

## EBRO SBU IO-Link



Example illustrations, not all possible type variants are shown!

## Original assembly instructions with operating instructions and technical appendix

in accordance with the EU RED Directive 2014/53/EU  
in accordance with the EC Machinery Directive 2006/42/EC

*English language version*

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Additional information and current Original assembly instructions SBU IO-Link as well as current addresses of our branch offices and trade partners can be found at:

**[www.ebro-armaturen.com](http://www.ebro-armaturen.com)**

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## **A) General information**

### **A01 Overview of types**

<b>Type</b>	<b>Description</b>
SBU IO-Link	Switch box for the acquisition of state signals (0°/90° or closed/open) for use in zones <b>not</b> at risk of explosion.

### **Solenoid valve:**

The solenoid valve connections serve as a clamping point or can be actively controlled via IO-Link. For control via the SBU IO-Link, only valves with a control voltage of 24 V DC and max. 2, 1 Watt are permitted. With external control of the solenoid valve coils, coils with a max. power of 5 Watt can be connected.

## A02 Design of the hazard symbols

The hazard symbols are found next to the safety information that indicates particular hazards for persons or material assets. They are uniformly structured in these operating instructions and must be observed without fail.

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General hazard	High voltage	Hand injuries	Explosion

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Signal word	Meaning
DANGER	Indicates a directly threatening hazard that will lead to very serious personal injuries or even death if the instruction given is not followed precisely.
WARNING	Indicates a possibly hazardous situation that could lead to very serious personal injuries or even death if the instruction given is not followed precisely.
CAUTION	Indicates a possibly hazardous situation or unsafe, hazardous procedures that could lead to personal injuries or damage to the SBU IO-Link or its surroundings.

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## Structure of the safety information

Signal word	Type and source of the hazard
	Explanation
Hazard symbol	Measures to avert the danger

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Observe the respectively mentioned safety information and be particularly careful in these cases! Also pass on all safety information to other users!  
 In addition to the notes in these operating instructions, the generally applicable safety and accident prevention regulations must be observed!

**A03 Design of the information symbols**

You will find the information symbols next to circumstances or activities that ensure the safe, proper and efficient handling of the SBU IO-Link if observed. They are all uniformly structured in these operating instructions and must be observed.



Protective gloves



Eye protection

**Symbol**

**Meaning**



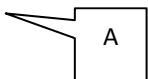
This symbol indicates that electrical components and the SBU IO-Link must be switched off and secured against being switched on again before service and maintenance.



This symbol indicates special circumstances that ensure the safe, proper and efficient handling of the SBU IO-Link if observed. All information should be followed in the interests of use of the SBU IO-Link as intended. Also pass on all safety information to other users!



Work and/or operation steps are marked by the bullet point. The steps must be performed in the order given from top to bottom!



Components and their installation location inside the SBU IO-Link are marked by the rectangular and round key and a letter. Note that the letters are issued again for each new chapter and always begin with A.

Information and symbols attached directly to the SBU IO-Link such as warning signs, actuation signs, direction of rotation arrows, component markings, etc. must be observed without fail. Information and symbols attached directly to the SBU IO-Link must not be removed and are to be maintained in a fully legible state!

## A04 Terms used

### SBU IO-Link

The term SBU IO-Link is used in the following text for these incomplete machines for acquiring the signals of the 0° and 90° positions of valves actuated by pneumatic quarter turn actuators or linear actuators.

### Operating personnel

The term operator is used in the following text for the operating personnel or the user of the SBU IO-Link. This group of people has been trained on the SBU IO-Link and informed about possible hazards.

## A05 About these operating instructions

These operating instructions apply to the SBU IO-Link in the standard version. The purpose of the SBU IO-Link is to detect the end positions (0° and 90°) of the valves with the help of the actuation of pneumatic quarter turn actuators or linear actuators, to process them with microprocessor assistance and to make them available to an existing interface for further processing.



The SBU IO-Link in the form delivered by EBRO ARMATUREN is an incomplete machine that is intended to be attached to a pneumatic quarter turn actuator with a VDE/VDI 3845 interface or optional detached for a linear actuator.

You must follow these operating instructions when operating the SBU IO-Link.

These operating instructions are intended to be used for safe working on and with the SBU IO-Link and are a considerable help for the successful and safe operation of the SBU IO-Link.

They contain important information that will help you to operate the SBU IO-Link safely, properly and economically and to use the full range of functions of the SBU IO-Link. Observing them will help to avoid hazards, to reduce repair costs and downtimes and to increase the reliability and prolong the service life of the SBU IO-Link.

In addition, the operating instructions are intended to enable the user to carry out maintenance and repair work on the SBU IO-Link himself for daily use. They contain safety information that must be observed.

All persons who work on and with the SBU IO-Link must have the operating instructions to hand during their work and must observe the information and instructions relevant to them.

The operating instructions must always be complete and in a fully legible condition.

EBRO ARMATUREN Gebr. Bröer GmbH has compiled all the data in this documentation with the greatest of care. Despite that, EBRO ARMATUREN cannot rule out deviations and reserves the right to make technical modifications to the SBU IO-Link without prior notice. EBRO ARMATUREN accepts no legal responsibility or liability for any damage that may occur as a result. Necessary changes will be included by EBRO ARMATUREN in subsequent editions.

### **A06 Note on copyright and property rights**

No part of this documentation may be duplicated or made available to third parties without the special permission of EBRO ARMATUREN Gebr. Bröer GmbH. It may only be made available to authorised persons.

This documentation including all of its parts is protected by copyright. Duplication, translation and microfilming as well as storage and processing in electronic systems require the written consent of EBRO ARMATUREN Gebr. Bröer GmbH.

Infringements are punishable by law with obligatory compensation of damages.

All rights to the exercising of commercial property rights are reserved by EBRO ARMATUREN Gebr. Bröer GmbH.

### **A07 Warranty and liability**

Warranty and liability are based on the contractually defined conditions. For the warranty terms, please refer to the Terms and Conditions of Sales and Delivery of EBRO ARMATUREN Gebr. Bröer GmbH. Notify EBRO ARMATUREN GmbH of warranty and guarantee claims in writing immediately after discovery of the defect or error. The guarantee or warranty lapses in all cases in which no liability claims can be made.

Liability and warranty claims lapse in the case of software modifications without the knowledge and consent of EBRO ARMATUREN Gebr. Bröer GmbH.

Illustrations and drawings serve the general exemplification and can differ from the SBU IO-Link delivered. EBRO ARMATUREN GmbH will accept no warranty claims for damage caused by use other than for the intended purpose, improper storage or improper transport.

### **A08 Legal conditions**

The information, data and notes provided in the operating instructions were up to date at the time of going to print.

No claims arising from the data, illustrations and descriptions can be asserted for SBU IO-Link units already delivered.

EBRO ARMATUREN Gebr. Bröer GmbH accepts no liability for damage and operational disruptions caused by:

- assembly.
- improper operation and troubleshooting during operation.
- maintenance (service, care, repair).
- improper use.
- unauthorised modifications to the SBU IO-Link .
- improper working on and with the SBU IO-Link .
- operating and setting errors.
- errors in the programming of the controller.
- disregard of existing standards, guidelines and accident prevention regulations.
- disregard of these operating instructions.



### **A09 Notes for the operating company**

The operating company is any natural or legal entity that uses the SBU IO-Link or on whose behalf the SBU IO-Link is used.

The operating company is thus the entity responsible for safety.

The operating company or its authorised representative must ensure:

- that all relevant regulations, instructions and laws for the avoidance of accidents and for operational readiness are complied with.
- that, following the installation and connection of the SBU IO-Link, the complete SBU IO-Link conforms to the relevant directives and that the SBU IO-Link conformity for the complex SBU IO-Link is established.
- that the necessary protective devices are installed in conjunction with the on-site SBU IO-Link.
- that only qualified personnel work on and with the SBU IO-Link.
- that the personnel have the operating instructions at their disposal during all corresponding work and adhere to them.
- that unqualified personnel are forbidden to work on and with the SBU IO-Link.
- that the necessary accident prevention and safety regulations are adhered to during the assembly or maintenance work on the SBU IO-Link.

The operating instructions are to be supplemented by the operating company on account of national regulations for accident prevention and environmental protection, including information on supervising and reporting duties for taking into account special operational conditions, e.g. with regard to work organisation, work processes and the assigned personnel.

In addition to the operating instructions and the mandatory accident prevention regulations applicable in the user's country and at the place of use, the recognised technical rules and/or state of the art for occupational health and safety are to be complied with.

