



KIESELMANN

FLUID PROCESS GROUP

Translation of the original

Operating Instructions

Control Head IO-Link


Type 5634

GEN 3



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Manufacturer: AquaDuna GmbH & Co.KG

Table of Contents

| | | |
|-----------|---|-----------|
| 1 | General informations | 4 |
| 1.1 | Informations for your safety | 4 |
| 1.2 | Marking of security instructions | 4 |
| 1.3 | General designated use | 4 |
| 1.4 | Personnel | 4 |
| 1.5 | Modifications, spare parts, accessories | 5 |
| 1.6 | General instructions | 5 |
| 2 | Safety instructions | 6 |
| 2.1 | Intended use | 6 |
| 2.2 | General notes | 6 |
| 2.3 | General safety instructions | 6 |
| 3 | Delivery, transport and storage | 8 |
| 3.1 | Delivery | 8 |
| 3.2 | Transport | 8 |
| 3.3 | Storage | 8 |
| 4 | Disposal | 9 |
| 5 | Specification | 10 |
| 6 | Function and operation | 11 |
| 6.1 | Function | 11 |
| 6.2 | Control of the actuator | 11 |
| 6.3 | Positioning | 11 |
| 6.4 | Pulse cleaning technology | 11 |
| 6.5 | ES Function | 12 |
| 6.6 | Application | 13 |
| 6.7 | LED signalling | 14 |
| 6.8 | Electrical connections | 15 |
| 6.9 | Setting Pulse generator for Lift valves | 16 |
| 7 | Assembly | 17 |
| 8 | Commissioning | 18 |
| 8.1 | Commissioning | 18 |
| 8.2 | Parameterisation / Settings – Valve table | 18 |
| 8.3 | Teaching | 18 |
| 8.4 | Integration into a plant | 19 |
| 9 | Malfunctions | 20 |
| 9.1 | Emergency stop | 20 |
| 10 | Disassembly | 21 |
| 11 | Technical data | 22 |
| 11.1 | Dimensions | 22 |
| 12 | Wearing parts | 23 |
| 13 | Program setting [S] | 24 |
| 14 | Appendix | 25 |
| 14.1 | IO-Link Process Data | 25 |
| 14.2 | IO-Link Parameters | 26 |
| 14.3 | other IO-Link Parameters | 27 |
| 14.4 | IO-Link commands | 27 |
| 14.5 | IO-Link diagnostic messages | 27 |

1 General informations

1.1 Informations for your safety

We are pleased that you have decided for a high-class KIESELMANN product. With correct application and adequate maintenance, our products provide long time and reliable operation.






Before installation and initiation, please carefully read this instruction manual and the security advices contained in it. This guarantees reliable and safe operation of this product and your plant respectively. Please note that an incorrect application of the process components may lead to great material damages and personal injury.

In case of damages caused by non observance of this instruction manual, incorrect initiation, handling or external interference, guarantee and warranty will lapse!

Our products are produced, mounted and tested with high diligence. However, if there is still a reason for complaint, we will naturally try to give you entire satisfaction within the scope of our warranty. We will be at your disposal also after expiration of the warranty. In addition, you will also find all necessary instructions and spare part data for maintenance in this instruction manual. If you don't want to carry out the maintenance by yourself, our KIESELMANN - service team will naturally be at your disposal.

1.2 Marking of security instructions

Hints are available in the chapter "safety instructions" or directly before the respective operation instruction. The hints are highlighted with a danger symbol and a signal word. Texts beside these symbols have to be read and adhered to by all means. Please continue with the text and with the handling at the valve only afterwards.

| Symbol | Signal word | Meaning |
|---|-------------|---|
|  | DANGER | Imminent danger which will result severe personal injury or death. |
|  | WARNING | Imminent danger which may result severe personal injury or death. |
|  | CAUTION | Dangerous situation which may cause slight personal injury or material damages. |
|  | NOTICE | An harmful situation which may result in damages of the product itself or of adjacent vicinity. |
|  | INFORMATION | Marks application hints and other information which is particularly useful. |

1.3 General designated use

The fitting is designed exclusively for the purposes described below. Using the fitting for purposes other than those mentioned is considered contrary to its designated use. KIESELMANN cannot be held liable for any damage resulting from such use. The risk of such misuse lies entirely with the user. The prerequisite for the reliable and safe operation of the fitting is proper transportation and storage as well as competent installation and assembly. Operating the fitting within the limits of its designated use also involves observing the operating, inspection and maintenance instructions.

