 V DC pulsed	14	brown	
GND	15	white	





Accessories

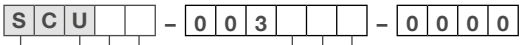
	Plug	Designation	Order number
Mains cable, 3 pole	Schuko	ZKA-160637-3500	0118821
Mains cable, 3 pole	SEV	ZKA-160638-3500	0118822
Mains cable, 3 pole	UL	ZKA-160639-3500	0105588
Mains cable, 3 pole	UK	ZKA-160609-3500	0105631
Mains cable, 3 pole	UL, hospital grade	ZKA-160640-3500	0118823
Battery pack 2,7 Ah		ZBA-160208-0400	0118806
Rack for 4,5 Ah battery		ZBA-160207-1000	0126155
Detachable battery 4,5 Ah		ZBA-160209	0126154

Connection for external communication

See separate user manual for the description of the RS232 serial interface of the SCU control unit!

Please note, that the RS232 interface is an option and must be ordered based on the type key **chapter 11.2.3**.

Ordering key



SCU control unit

Voltage

1	24 V DC (only for 6-channel version)
5	120 V AC, 60 Hz, class I
9	230 V AC, 50 Hz, class I

Number of channels

3	3 channels
6	6 channels

Battery

1	None (only for SCU16)
2	Prepared for mounting of battery
3	Under floor 2.7 Ah battery mounted

Transformer

0

3

Interface

0	Without RS232
1	With RS232 (only for 6-channel version)

Each SCU needs a SCP

SCU parameterization

Functionality

11	All channels individually
21	Channel 2+1(+1+1+1)
22	Six (6) channel version 2+2+1+1
30	Three (3) channel version, all channels synchronously
31	Six (6) channel version 3+1+1+1
41	Six (6) channel version 4+1+1
60	Six (6) channel version, all channels synchronously
T1	Trendelenburg T+1 (+1+1)

Actuators

A	ECO4F, ECO5F	3,7 A	Actuator 1 –
C	TLT 10[1]	4,7 A	Actuator 2 –
E	TFG10, ECO8F, ECO9F	5,7 A	Actuator 3 –
M	MAX10, MAX30, TLG10, THG10	6,7 A	Actuator 4 –[2]
R	RU20, RU21, RU22	8,5 A	Actuator 5 –[2]
D	MD22, MD23	8,5 A	Actuator 6 –[2]
U	RU23, RU24, RU25	11,7 A	
S	CPMT1-1	11,7 A	
T	CPMT1-2	10,2 A	

Softstart

0	Hard
3	Medium
6	Soft (on request)

The SCU solution offers many more possibilities than those given in the type keys.
Please feel free to ask for more functions like “virtual limit switches”, “external limit switches” and so on.

[1] TLT is a 2-motor actuator. If simultaneous run is needed, VCP21-CC... is recommended

[2] For SCUx3: insert zero

Standards Compliance

IEC 60601-1:2005 + A1:2012	Medical Electric Equipment, IEC 3rd ed.
EN 60601-1:2006/A1:2013	General Requirements for Safety
ANSI/AAMI ES60601-1: A1:2012	Medical Electrical Equipment,
CSA CAN/CSA-C22.2 NO. 60601-1:14	General Requirements for basic Safety and performance
IEC/EN 60529	Degrees of Protection provided by Enclosures (IP codes)
RoHS II Directive 2011/65/EU	Restriction of Hazardous Substances
WEE Directive 2002/96/EG	Waste of electrical and Electronic Equipment

The declaration of incorporation according to annex IIB of Directive on machinery 2006/42/EC can be supplied upon request.

Certification of conformity

A certification of conformity in accordance the EMC directive can be supplied on request.

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