**A10 Qualified personnel**

Qualified personnel are persons who, on account of their training, experience, instruction and knowledge, are able to carry out the necessary activities on the SBU IO-Link . In particular they have knowledge of relevant standards, provisions, accident prevention regulations and operating conditions and have been authorised by the entity responsible for the safety of the SBU IO-Link to carry out the respectively necessary work. They must be capable of recognising and avoiding possible hazards.

Semi-skilled personnel trained by EBRO ARMATUREN GmbH may work with the SBU IO-Link . In addition, they may instruct other persons in the operation and mode of operation of the SBU IO-Link .

Otherwise, special knowledge is required for certain tasks and activities. These may only be carried out by trained and skilled workers.

Activities	Instructed persons	Instructed persons with technical training	Electricians	Manufacturer
Installation / setup		•	•	
Initial commissioning		•	•	
Operation	•			
Troubleshooting mechanical		•		
Troubleshooting electrical				•
Cleaning	•			
Maintenance		•	•	
Work on the electrical system			•	
Packaging and transport	•			

### A11 Instruction and training

It is your duty as the operating company to inform the operating and maintenance personnel or instruct them about existing safety and accident-prevention regulations as well as about the safety devices existing on the SBU IO-Link .

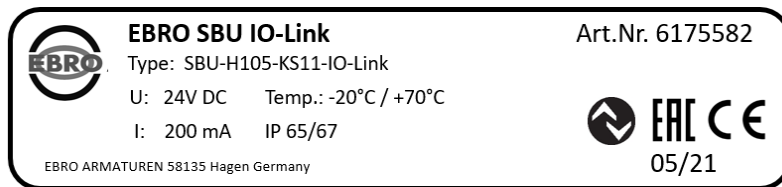
The different technical qualifications of the employees are to be taken into account.

The operating personnel must have understood the instruction. In addition, it must be ensured that attention is paid to the instruction. Only in this way can safety and hazard-conscious working of your personnel be achieved. This should be checked regularly. As the operating company you should therefore have participation in the instruction or training confirmed in writing by each employee.

If there is still a need for training of the operating personnel after handover of the SBU IO-Link to the operating company, please contact EBRO ARMATUREN Gebr. Bröer GmbH to discuss the conditions.

### A12 Marking of the SBU IO-Link

Each SBU IO-Link is marked with the following data on the housing or on the type plate:



Example of an SBU IO-Link standard version (outside of a potentially explosive zone)

The type plate describes the temperature range, electrical data, EBRO article no. and IP protection class applying to the SBU IO-Link . In addition, the date of manufacture and the CE mark are also printed on it. So that the installed SBU IO-Link remains identifiable, it should not be covered.

## **B) Safety information**

### ***B01 General safety information***

These instructions contain safety information on the foreseeable risks involved in the mounting, connection, operation and dismounting of the SBU IO-Link .

It is the responsibility of the operating company to supplement this information to cover other, specifically local or process-related risks.

Please contact EBRO ARMATUREN Gebr. Bröer GmbH in case of questions or problems.

The SBU IO-Link conforms to the state of the art at the time of delivery and is deemed to be an incomplete machine within the meaning of the Machinery Directive.

The SBU IO-Link can be a source of danger to persons, the SBU IO-Link itself and other material assets of the operating company if:

- personnel who are unqualified and have not been instructed work on and with the SBU IO-Link .
- the SBU IO-Link is used improperly and not for its intended purpose.
- the SBU IO-Link is incorrectly adjusted, repaired, maintained or connected.

The SBU IO-Link must be adjusted and equipped such that, when properly adjusted and equipped and used for its intended purpose in error-free operation, it fulfils its function and does not represent a danger to individuals. Take suitable measures to ensure use for the intended purpose. Operate the SBU IO-Link only if it is in perfect condition. Retrofits, modifications or conversions of the SBU IO-Link are forbidden as a matter of principle and require consultation with EBRO ARMATUREN Gebr. Bröer GmbH in every case.

## B02 Use for the intended purpose

The SBU IO-Link serves to acquire the signals for the 0°/90° or closed/open position detection of a valve. The SBU IO-Link is mounted on a pneumatic quarter turn actuator with a VDE/VDI 3845 AA2 interface. Quarter turn actuators not having these interfaces require an additional attachment kit for adaptation. The SBU IO-Link can also optional be used as a detached unit with linear actuators. The additional interface for two 24 V DC proximity switches allows the two end position sensors of the linear actuator to be electrically connected there and their signals processed by the microprocessor-assisted SBU IO-Link. Further input signals and output signals that are available are described in the following chapters. The SBU IO-Link is suitable only for the non-explosive zone and may be operated only with a 24 V DC power supply. The further conditions of use are described in more detail in the chapter *Usage conditions*. The SBU IO-Link may only be put into operation after the following documents have been read:

- <Explanation of the EU directives>
- These assembly/operating instructions

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### DANGER

#### Danger due to use of the SBU IO-Link other than for the intended purpose



People can be seriously injured if the SBU IO-Link is used improperly or for a purpose other than that intended. Also, the SBU IO-Link may sustain damage.

Use the SBU IO-Link only for its intended purpose!

Do not modify the SBU IO-Link !

Do not exceed the operating voltage!

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### INFO



Be sure to observe all the information in these operating instructions, in particular the safety information. It must be read and observed before all activities on the SBU IO-Link .

Any use, adjustment and variation other than that described in these operating instructions is considered to be improper and contrary to the intended purpose of the SBU IO-Link !

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This EBRO-SBU IO-Link , which

- a) will be installed as a complete functional unit in a complete system
  - directly on a pneumatic quarter turn actuator with the attached interface according to VDI/VDE 3845 AA2 80 mm x 30 mm and 30 mm (max. dia. 30 mm) shaft height,
- b) should normally detect the 0° (closed) and 90° (open) positions.
- c) The microcontroller-assisted switch box has the following interfaces:
  - Terminal point for two 24 V DC solenoid valves
  - Terminal point for two external sensors
  - Terminal point for two analog sensors
  - Terminal point for the closed/open feedback signals
  - Terminal point for a collective error
  - IO-Link connection for configuration and parameterization
  - Bluetooth 4.0 LE interface for the visualisation of the operating state and parametrisation options.

### **B03 Organisational measures**

The SBU IO-Link has been designed and built in accordance with the state of the art and recognised safety rules. In order to avoid danger to the users and impairment of the SBU IO-Link and other material assets, the following organisational measures are to be adhered to:

- observance of the intended purpose of use of the SBU IO-Link .
- operation of the SBU IO-Link in a technically flawless condition.
- assignment of sufficiently qualified personnel.
- adherence to the maintenance intervals.
- observance and adherence to the hazard signs and markings on the SBU IO-Link .
- observance of these operating instructions.

The operating instructions are to be stored permanently and ready to hand near the SBU IO-Link . The personnel assigned to carry out tasks on the SBU IO-Link must have read the operating instructions, in particular the chapter "Safety information", before starting work. This applies in particular to personnel who only work occasionally on the SBU IO-Link .

Spare parts must meet the technical requirements attained during the commissioning of the SBU IO-Link . This is guaranteed with original spare parts from EBRO ARMATUREN Gebr. Bröer GmbH.

The environment of the SBU IO-Link must be kept tidy and clean. Dirt and hampering of the function of the SBU IO-Link as well as restrictions in the freedom of movement of the user can lead to errors and accidents.

The SBU IO-Link may be operated only by personnel with the appropriate qualifications.

It is the duty of the operating personnel to check the SBU IO-Link at regular intervals (at least once per day) for outwardly visible damage and defects. Any changes that occur that are detrimental to safety, including changes in the operational behaviour, must be reported and rectified immediately.

### **B04 Safety information for the operating personnel**

The SBU IO-Link may only be used in a technically flawless condition as well as for its intended purpose, in a safety and hazard-conscious manner and in accordance with these operating instructions! All faults, especially those that could affect safety, must be rectified immediately!

Each person assigned to the installation, commissioning, operation or maintenance of the SBU IO-Link must have read and understood these operating instructions in their entirety – in particular the chapter *Safety information* – before starting work. This especially applies to personnel who only occasionally work on the SBU IO-Link .

No liability will be accepted for damage and accidents that occur due to disregarding the operating instructions.

The relevant accident prevention regulations as well as the other generally recognised safety rules and rules of occupational medicine must be followed.