1.4 Personnel

Personnel entrusted with the operation and maintenance of the tank safety system must have the suitable qualification to carry out their tasks. They must be informed about possible dangers and must understand and observe the safety instructions given in the relevant manual. Only allow qualified personnel to make electrical connections.

1.5 Modifications, spare parts, accessories

Unauthorized modifications, additions or conversions which affect the safety of the fitting are not permitted. Safety devices must not be bypassed, removed or made inactive. Only use original spare parts and accessories recommended by the manufacturer.

1.6 General instructions

The user is obliged to operate the fitting only when it is in good working order. In addition to the instructions given in the operating manual, please observe the relevant accident prevention regulations, generally accepted safety regulations, regulations effective in the country of installation, working and safety instructions effective in the user's plant.

2 Safety instructions

2.1 Intended use

These control heads Type 5634 are designed to be used only on FLUID PROCESS GROUP actuators. They may only be used in the areas intended for this purpose. Any application other than intended is forbidden. Application must be made only by qualified and instructed persons. Modifications are not covered by the manufacturer.

2.2 General notes



NOTICE - observe the operating instructions

These operating instructions are an integral part of the product and must be available to the user at all times. Every safety instruction is to be made sufficiently known and to be observed. If the unit is passed on, the operating instructions must be passed on as well.



NOTICE

All data are in line with the current state of development. Subject to change as a result of technical progress.

2.3 General safety instructions



NOTICE

Safety requirements

The operator of the control head is obliged to train the operating personnel as well as the personnel authorized to carry out the maintenance. Everybody who works with controlling pneumatic actuators, must be informed about the dangers that these devices may present.

Persons being not listed as operating and maintenance personnel, are not allowed to stay in the operating range of the devices. The operator must see to the necessary measures to be taken.

As a general rule, the devices must be maintained solely by qualified personnel. Only original spare parts must be used. If OEM parts are used, warranty will be lost.

Every assembly work carried out at the control head is to be done in stressfree condition.



NOTICE

Loss of warranty if non-original components are used

Damages which result from the use of OEM parts, won't be accepted by the manufacturer.

The control heads are operated with 6 - max. 8 bar compressed air. Due to the design, stagnation pressure may arise in the hood of the control head in case of leakage. Notification is hereby made that only original spare parts must be used for repair / maintenance.



⚠ WARNING

No ATEX approval

The control head IO-Link is not approved for operation in the ATEX area.



⚠ WARNING

Destruction of the control head cover

If the cap is not completely screwed down, the cover may be destroyed through the stroke movement of the piston rod.

- If the pulse generator which is in the control head, is removed or put in, make sure that the closing cap is screwed down until the metallic stop.

**⚠ CAUTION****Danger due unintended use**

The control head must be operated only in the ambiance intended for it.

**⚠ CAUTION****Damage to the control head cover**

The control head cover is fitted with bayonet catch. Make sure that no tools are used to loosen the cover and that the respective sense of rotation to open and/or close is observed.

**⚠ CAUTION****Risk of injury due to pressure in the control head**

The Hood may be under pressure.

When removing it, make sure that the hood is held fast.

**⚠ CAUTION****Damage due to incorrect operation**

Only authorized persons are allowed to stay in the operational area of the control head.

3 Delivery, transport and storage

3.1 Delivery

Our products are very carefully produced, mounted and tested. Should there be any reason for complaint, we will naturally give you entire satisfaction within the scope of our warranty. We will be pleased to help you after expiry of warranty, too.



NOTICE

When receiving a delivery, always check the packing list against the delivery scope. After having noticed that delivery is complete, the goods must be checked for damage.

If there are damages, it is essential to note them down on the shipping documents. In case of damage, the forwarder must countersign the documents.

- | | |
|----------------|---|
| Delivery scope | <ul style="list-style-type: none"> • Control head • Quick guide • Instructions for use |
|----------------|---|



INFORMATION

You can learn the options from the shipping documents.