The responsibilities for the various activities in the context of the operation, service and maintenance of the SBU IO-Link must be clearly defined and adhered to. Only in this way can human errors be avoided, in particular in dangerous situations.

The operating company must obligate the operating and maintenance personnel to wear personal protective equipment. This includes in particular safety shoes, protective gloves, safety glasses, protective clothes and, if necessary, ear protection and close-fitting work clothes.

Do not wear long hair hanging loose, loose clothing or jewellery! There is a fundamental risk of injury due to being caught up, pulled in or dragged by moving parts!

If you discover safety-relevant changes to the operational behaviour of the SBU IO-Link or faults in the SBU IO-Link , it must be shut down immediately and the occurrence is to be reported to the responsible person!

First aid facilities such as first aid kits, eyewash bottles, fire extinguishers, etc. are to be kept within reach! Work may only be carried out on the SBU IO-Link by reliable, qualified personnel. The legal minimum age must be observed!

Assign only trained or instructed personnel!

Personnel undergoing training, instruction or general education as well as apprentices may only work on the SBU IO-Link under the constant supervision of an experienced, qualified person!

### ***B05 Safety information for the operation of the SBU IO-Link***

For all work that concerns the operation, retooling or adjustment of the SBU IO-Link and its safety devices, as well as its inspection, maintenance and repair, the switch-on and switch-off procedures according to these operating instructions and the information on maintenance must be observed!

The SBU IO-Link may only be put into operation in the assembled and ready-to-operate condition.

The SBU IO-Link is suitable only for operation in areas that are not at risk of explosion!

Before starting work, the personnel must familiarise themselves with the working environment around the SBU IO-Link .

The SBU IO-Link must be checked for outwardly visible damage at regular intervals (at least once per day). Changes (including in the operational behaviour) must be reported immediately to the responsible foreman or the works manager.

Shut down and secure the SBU IO-Link immediately in case of malfunctions. Have malfunctions rectified immediately by technical personnel who are trained for such work.

### ***B06 Safety information for start-up/shutdown, service and maintenance***

The operating personnel must be informed before special work and maintenance are carried out.

The prescribed intervals or those specified in the operating instructions for recurring checks, service or maintenance must be adhered to.

Workshop equipment appropriate for the work is absolutely essential for carrying out the service and maintenance tasks.

If necessary, illuminate service and maintenance areas with additional hand lamps or lamps mounted on stands.

Secure the maintenance area if necessary!

To avoid electric shocks, do not touch any electrical components or damaged, torn and in particular live parts.

During the setting and adjustment work, the support shaft with the end position cams and the remote position indicator may rotate. Therefore, safe working on the SBU IO-Link must be ensured. An appropriate safe distance must always be maintained.

Check the seals of the electrical housing regularly and replace them if necessary.

Clean the SBU IO-Link and its surroundings at regular intervals.

Screwed connections loosened during maintenance and repair work must always be tightened again afterwards!

Do not stand or work under suspended loads.

If carrying out work at heights of 1.60 m or higher, safe climbing aids and working platforms or other such equipment provided for this purpose are to be used! In the case of work platforms or work at heights greater than 1.0 m, appropriate fall protection must be provided! Keep all grips, steps, railings, landings, platforms and ladders free from dirt!

At the start of service, maintenance and care, free the SBU IO-Link from all dirt and residues such as oil, operating materials or care products.

Do not use aggressive or solvent-based cleaning agents. Use lint-free cleaning cloths.

Use only water-based cleaning agents and observe the manufacturer's instructions. Do not use organic solvents as there is a risk of fire and explosion!

Ensure safe and environmentally-friendly disposal of operating and auxiliary materials!



**DANGER**

**Danger due to rotating components.**



Very serious injuries due to being crushed, pulled in, caught up or trapped as well as due to abrasion, grazing and cutting.

Assembly, disassembly, setting and adjustment work may be carried out only by technical personnel.

A safe distance must be maintained to rotating parts.

Observe the accident prevention regulations.

**DANGER**

**Danger to life due to high voltage.**



Very serious injuries due to electrocution.

The SBU IO-Link may only be connected by an electrician.

Switch the SBU IO-Link off and secure it against being switched on again.

### **B07 Safety information for working on the electrical system**

The operating voltage required for the system may result in very serious injuries or even death if live parts are touched. If a short circuit occurs there is a danger of sparks being generated, leading to a fire.

The system connection must be adequately dimensioned in order to prevent overloads. Switch the SBU IO-Link off immediately in case of faults in the electricity supply.

It is forbidden to work on live active parts of the SBU IO-Link .

The SBU IO-Link must be in a safe condition and is to be kept in this condition. The SBU IO-Link must be inspected regularly. Defects such as loose connections, etc. must be reported and rectified immediately. The switch box is to be kept closed at all times. Only authorised personnel are allowed access to it for inspection and maintenance.

The SBU IO-Link must be protected against indirect contact in accordance with its voltage, type of use and place of operation so that protection against hazardous contact voltages exists in the case of a fault in the SBU IO-Link .

#### **DANGER**

#### **Danger to life due to high voltage.**



Very serious injuries or death due to electrocution or effects on medical implants.

Risk of falling due to electric shock.

The SBU IO-Link may only be connected by an electrician.  
Switch the SBU IO-Link off and secure it against being switched on again.

Electrostatic charging may occur due to friction of the media in the pipeline and due to the possibly high pressures. This charging can adversely affect the SBU IO-Link . The SBU IO-Link must therefore be adequately earthed.

#### **WARNING**

#### **Operational malfunction due to electrostatic charging.**



Malfunctions of, or damage to components.

The SBU IO-Link may only be connected by an electrician.

The SBU IO-Link must be earthed.

**DANGER**

**Danger due to rotating components.**



Very serious injuries due to being crushed, pulled in, caught up or trapped as well as due to abrasion, grazing and cutting.

Assembly, disassembly, setting and adjustment work may be carried out only by technical personnel.

A safe distance must be maintained to rotating parts.

Observe the accident prevention regulations.

**NOTE**

Use personal protective equipment.



When dealing with hazardous materials, the personal protective equipment specified in the safety data sheets must be used.

Use the personal protective equipment.



### **B08 Residual hazards**

The hazards emanating from the SBU IO-Link occur when working inside the actual limits of the SBU IO-Link if you have to put the SBU IO-Link into operation for work, e.g. in the case of:

- maintenance.
- retooling.
- fault-finding and troubleshooting.

When carrying out service work, retooling or maintenance in which you have to put the SBU IO-Link into operation, enlist the help of a second person who can switch the SBU IO-Link off in an emergency.

Work with extreme care and attentiveness.

A residual risk remains when operating the SBU IO-Link even when all safety regulations are followed. All persons who work on and with the SBU IO-Link must be aware of the residual risks and follow the instructions designed to prevent these residual risks leading to accidents or damage.

#### **DANGER**

#### **Danger due to missing safety devices.**

Very serious injuries due to moving components.



If safety devices have to be dismantled or disabled for setup and tooling work, all work must be carried out with deliberation and care!

Any kind of routine in the operating sequence is to be avoided!

### **B09 Danger due to foreseeable misuse**

It is the responsibility of the operating company to ensure that the SBU IO-Link is used for its intended purpose by protecting it against foreseeable misuse and considering this in the safety consideration of the entire machine.

- It is forbidden to operate the SBU IO-Link outside of the minimum or maximum operating conditions with regard to temperature, atmosphere and voltage.
- Operation with the switch box open is forbidden.
- Operation with modified actuating elements for signalling the end positions is forbidden.
- The disconnection of live contact and plug connections is forbidden.
- The SBU IO-Link must not be disconnected from the earthing system.

#### **DANGER**

#### **Danger due to misuse.**



Very serious injuries due to moving components.

Assembly, disassembly, setting and adjustment work may be carried out only by technical personnel.



A safe distance must be maintained to rotating parts.

Very serious injuries or death due to electrocution.

The SBU IO-Link may only be connected by an electrician.

The SBU IO-Link must be earthed.

## **C) Product description**

### ***C01 Use for the intended purpose***

The SBU IO-Link is intended to be used in conjunction with pneumatic quarter turn actuators for valves. It serves to detect the signals for the state "Open"/"Closed" or position 0° and 90°.

The SBU IO-Link is a microcontroller-assisted switch box. It has six interfaces.