3.2 Transport

If parts are returned, either keep the outer package or use a packaging where the devices are not damaged.

3.3 Storage



NOTICE

Damage to the product due to improper storage!

Observe storage instructions
avoid a prolonged storage



INFORMATION

Recommendation for longer storage

We recommend regularly checking the product and the prevailing storage conditions during long storage times.

- Don't store any objects on the products.
- Protect the products for wetness, dust and dirt.
- The product should be stored in a dry and well ventilated room at a constant temperature (optimal indoor temperature: 25 C ±5 ; indoor humidity data 60% ±5%).
- Protect seals, bearings and plastic parts for UV light and ozone.

4 Disposal

If the control head is put out of operation, the plastic parts are to be recycled. The electronic sub-assembly is recycled correspondingly for the recovery of raw materials. You can dispose of these materials over the ways intended.



NOTICE

Make sure that there are not contaminations with materials from operation anymore. If so, the corresponding material for rinsing of the parts to be disposed, must be used.

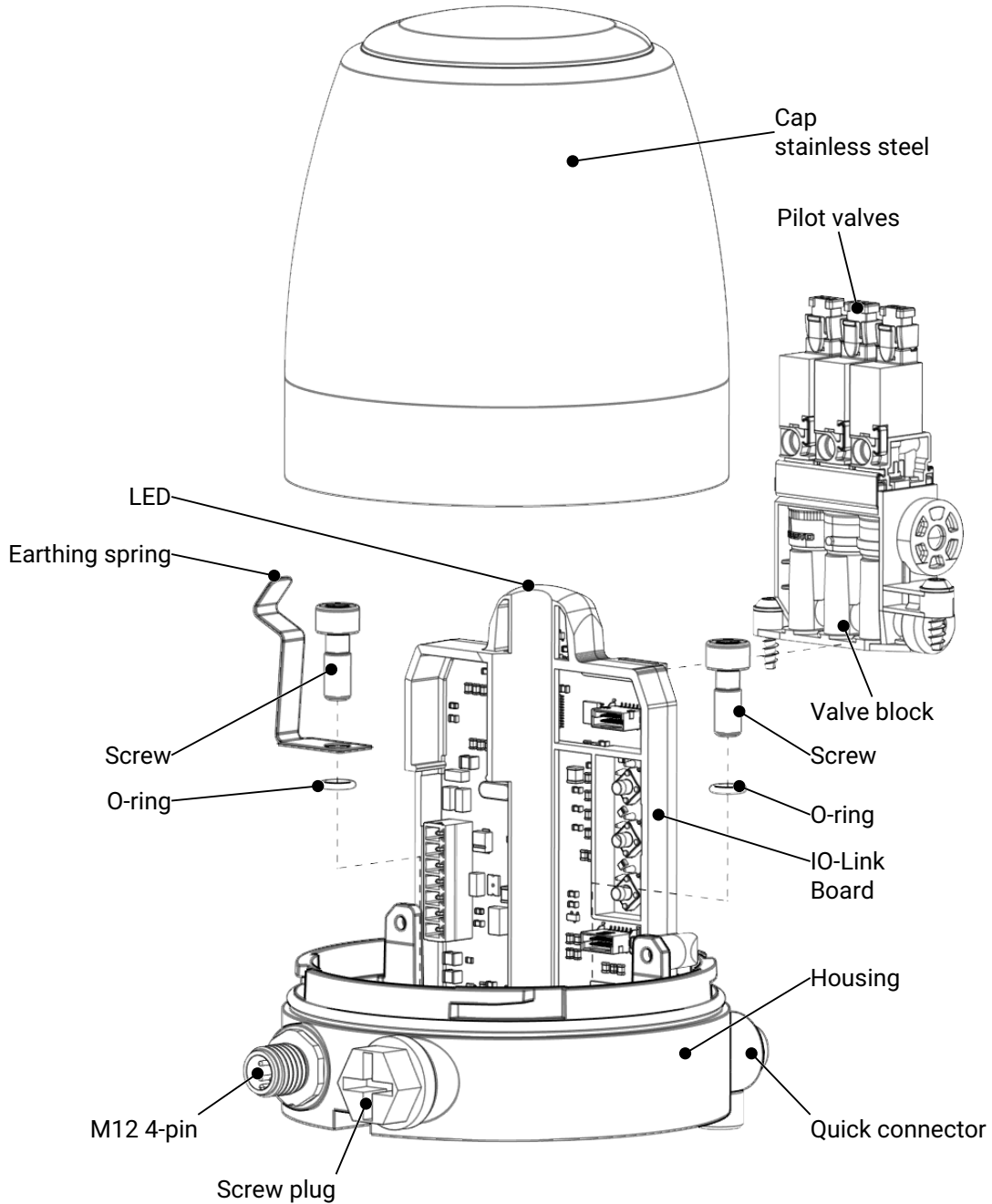
5 Specification

The control head consists of a body with a bayonet lock onto which a plastic or stainless steel hood is fitted.

The electronic system is integrated in this body. Which allows to control and to acquire the positions of the valve. The valve actuator is controlled via the pilot valves.

The electrical connections are made via an M12 connector in the bottom part.

The control head is connected to the compressed air supply and the valve actuator via quick-release couplings.



6 Function and operation

6.1 Function

The control head can be combined with the KIESELMANN valves. It is put on the actuator drive and then screwed down.

The touchless magnetic sensor technology allows the application in different valve types. The positions of the valves are acquired over the electronics of the control head and forwarded to a higher-level control. The forwarding of the signals is made via a wiring provided for it.

The electronic system signalizes the valve conditions at the control head. The actuator is controlled over the integrated pilot valves. The supply of air is made either directly over the control head or over an external hose coupling.

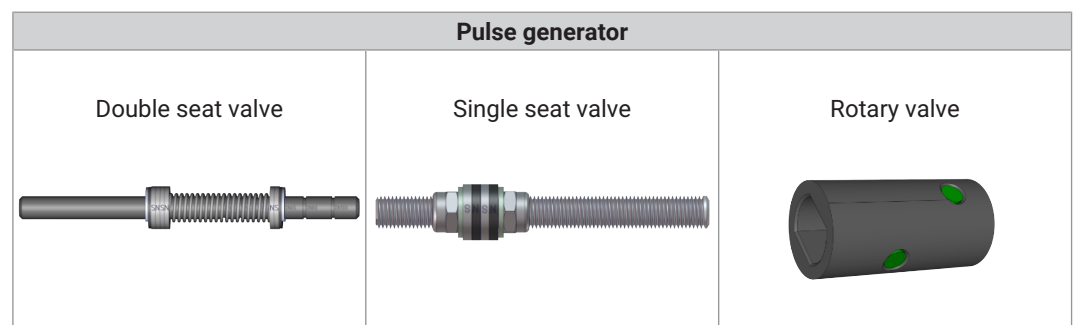
Operation is allowed only in the intended environment.

6.2 Control of the actuator

The actuator is controlled over the integrated pilot valves. Internal pilot valves can be triggered over the hand emergency actuation.

6.3 Positioning

The position of the actuator is determined over a magnet carrier (pulse generator). This carrier is located in the axle of the valve.



6.4 Pulse cleaning technology

When the KIESELMANN 'pulse' mode is activated, the valve and the valve seat are flushed extremely efficiently and in a resource-saving manner. Thanks to the newly developed and high-resolution position detection of the control head, the flushing and cleaning process is carried out in the shortest possible time and with minimal use of media.



INFORMATION

Please refer to the Program setting [S] [▶ 24] of this operating manual for the input commands for using this function.

6.5 ES Function

ES (Emergency Stop)

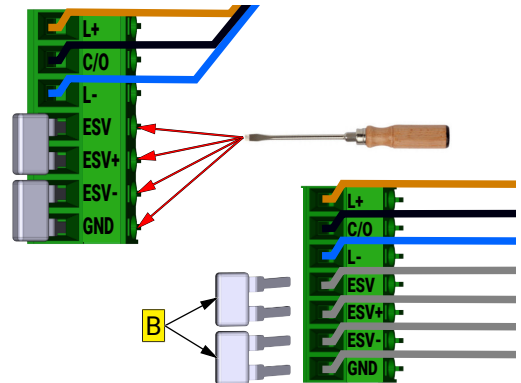
The control head has an emergency stop function. This makes it possible to override the input signal in an emergency so that the valve actuator moves to the basic position.