These are:

- IO-Link communication interface for configuration of various parameters and direct access to process and diagnostic data (the IODD required for operation of IO-Link and detailed description of the parameters can be found at [www.ebro-armaturen.com](http://www.ebro-armaturen.com))
- Connection terminals for the feedback signal OPEN/CLOSED & collective error (exceeding the set operating parameters)
- Connection terminals for wiring of two solenoid valve coils
- Connection terminals for wiring external digital sensors (e.g. for the use of linear actuators)
- Connection terminals for wiring external analog sensors (standard signal 4-20mA)
- Bluetooth 4.0 interface for the visualisation of the operating states or the setting of the operating parameters using the free EBRO Connect app (available in the Apple App Store and Play Store).

The mechanical adaptation to the pneumatic actuator is done directly at the connection point for positioners and signal devices according to VDI/VDE 3845 AA2 80 mm x 30 mm and 30 mm shaft height (max. dia. 30 mm). Mounting kits according to VDI/VDE 3845 with different bracket dimensions are available for other attachments.

The SBU IO-Link is used only in an area that is not potentially explosive.

The SBU IO-Link may only be put into operation after the following documents have been read:

- <Explanation of the EU directives>
- These assembly/operating instructions

***Failure to observe this <intended purpose of use> represents gross negligence and relieves the manufacturer EBRO-Armaturen of its product liability.***

---

**DANGER****Danger due to use of the SBU IO-Link other than for the intended purpose**

People can be seriously injured or killed if the SBU IO-Link is used improperly or for a purpose other than that intended. Also, the SBU IO-Link may sustain damage.

Use the SBU IO-Link only for its intended purpose!

Do not modify the SBU IO-Link !

---

**INFO**

Be sure to observe all the information in these operating instructions, in particular the safety information. It must be read and observed before all activities on the SBU IO-Link .

Any use, adjustment and variation other than that described in these operating instructions is considered to be improper and contrary to the intended purpose of the SBU IO-Link !

---

## **C02 Scope of delivery**

The SBU IO-Link was conceived and assembled at EBRO ARMATUREN Gebr. Bröer GmbH and is suitable for detecting the signals of the CLOSED / OPEN state of a pneumatic quarter turn actuator. In the form supplied by us as an incomplete machine, the SBU IO-Link is intended to be mounted on a pneumatic quarter turn actuator.

The scope of delivery generally includes this device and the associated original assembly and operating instructions.

Immediately upon receipt of the SBU IO-Link, check that it corresponds to your order and is complete.

Complain immediately:

- to the delivery company if there is visible transport damage.
- to EBRO ARMATUREN GmbH if there are visible defects or if anything is missing.



## **D) Usage conditions**

### ***D01 Ambient temperatures***

Ambient temperature in area of use: -20 °C to +70 °C

Trouble-free operation of the SBU IO-Link is guaranteed within this temperature range.

The mode of operation can no longer be guaranteed at temperatures above and below the temperatures specified above.

### ***D02 Environmental conditions***

Provided the individual components are assembled correctly, the SBU IO-Link attains a protection class according to DIN of IP65/IP67/IP68.

Environmental media, in particular chemically aggressive media, can attack seals, hoses, cables and plastic.

### ***D03 Installation conditions***

The SBU IO-Link should be mounted only in an area that meets the requirements for the temperatures and environmental conditions. The general directives for workplaces are also to be complied with. The SBU IO-Link is not suitable for potentially explosive areas.

## E) Mounting instructions

When mounting the SBU IO-Link , the safety information in these operating instructions and the safety regulations applicable at the operating company's place of installation must be observed. The mounting or installation location must have a sufficient load-bearing capacity and should be free from vibrations. The SBU IO-Link should be mounted only in an area that meets the requirements for the temperatures and environmental conditions. The general directives for workplaces are to be complied with. Also observe the installation conditions specified in these operating instructions.

The SBU IO-Link is assembled and adjusted in the factory for the purpose of use that you ordered. This purpose of use thus also corresponds to the intended purpose of use of the SBU IO-Link . Before installing the SBU IO-Link , the intended purpose of use must be compared once again with the installation situation. The installation must be approved by the operating company and may only be carried out by qualified personnel.

The actuation of the SBU IO-Link is only permitted when it is fully mounted on a pneumatic quarter turn actuator.

**DANGER**

**Danger of the upper limbs being crushed.**



Very serious injuries when actuating the SBU IO-Link if it is not fully mounted on a depressurised pneumatic quarter turn actuator.

Before switching on the SBU IO-Link , all components and connections must be fully mounted by qualified personnel.

The quarter turn actuator should be depressurised and secured against uncontrolled actuation.

Proceed with the utmost caution when installing the SBU IO-Link and avoid damage to its components.

**DANGER**

**Danger due to damaged components.**



Very serious injuries due to moving components.



Very serious injuries or death due to electrocution.

The operating company must ensure that the SBU IO-Link and the pipework or quarter turn actuator are earthed via a secure earth connection to an earthing point. This particularly applies where insulating seals and screw connections made of non-conductive materials are used.

The bleeder resistance must be  $< 10^6 \Omega$ .

The operating company must ensure that the SBU IO-Link is connected via an electrostatically conductive pipe connection or via a separate earthing point.

**WARNING**

**Operational malfunction due to electrostatic charging.**



Malfunctions of, or damage to components.

The SBU IO-Link may only be connected by an electrician.

The SBU IO-Link must be earthed.

### E01 Mounting the SBU IO-Link on the quarter turn actuator

The SBU IO-Link is suitable for direct mounting on quarter turn actuators with the mounting interface according to VDI/VDE 3845 AA2 80 mm x 30 mm, shaft height 30 mm (max. dia. 30 mm).

Adapters are required for all other interfaces. The SBU IO-Link may only be operated with the accessories foreseen and approved by EBRO ARMATUREN Gebr. Bröer GmbH.

#### DANGER

#### Risk of injury in case of improper mounting.



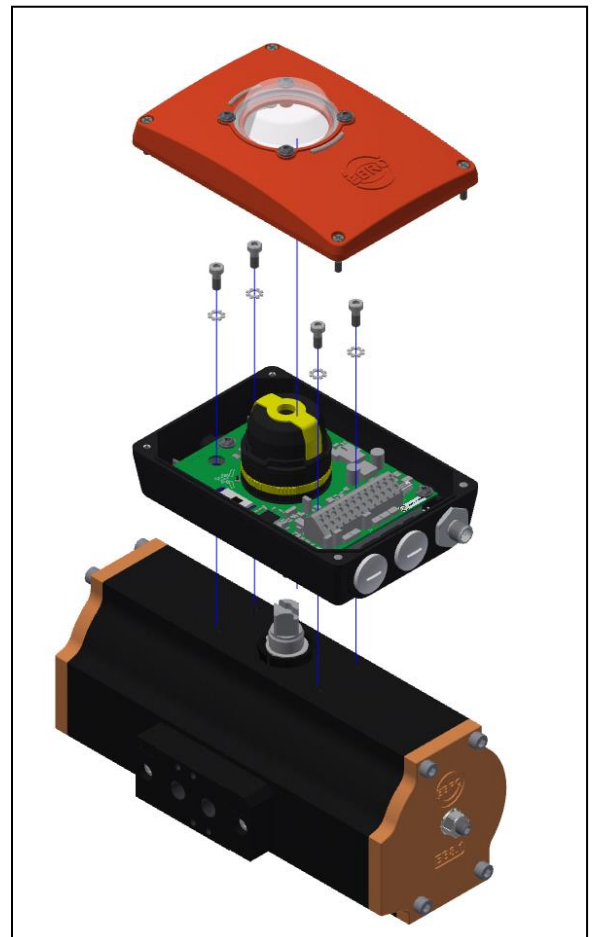
Mounting may only be carried out by authorised technical personnel using suitable tools!

#### Risk of injury due to inadvertently switching on the plant and uncontrolled restarting.

Secure the plant against inadvertent actuation.  
Ensure controlled restarting after mounting.

The SBU IO-Link should be mounted as follows:

- Unpack the SBU IO-Link from the factory packaging at the installation location.
- Check the SBU IO-Link for transport damage.
- Check the SBU IO-Link for damage.
- In case of outdoor installation of SBU IO-Link units, measures may need to be taken to ensure operation as intended. These include the "Diaphragm element" option for switch box ventilation or rain roofs and possibly enclosures of an adequate protection class.
- Determine the mounting position of the device (parallel to the actuator).
- Open the switch box cover.
- Align the drive shafts (groove) and switch box shaft (tongue).
- Check the flush fitting of the insert seals on the underside of the switch box housing.
- Push the switch box onto the drive shaft.
- Fasten the switch box to the actuator with 4 cheesehead screws and spring washers.
- Close the switch box cover again if the electrical connection is not to be made immediately.



## E02 Electrical connection

Switch the SBU IO-Link off and secure it against being switched on again! Connect the electrical supply cables in the control box, observing the terminal assignment in the circuit diagram. Connect all connections according to the legal regulations and the VDE directives. Make sure that cable cross sections and fuses are adequately dimensioned in accordance with the power consumption.

Metallic cable glands must be connected to the earthing system. Unused holes for cable glands must be sealed with blanking plugs.

The attachment of wire end ferrules must always be done with suitable crimping tools to ensure constant quality of the crimping.

Measures may need to be taken against external influences if the SBU IO-Link is installed outdoors. These could be, for example, rain roofs or an enclosure. It is the duty of the company operating the SBU IO-Link to check this.

The potential equalisation of the SBU IO-Link takes place via the piping or via one of the three fixing screws of the PCBs.

Only separate cable glands suitable for the application may be used for the cable entries. Connecting threads in the switch box that are not required are sealed with suitable separately certified screw plugs.

The installation and maintenance may only be carried out by an **electrician**; refer here in particular to the chapter "Safety".

### DANGER

#### Danger to life due to high voltage.



Very serious injuries or death due to electrocution.

The SBU IO-Link may only be connected by an electrician.

Switch the SBU IO-Link off and secure it against being switched on again.

Electrostatic charging may occur due to friction of the media and due to the possibly high pressures. This charging can adversely affect the SBU IO-Link. The SBU IO-Link must therefore be adequately earthed.

### WARNING

#### Operational malfunction due to electrostatic charging.



Malfunctions of, or damage to components.

The SBU IO-Link may only be connected by an electrician.

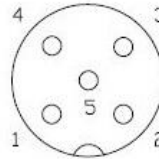
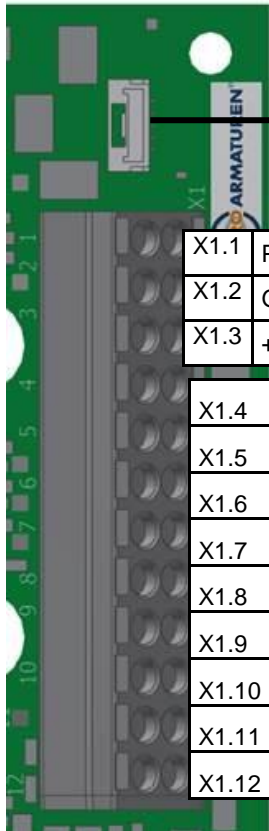
The SBU IO-Link must be earthed.

The operating company must therefore ensure that the SBU IO-Link and the pipework or quarter turn actuator are earthed via a secure earth connection to an earthing point. This particularly applies where insulating seals and screw connections made of non-conductive materials are used.

The bleeder resistance must be  $< 10^6 \Omega$ .

The operating company must ensure that the SBU IO-Link is connected via an electrostatically conductive pipe connection or via a separate earthing point.

Terminal assignment



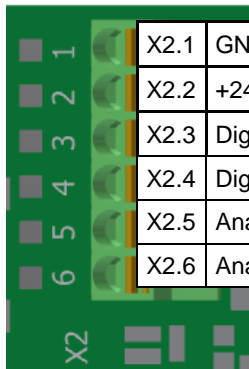
1) M12-Class A Plug

X1.1	PE
X1.2	GND
X1.3	+24 V DC $\pm$ 10%
X1.4	Collective error
X1.5	Valve is OPEN
X1.6	Valve is CLOSED (Q) / IO-Link (C)
X1.7	PE
X1.8	PE
X1.9	Solenoid valve GND
X1.10	Solenoid valve GND
X1.11	Solenoid valve 1 +24 V DC (max. 2,1 W)
X1.12	Solenoid valve 2 +24 V DC (max. 2,1 W)

X3.1	+24VDC
X3.2	Output Valve OPEN
X3.3	0V
X3.4	Output Valve CLOSED (Q) / IO-Link (C)
X3.5	N.C.

**Note:**

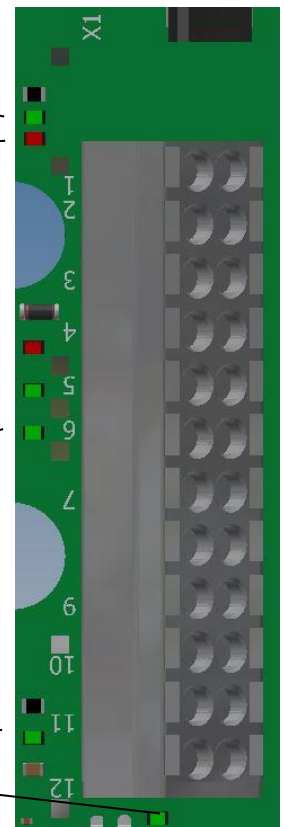
1) Voltage supply and output signals for the valve position are identical as for X1. Parallel use of these interfaces is not necessary and also not permitted.



X2.1	GND
X2.2	+24 V DC
X2.3	Digital input 1
X2.4	Digital input 2
X2.5	Analog input 1
X2.6	Analog input 2

LED signalling

- Voltage OK (green)
- Voltage polarity reversed (red)
- Collective error (red)
- OPEN position (green)
- CLOSED position
- SV1 activated (green)
- SV2 activated (green)



### Connection of the operating company's signal cables

#### Operating voltage:

Terminal	Assignment	Signal
X1.1	Potential equalisation	PE
X1.2	Operating voltage -	GND
X1.3	Operating voltage +	+ 24 V DC $\pm$ 10% (max. 200mA)

#### Signal outputs:

Terminal	Assignment	Signal
X1.4	Switching output – collective error	+ 24 V DC referenced to GND (max. 100 mA)
X1.5	Switching output – valve is OPEN	+ 24 V DC referenced to GND (max. 100 mA)
X1.6	Switching output – valve is CLOSED / IO-Link (C)	+ 24 V DC referenced to GND (max. 100 mA) IO-Link communication

#### Valve

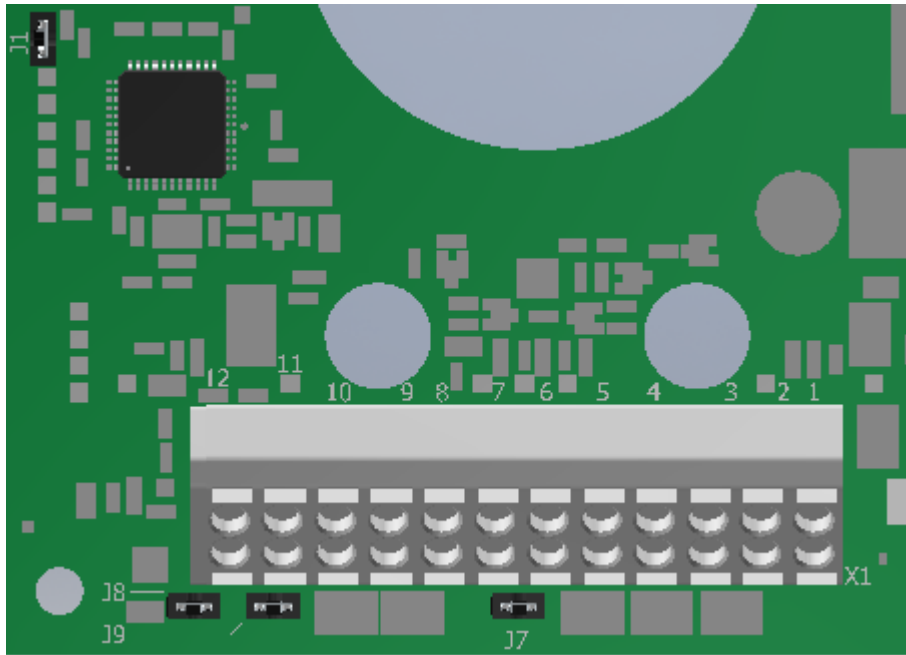
Terminal	Assignment	Signal
X1.7	Potential equalisation	PE
X1.8	Potential equalisation	PE
X1.9	Solenoid valve power supply GND	GND / GND external
X1.10	Solenoid valve power supply GND	GND / GND external
X1.11	Solenoid valve 1 signal out- / input (max. 2,1W)	+24 V DC via IO-Link / external signal
X1.12	Solenoid valve 2 signal out- / input (max. 2,1W)	+24 V DC via IO-Link / external signal

#### Signal inputs:

Terminal	Assignment	Signal
X2.1	Sensor supply -	referenced to operating voltage GND
X2.2	Sensor supply +	+ 24 V DC referenced to GND (max. 80 mA)
X2.3	Digital input 1	Low / High signal level
X2.4	Digital input 2	Low / High signal level
X2.5	Analog input 1	Standard signal 4-20mA
X2.6	Analog input 2	Standard signal 4-20mA



## Jumper



J1	+3.3 V reference for	Set	Not set
	Power supply for Bluetooth module	Bluetooth module active	Bluetooth module inactive
J7	GND reference for	Set	Not set
	Power supply solenoid valves GND	GND related to operating voltage GND	0V potential for the SV connections must be applied separately to the respective terminal (see wiring diagram)
J8	Control SV1	Set	Not set
	Control via IO-Link / external	Control via IO-Link	Control by external signal
J9	Control SV2	Set	Not set
	Control via IO-Link / external	Control via IO-Link	Control by external signal

### CAUTION



#### Danger due to incorrect operation.

Malfunctions of, or damage to components.