When supplied as standard, the ES function is deactivated by two fitted insertion bridges in connector P1.

There are two options to activate the ES function of the control head:

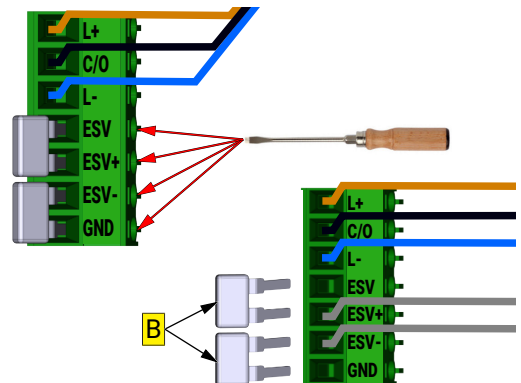
Option 1

Remove the insertion bridge (ESV to ESV+ or ESV- to GND) and connect your preferred switch to the now free position of the plug using cabling. The switch must interrupt the connection when actuated so that the ES function is activated and the valve actuator moves to the basic position.



Option 2

Remove the insertion bridges (ESV to ESV+) and (ESV- to GND). Connect an external supply voltage of 24V to ESV+ and ESV-. The ESV and GND connections are not contacted in this circuit. As soon as the supply voltage is interrupted, the ES function is activated and the valve drive moves to the basic position.



NOTICE

- When the ES function is activated, only spring-loaded valve actuators move to the basic position.
- When the emergency stop function is triggered, the signalling ('Error' - electrical error control head) flashes red / white (see also LED signalling ▶ 14).
- If a switch is integrated, it must be a 'NORMALLY CLOSED' switch (normally closed contact / NC switch).

6.6 Application

These control heads are suitable for the application on KIESELMANN actuators for lift and turning valves.



NOTICE

- These control heads are designed to be used only on KIESELMANN actuators and must be used only in the intended ranges.
- They may only be used in the areas intended for this purpose.
- Any application other than intended is forbidden.
- Application must be made only by qualified and instructed persons.
- Modifications are not covered by the manufacturer.



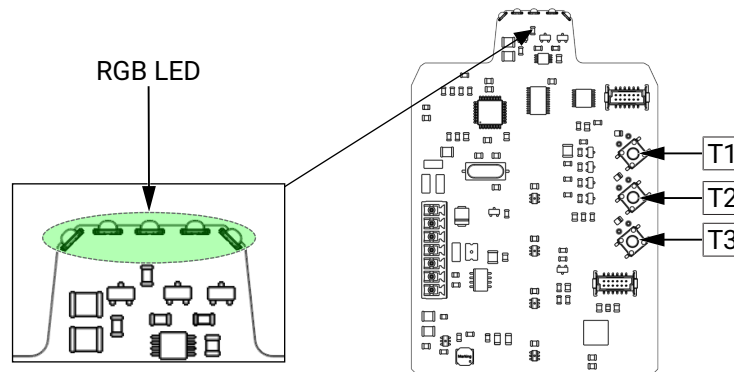
WARNING

No ATEX approval

The control head IO-Link is not approved for operation in the ATEX area.

6.7 LED signalling

Signalling of the actuator position via LEDs on the circuit board.



| Lift and Rotary Valves | | |
|------------------------|----------------|------------|
| Valve position | RGB LED colour | Signalling |
| open | green | throughout |
| close | red | throughout |
| during valve movement | red / green | flashing |

| Lift and rotary valves with cycle and 'pulse' function | | |
|--|----------------|------------|
| Valve position | RGB LED colour | Signalling |
| Cycle / "pulse" below | red | flashing |
| Cycle / "pulse" above | green | flashing |
| | | |

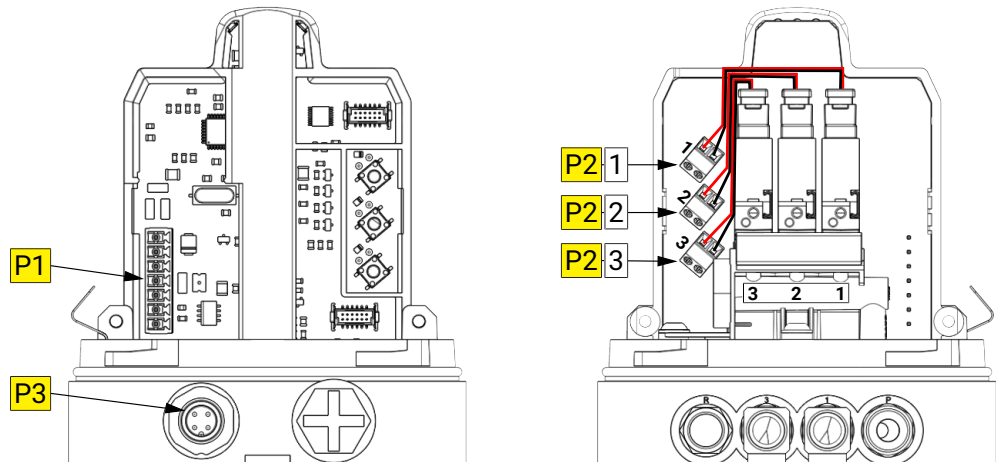
| Teaching – Button T1 | | RGB LED colour | Signalling |
|----------------------|-------------------------------|------------------------|------------|
| Control head | not enabled | red / turquoise (cyan) | flashing |
| | during teaching | turquoise (cyan) | flashing |
| | Error during teaching process | red / turquoise (cyan) | flashing |

| Manual operation / manual switching of solenoid valves via push-button Tx | | |
|---|--------------------------------|-------------------------------|
| Valve position | Valve position (red / green) | 3s continuous - (3s flashing) |
| | Manual operation (red / white) | 3s flashing |

| Error | | |
|-------------------------------|-------------|----------|
| electrical error control head | red / white | flashing |

6.8 Electrical connections

Position of the connectors



Connector 7 pin [P1]

| | | | |
|-------|------|------------------|--|
| Pin 1 | L+ | brown | |
| Pin 2 | C/O | Data input black | |
| Pin 3 | L- | blue | |
| Pin 4 | ESV | - | |
| Pin 5 | ESV+ | - | |
| Pin 6 | ESV- | - | |
| Pin 7 | GND | - | |

Connector 2 pin [P2]

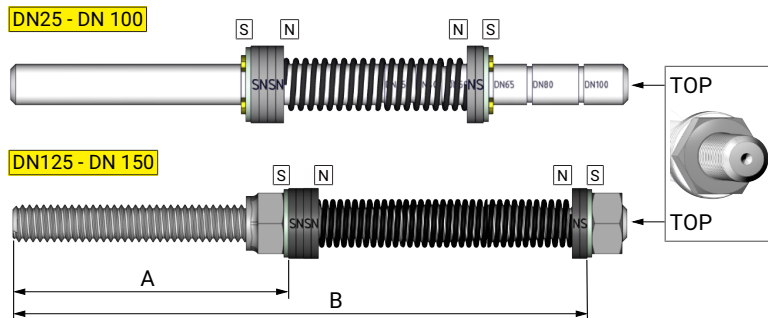
| | | |
|-------|-------|--|
| Pin 1 | red | |
| Pin 2 | black | |

Electrical connection external input M12 connector 4pin [P3]

| | | | |
|-------|----------------------------|------------------|--|
| Pin 1 | Power supply (+) | brown | |
| Pin 2 | Not used | - | |
| Pin 3 | Power supply (-) | blue | |
| Pin 4 | Bus signal / Communication | Data input black | |

6.9 Setting Pulse generator for Lift valves

Pulse generator double seat mixproof valve

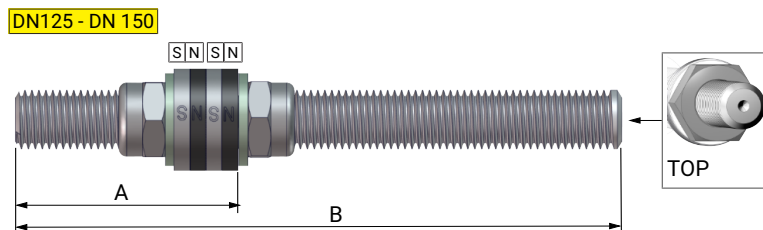


e.g.: 56xx, 564x, 565x, 567x, 568x, 569x, 5000

The setting for nominal sizes DN 25 to DN 100 is specified via the notches on the bolt and secured with a retaining ring.