The SBU IO-Link may only be connected by an electrician.

For external control signals for the solenoid valves, the jumpers J7, J8 and J9 **must** be removed and the wiring diagram must be observed.

### E03 Setting and adjustment of the end position signalling

During the setting and adjustment work, the support shaft with the end position cams and the remote position indicator may rotate. An appropriate safe distance must always be maintained.

**DANGER**



**Danger due to rotating components.**

Very serious injuries due to being crushed, pulled in, caught up or trapped as well as due to abrasion, grazing and cutting.

Assembly, disassembly, setting and adjustment work may be carried out only by technical personnel.

A safe distance must be maintained to rotating parts.

Observe the accident prevention regulations.

The setting and adjustment work may only be carried out by **instructed persons who have received technical training**; refer here in particular to the chapter "Safety".

**DANGER**



**Danger to life due to high voltage.**

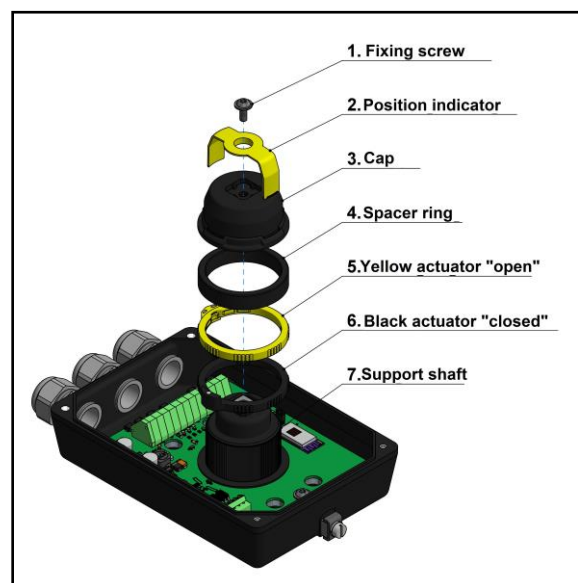
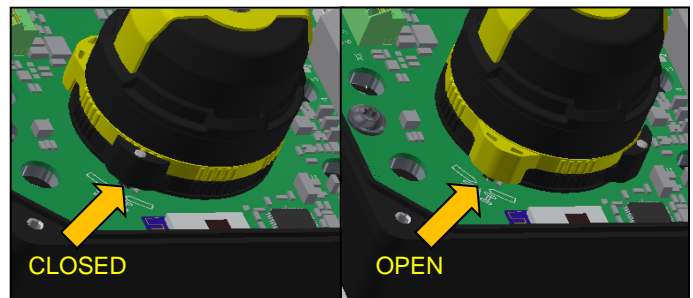
Very serious injuries or death due to electrocution.

The SBU IO-Link may only be connected by an electrician.

Switch the SBU IO-Link off and secure it against being switched on again.

The actuation rings of the SBU IO-Link are adjusted as follows:

- Close the valve or move the quarter turn actuator to the CLOSED position.
- Loosen the fixing screw (1).
- Adjust the black actuation ring (6) on the support shaft (7) so that the actuation magnet is placed directly above the sensor. When the power supply is connected the "closed" LED lights up.
- Open the valve or move the quarter turn actuator to the OPEN position.
- Adjust the yellow actuation ring (5) on the support shaft (7) so that the actuation magnet is placed directly above the sensor. When the power supply is connected the "open" LED lights up.
- Push the spacer ring (4) onto the support shaft (7).
- The cap (3) must be placed on the support shaft (7) such that it fits over the square of the shaft.
- Engage the position indicator (2) in the cap so that the indicator position corresponds to the position of the butterfly disc.
- Tighten the fixing screw (1).



### E04 Dismounting the SBU IO-Link

When dismantling the SBU IO-Link , the safety information in these operating instructions and the safety regulations applicable at the operating company's place of installation must be observed.

The removal must be approved by the operating company and may only be carried out by qualified personnel.

Proceed with the utmost caution when removing the SBU IO-Link and avoid damage to its components. The SBU IO-Link should be dismantled as follows:

- Take the SBU IO-Link out of service, switch it off and secure it against being switched on again!

**NOTE**

Switch the SBU IO-Link off and secure it against being switched on again for all work, before service, during adjustment and maintenance.



Depressurise the pneumatic quarter turn actuator and secure it against being pressurised.

**DANGER**

**Danger to life due to high voltage.**

Very serious injuries or death due to electrocution.



The SBU IO-Link may only be connected by an electrician.

Switch the SBU IO-Link off and secure it against being switched on again.

**DANGER**

**Danger due to uncontrolled start-up of the pneumatic quarter turn actuator.**



Very serious injuries due to incorrectly connected pneumatic quarter turn actuator or uncontrolled start-up.



Very serious injuries due to being crushed, pulled in, caught up or trapped as well as due to abrasion, grazing and cutting.

All components and connections must be checked before switching on the pneumatic system.

- Make sure that the SBU IO-Link is switched off.
- Make sure that the removal of the SBU IO-Link has been approved.
- Inform yourself about the safety regulations at the dismantling location. If you need to carry out welding or grinding work you must first obtain a welding and grinding permit – a so-called welding permit – from the operating company.
- Use the personal protective equipment (PPE) prescribed for the work during the dismantling of the SBU IO-Link .

- Move the butterfly of the valve to the CLOSED position so that the valve is fully closed.
- Make sure that the pneumatic actuator is depressurised.
- Secure the SBU IO-Link appropriately against slipping, tipping over or falling down.

### DANGER

#### Danger due to incorrect attachment.



Very serious damage to the SBU IO-Link .

Do not suspend the SBU IO-Link on attachment devices as there are no attachment points for this.

Ensure safe manual transport of the SBU IO-Link .

Ensure that the SBU IO-Link is safely packed.

- Unscrew and remove the cover, release all the electrical cables and pull them out of the housing.
- Undo the four interior hex socket-head screws and pull the SBU IO-Link off the quarter turn actuator.
- Remove the four loosened screws from the interior.
- Screw the cover back onto the lower part and secure the SBU IO-Link in a suitable transport box.

## F) Test run after installation

### F01 Test run

The SBU IO-Link delivered has been manufactured, factory-preset and tested for the technical data specified in the order.

Nevertheless you must ensure the perfect function after full installation of the SBU IO-Link . Therefore, be sure to carry out and document the following steps before commissioning.

- Check that all components and connections have been mounted correctly and firmly.
- Check the proper mounting of the SBU IO-Link on the pneumatic quarter turn actuator.

**DANGER**

**Danger due to incorrect adjustment or indication.**



Serious damage to the SBU IO-Link during operation.  
A false indication or feedback represents a hazard.

Make sure that the OPEN and CLOSED positions of the valves correspond to the controller.

**INFO**

Note.



Observe the adjustment and indication of the valve and actuator.

The setting of the CLOSED end stop of a new SBU IO-Link should not be changed as long as the quarter turn actuator is in the CLOSED position.

Refer to the information in these operating instructions for readjustment.

**DANGER**

**Danger to life due to high voltage.**



Very serious injuries or death due to electrocution.

People could come into contact with live parts

The SBU IO-Link may only be connected by an electrician.

Carry out the test run only with the switch box closed.

**DANGER**

**Danger due to uncontrolled start-up of the pneumatic quarter turn actuator.**



Very serious injuries due to incorrectly connected pneumatic quarter turn actuator or uncontrolled start-up.