| DN | A | B | Pulse generator |
|-----------------|---------|----------|-------------------|
| DN 25 – DN 100 | - | - | 5620.DN.005-K000 |
| DN 125 – DN 150 | 56.5 mm | 122.5 mm | 5620.150.005-K000 |

Pulse generator Single seat valves



e.g.: KI-DS Valve series 55xx

| DN | A | B | Pulse generator |
|----------------|-------|-------|-------------------|
| DN 25 - DN 150 | 30 mm | 90 mm | 5500.150.005-K000 |

7 Assembly



⚠ WARNING

Before putting the control head into operation, always check that every part is fixed. In case the control heads are not correctly mounted, the operator himself will be liable.

The control head is mounted on the actuator of the lift or turning valve respectively. The hexagon socket screws M6 with the fitted O-ring are required for mounting. If control heads with stainless steel hood are used, a spring is to be fitted for earthing according to (see illustration below).

In case of actuators whose diameter is smaller than 100 mm, use a distance plate. For rotary actuators, an encoder extension is also required to extend the puls generator.



NOTICE

- When mounting the control head, make sure that the O-rings are correctly mounted in the body of the control head.
- Install the control head on a clean valve actuator.
- Control heads with a stainless steel hood must be installed with an earthing spring. (see illustration).
- The spring connects the stainless steel hood with the actuator body. The actuator itself must not be incorporated in an insulated way toward the potential EARTH.
- Always mind the equipotential bonding.

- Mount the control head on the actuator using Allen screws (M6x16) (2x) with O-rings (2x).
- Connect the electrical and pneumatic connections.
- Place the cover onto the housing and turn it clockwise until it clicks into place (bayonet lock).

Earthing spring

Art. No.: 5630000103-340

Adapter plate

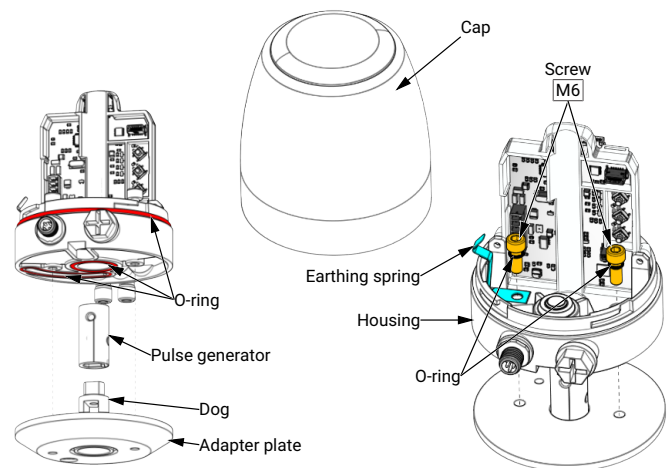
Art. No.: 5630600076-087

Dog

Art. No.: 5630600077-059

Pulse generator

Art. No.: 5631600010-000



8 Commissioning

8.1 Commissioning

Before commissioning, the compressed air line supplying the control head must be blown clear. Metallic contaminants, welding residues and other solid particles can cause malfunctions or damage the control head.

Commissioning must not take place until installation in accordance with paragraph Assembly [▶ 17] has been completed and the compressed air supply has been established.

The compressed air supply must be installed in accordance with the manufacturer's specifications. The compressed air quality must comply with the manufacturer's specifications (see Technical data [▶ 22]).



NOTICE

In the case that the control head is supplied already fitted to a valve, the teaching process is carried out in the factory by KIESELMANN. Customer teaching of the control head is not necessary.

8.2 Parameterisation / Settings – Valve table

Once the control head has been installed on the valve body, it must be parameterised for the relevant valve actuator.

NOTICE (IODD) ▶ For parameterisation – provided this is specified or requested by the plant operator – the IODD compatible with the SK Gen.3 control head must be used. Ensure that the correct IODD version is integrated into the master's engineering/parameterisation tool.

Parameterisation (configuration) is carried out via the plant operator's master. The control head must be parameterised in accordance with the valve actuator used (see table Program setting [S] [▶ 24]).