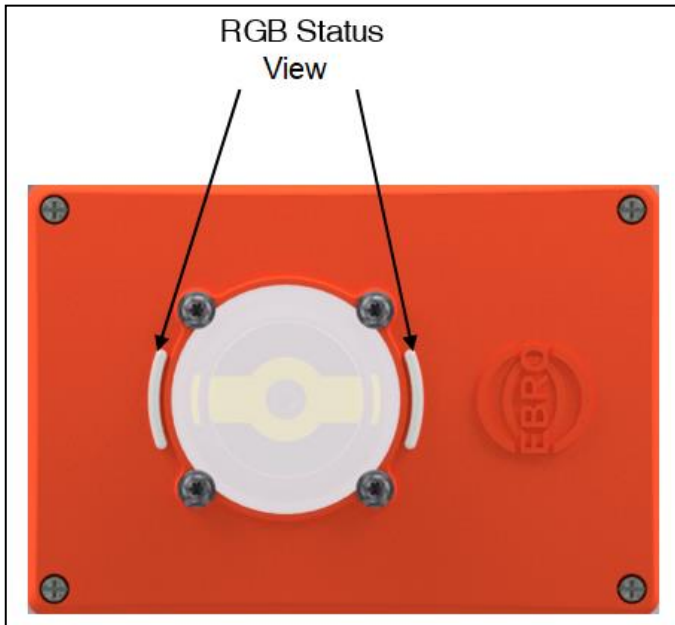
Very serious injuries due to being crushed, pulled in, caught up or trapped as well as due to abrasion, grazing and cutting.



All components and connections must be checked before switching on the pneumatic system.

- Check the earthing of the SBU IO-Link .
- Switch the SBU IO-Link on and carry out a test run. Make sure that when control pressure is applied, the respective valve or quarter turn actuator is driven to the intended end position with the corresponding control commands "CLOSED" and "OPEN".

### F02 RGB LED View



The supplied SBU IO-Link has two RGB light elements that light up in a configured color when the end position "CLOSED" and "OPEN" is reached. More details about the colors can be found on the IODD interface description. The colors can be changed or deactivated via IO-Link. The factory setting for the end positions is "green" - CLOSED and "yellow" - OPEN.

### **F03 Configuration via IO-Link Master**

Switching setup, LED colors, diagnostics, etc. can be configured or read out via IO-Link with an IO-Link master.

#### **Caution:**

The SBU IO-Link must not be connected directly to a class B master.

- Connect IO-Link Master to SBU IO-Link.
- Connect IO-Link to PC.
- Configure parameter.

A detailed description of the parameters and process data for the IODD is available at [www.ebro-armaturen.com](http://www.ebro-armaturen.com).

## **G) Function**

### **G01 IO-Link**

The SBU IO-Link has an IO-Link communication interface that allows access to process data, switching setup and diagnostic data. IO-Link makes it possible to parameterize and configure the device during operation. Operation of the SBU IO-Link via the IO-Link interface requires a suitable IO-Link master.

### **G02 Bluetooth LE**

As an additional communication interface, the SBU IO-Link has a radio-based communication channel. This channel provides process and diagnostic parameters in parallel to IO-Link, which can be accessed with the EBRO Connect App. This interface serves as an additional communication channel and is operated independently. Simultaneous access to the device is impossible.

### **G03 Parameterization**

The SBU IO-Link can be configured either via Bluetooth and the EBRO Connect App (restricted mode) or via IO-Link (extended mode). All parameters and their functional description can be found in the IODD interface description.

### **G04 Solenoid valve control**

The SBU IO-Link has two clamping points for solenoid valve coils. These can be controlled directly via IO-Link. Otherwise, the clamped solenoid valve coils can be operated by an externally applied signal. In the case of control via IO-Link, simultaneous activation of the solenoid valve coils is not possible. In the case of external control, this restriction does not apply. Please observe the jumper configuration in chapter E02 Electrical connection.

### **G05 Process inputs**

The SBU IO-Link has four process inputs. Two digital inputs and two analog (4-20mA). This interface can be used, for example, to wire nearby sensors to the SBU IO-Link, put them into operation, and via IO-Link to display the states (high/low (digital) or 4-20mA (analog)). More details on the exact parameterization of this interface can be found in the IODD interface description.

### **G05 Extended sensor technology**

In addition to position and temperature sensors, the SBU IO-Link has a built-in acceleration sensor. In addition to providing the acceleration value, this sensor also serves to detect the installation position of the valve. When the SBU IO-Link is started up, an installation detection and a calibration of the sensor value are carried out automatically. More details on the exact parameterization of this interface can be found in the IODD interface description.



## H) Service and maintenance

### H01 *Service and maintenance in general*

Before commencing with any service and maintenance work, read the entire chapter *Safety information*. When procuring spare and wearing parts, original parts from EBRO ARMATUREN Gebr. Bröer GmbH and from the manufacturers of bought-in parts are to be used. Please note that spare parts not supplied by the respective manufacturer have not been tested and approved. The installation and/or use of such parts may therefore negatively change structurally-related properties of the SBU IO-Link and thus impair its active or passive operational safety.

The manufacturer accepts no liability whatsoever for damage caused by the use of non-original parts and accessories.

The necessary work and activities on the SBU IO-Link may only be carried out by qualified personnel; refer also to the chapter *Qualified personnel*.

The safety information given must be observed without fail and applies to all sub-chapters.

The maintenance must be approved by the operating company and may only be carried out by qualified personnel.

#### CAUTION

**Damage to and malfunctions of the SBU IO-Link due to a lack of maintenance.**



Material damage to the SBU IO-Link and possibly shorter service life.

Service and maintain the SBU IO-Link at the specified intervals!

Observe shift operation!

#### DANGER

**Danger to life due to high voltage.**



Very serious injuries or death due to electrocution.

The SBU IO-Link may only be connected by an electrician.

Switch the SBU IO-Link off and secure it against being switched on again.

#### DANGER

**Danger due to uncontrolled start-up of the pneumatic quarter turn actuator.**



Very serious injuries due to incorrectly connected pneumatic quarter turn actuator or uncontrolled start-up.

Very serious injuries due to being crushed, pulled in, caught up or trapped as well as due to abrasion, grazing and cutting.



Make sure that the pneumatic quarter turn actuator is depressurised before commencing with maintenance.

All components and connections must be checked before switching on the pneumatic system.

---

**NOTE**



Switch the SBU IO-Link off and secure it against being switched on again with a lock!

Switch the electrical components and the SBU IO-Link off and secure them against being switched on again for all work, before service, during adjustment and maintenance.

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See chapter A11 on maintenance!

### H02 Maintenance intervals

The service life is limited to 10 years or 1,000,000 switching cycles at the most.  
 This documentation must be available in case of maintenance or repair work by the manufacturer.

Element	Maintenance activity	Maintenance intervals			Information
		Before each shift	Daily	Every six months	
Complete SBU IO-Link	Inspection	•	•		Report changes in the operating behaviour immediately and have them rectified!
Check cable glands for firm seating	Inspection			•	Check cable glands every 6 months for damage or improper use.
Check cable connection for firm seating	Inspection			•	Check the terminal connections of the cables every 6 months.
Complete SBU IO-Link	Cleaning			•	All dirt must be cleaned off at least every 6 months!

### H03 *Cleaning of the SBU IO-Link in general*

Depending on the environment, the SBU IO-Link may occasionally be exposed to a mixture of oil, dust and other foreign particles. The operation and function of the SBU IO-Link can be negatively affected by these deposits.

In order to avoid these malfunctions you must adhere to the maintenance intervals and clean the SBU IO-Link from the outside at least every 6 months.

---

#### **DANGER**

##### **Danger due to components moving in an uncontrolled manner.**



Very serious injuries due to being crushed, pulled in, caught up or trapped as well as due to abrasion, grazing and cutting.

The SBU IO-Link must be switched off and secured against being inadvertently switched on again before any cleaning work.

Do not carry out cleaning during running operation.

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#### **CAUTION**

##### **Danger due to incorrect or aggressive cleaning agent.**



Injuries or damage to the SBU IO-Link .

The safety data sheets for the cleaning agent must be available and observed.

Use only a dry cloth and if necessary a commercially available cleaning agent.

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#### **DANGER**

##### **Danger to life due to high voltage**



Very serious injuries or death due to electrocution.

Fluid can penetrate into the switch box if spray water with too high a pressure is used. People could come into contact with live parts.

Switch the SBU IO-Link off and secure it against being switched on again.

The SBU IO-Link may only be connected by an electrician.

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Dust layers on the components of the SBU IO-Link could impair the exchange of heat with the ambient air. This can lead to a build-up of heat. In order to avoid an impermissible temperature increase above the maximum permissible surface temperature, any deposits or dust layers must be removed. Dust layers are to be removed by vacuum cleaning before the layer thickness reaches 5 mm.

## I) Errors, causes and remedial action

### I01 *Errors in general*

Before commencing with troubleshooting, read the chapter *Safety information*. The safety information given must be observed without fail and applies to all sub-chapters.

---

#### **DANGER**

**Danger to life due to high voltage.**



Very serious injuries or death due to electrocution.

The SBU IO-Link may only be connected by an electrician.

Switch the SBU IO-Link Pro off and secure it against being switched on again.

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#### **DANGER**

**Danger due to uncontrolled start-up of the pneumatic components.**



Very serious injuries due to incorrectly connected pneumatic components or pneumatic components that start up in an uncontrolled manner.

Very serious injuries due to being crushed, pulled in, caught up or trapped as well as due to abrasion, grazing and cutting.



Make sure that the pneumatic quarter turn actuator is depressurised before commencing with maintenance.

All components and connections must be checked before switching on the pneumatic system.

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#### **NOTE**



Switch the SBU IO-Link off and secure it against being switched on again for all work, before service, adjustment and maintenance.

Depressurise the pneumatic quarter turn actuator and secure it against being pressurised.

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**102 Collective error**

Errors are signalled by the flashing of the red Error LED and the switching of the Collective Error output X1.6.

No error messages have any effect on the current program sequence.

The error is reset once the cause of the error has been rectified.

**103 Errors – Cause – Remedial action**

Errors that can be signalled by the SBU IO-Link are:

Error	Cause	Remedial action
Collective error	Runtime monitoring:  The set running time is exceeded.  <b>Default value: 0 s (deactivated)</b>	Check the following components: - Valve switched - Actuator function Check compressed air supply Check the position of the cam plate. Check for jamming in the pipeline. The fault is automatically reset as soon as the repeated ride is within the time tolerance.
	Max. switching cycles:  Max. set switching cycles reached.  <b>Default value: 0 n (deactivated)</b>	Check the number of switching cycles performed. Reset or increase the counter.
	Temperature overrange / temperature underrange	Check environment of SBU IO-Link

All error messages are deactivated with the setting value "0". Further logical links can be added or deselected to the collective fault. More details are given in the IODD interface description.

## J) Storage, packaging and transport

### **J01 Storage**

If you do not install the SBU IO-Link immediately, ensure suitable storage conditions in dry, dust-free, frost-free indoor rooms protected against sunlight. Wrap the SBU IO-Link in cardboard, plastic or film packaging.

In order to keep the unused SBU IO-Link in a functional condition even over a maximum period of six months, please observe the following storage conditions:

- the storage room should be dry and free from dust.
- the storage temperature should be between + 5 °C and + 40 °C.
- the SBU IO-Link should be stored on a level floor.
- the SBU IO-Link should be protected against inadvertent movements and damage.
- the SBU IO-Link should be protected against static discharge.

### **J02 Packaging**

The complete SBU IO-Link from EBRO ARMATUREN Gebr. Bröer GmbH is packed safely and fit for purpose in accordance with the transport route and destination.

#### **INFO**



Note.

On arrival at the destination the completeness of the shipment must be checked immediately against the shipping documents and packing lists; the intactness of the shipment must also be checked.

EBRO ARMATUREN Gebr. Bröer GmbH is to be notified immediately in case of complaints.

### **J03 Transport in general**

Unless agreed otherwise, the SBU IO-Link will be delivered fully factory-preassembled by EBRO ARMATUREN Gebr. Bröer GmbH.

For the transport, observe the specified weights and dimensions in the delivery documents of the SBU IO-Link .

The SBU IO-Link should be kept in the factory packaging until use or installation. The specified storage conditions must be adhered to.

#### **DANGER**

**Danger due to incorrect transport or incorrect attachment.**



Very serious damage to the SBU IO-Link .

Do not suspend the SBU IO-Link on attachment devices as there are no attachment points for this.

Ensure safe manual transport of the SBU IO-Link .

Keep the SBU IO-Link in the original factory packaging until reaching the place of use.

## **K) Disposal**

### ***K01 Environmental protection***

Contribute to the protection of the environment by recycling valuable raw materials and thus preserving resources.

In all other cases we refer you to the disposal regulations of the respective countries.

What is to be disposed of?	Material	How is it to be disposed of?
Transport material Packaging	Pallets Paper and cardboard boxes Plastics	Back to the manufacturer or freight forwarder Put in the paper recycling Put in the plastic recycling
Cleaning cloths Oil and grease	Fabric, oils and greases	Oily and greasy waste
Components	Controller Electronic devices and components Metal Plastics	Put in the electronic scrap Put in the electronic scrap Metal recycling Put in the plastic recycling

**CAUTION**      **Danger due to operating resources or hazardous materials.**



Serious personal injuries or serious damage to the environment.

The safety data sheets for the operating resources and hazardous materials must be available and observed.

Use the personal protective equipment stipulated in the safety data sheet when handling the respective hazardous material.

For all work on and with the SBU IO-Link , comply with the legal obligations for avoiding waste and for proper recycling and disposal in accordance with the safety data sheet!

In particular in the case of installation repair and maintenance work, water pollutants such as lubricating greases and oils must not contaminate the floor or get into the sewer! These materials must be stored, transported, caught and disposed of in suitable containers!



## **L) Spare parts**

### ***L01 Spare parts in general***

When procuring spare and wearing parts, original parts from EBRO ARMATUREN Gebr. Bröer GmbH and from the manufacturers of bought-in parts are to be used. Please note that spare parts not supplied by the respective manufacturer have not been tested and approved. The installation and/or use of such parts may therefore negatively change structurally-related properties of the SBU IO-Link and thus impair its active or passive operational safety.

The manufacturer accepts no liability whatsoever for damage caused by the use of non-original parts and accessories.

The list of spare and wearing parts can be found in the appendix to these operating instructions.

### ***L02 Ordering spare parts***

The following details must be supplied with each spare part order:

- Type.
- Article number.
- Order number.
- ID no. or drawing no. (parts catalogue).

If these four points are disregarded we cannot guarantee prompt handling of the spare parts order.

## EC Declaration of conformity

### Declaration in accordance with EC Directives

**KE\_SBUADV00**

Rev00/2018-10/AF

The manufacturer

### **EBRO Armaturen**

**Gebr. Bröer GmbH**  
**Karlstrasse 8**  
**58135 Hagen**  
**Deutschland**



Declares that the switchbox unit  
**series SBU-Advanced-XXXX**

are manufactured in accordance with the requirements of the following standards:

**EN 301 489-1 V2.1.1 (2017-02)**  
**EN 55032 +C1 (2015/2016)**  
**EN 61000-4-2 (2009)**  
**EN 61000-4-3 +A1+A2 (2006/2008/2010)**  
**EN 61000-4-4 (2012)**  
**EN 61000-4-6 (2009)**  
**ETSI EN 300 328 V2.1.1**  
**IEC 60950-1:2005 (2nd Ed.) + Am1:2009 + Am2:2013**  
**EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013**

The following product documents are available:

#### **Planning documents, technical data sheets, catalogue pages**

These products conform to the following directives:

**Radio Equipment Directive 2014/53/EU (RED)**  
**Electromagnetic compatibility 2014/30/EU (EMC)**  
**Machinery Directive 2006/42/EC**

1. The products are an "incomplete machine" in the sense of article 2 g) of this directive
2. The table overleaf lists whether and how the requirements of this directive are fulfilled
3. This declaration is the mounting declaration in the sense of this directive

For conformity with the above- named directives, the following apply:

1. The user must comply with the <correct use> as defined in the "Original mounting and operating instructions" (BA SBU-Advanced) included in the delivery and must follow all notices in these instructions. Failure to comply with these instructions can – in serious cases – release the manufacturer from product liability.
2. Commissioning of the Limit Switches Box is not permitted until conformity of the system in which the Limit Switches Box is installed with all the above- mentioned EU directives is declared by the person responsible. A specific declaration is included in delivery for the above - named actuator.

Hagen, October 2018

sgd. Lydia Bröer  
 CEO

EBRO Armaturen, Gebr. Bröer GmbH  
 Karlstrasse 8  
 D-58135 Hagen