Procedure ▶

- Connect the control head to the operator's system via the connector input.
- Select the appropriate valve entry in the master according to table Program setting [S] [▶ 24].
- Transfer the selection to the control head and, if necessary, save the settings in accordance with the master system's specifications.

8.3 Teaching

Teaching (Standard)

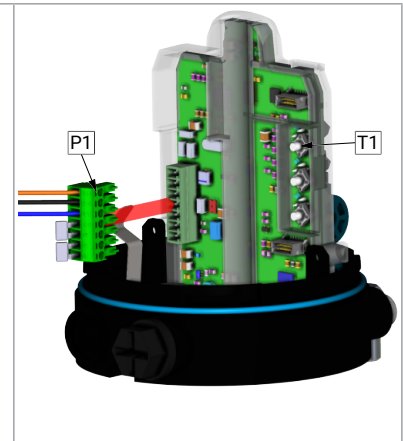


CAUTION

Ensure that the control head is de-energised before carrying out the teaching process.

Performing the teach-in procedure (standard):

1. Press and hold the MV 1 button (T1)
2. Insert power supply connector (P1)
3. Press and hold button MV 1 (T1) for a further 3 seconds, then release it
→ ... **Teaching process starts**
4. During the teaching process, the signalling light on the circuit board flashes turquoise (cyan).
5. Once completed successfully, the signal returns to its normal state:
 - RED = Valve closed
 - GREEN = Valve open



Teaching (via system control)



CAUTION

Ensure that the control head is properly connected to the operator's system and that power is supplied via connector P1.

Performing the teaching procedure (via system control):

1. Execute the "Teaching" command in the user interface (UI) of the system control.
→ ... **teaching procedure starts automatically**
2. During the teaching process, the signalling light on the circuit board flashes turquoise (cyan).
3. Once completed successfully, the indicator returns to its default state:
 - RED = Valve closed
 - GREEN = Valve open

(see also LED signalling [▶ 14])

8.4 Integration into a plant

If the control head is integrated into an automatically working plant, make sure that the function of the control head can be monitored. Monitoring must be guaranteed by the plant design. An optical control has also to be carried out in certain time intervals. The function control must be documented in case of optical inspection. If faults or damages are determined during control, they must be immediately removed.



NOTICE

In case of operation in automatically working plants the operators must familiarize with the cutoff or emergency stop of the plant respectively.

9 Malfunctions

9.1 Emergency stop



WARNING

In order to force an emergency stop of the control head, the operators of the plant must absolutely familiarize with the plant design.

- It is essential to train an emergency stop and to inform about the necessary elements regarding an emergency stop.
 - The training of the persons who were charged with the operation of the plant, must be documented.
 - Every damage to person and property which results from faulty operation or faulty application respectively, are borne by the plant operator.

10 Disassembly

Assembly Tools

1. Torx screwdriver T20
2. Allen wrench Größe 5 mm
3. Screwdriver long blade size 3
4. Screwdriver size 2
5. Open-end spanner SW 13

Disassembly



NOTICE - observe the operating instructions

Dismounting of the control head is made when

- the control head or the valve requires maintenance
- parts of the control head shall be replaced

see *illustration* Assembly [▶ 17]

- Interrupted the air supply to the control head and disconnected the control head from the electric contact.
- Loosen the cover by turning it anticlockwise and remove it (bayonet lock).
- Use a Torx screwdriver to remove the electronics or the sensors with the pilot valve block.
- **NOTICE! The pilot valve block is differently assembled. The block is built in without assembly in case of control by external valves.**

Dismantling body

- Loosen the pneumatic and electrical connections.
- Unscrew the allen screws (M6) (2x).
- Remove the housing upwards from the valve.

11 Technical data

IO-Link electronics

| | |
|---------------------------------------|--------------------|
| Supply voltage | 24V DC |
| Supply voltage range | ± 10% |
| Electrical nominal power ¹ | 85.5 mA |
| <u>Current consumption</u> | |
| Maximum | 80 mA (24V DC) |
| Quiescent current ² : | 25.5 mA |
| Ambient temperature | -10°C – +60°C |
| Protection class | IP 67 DIN EN 60529 |
| with stainless steel hood | DIN EN 61140 I |
| with plastic hood | DIN EN 61140 I |

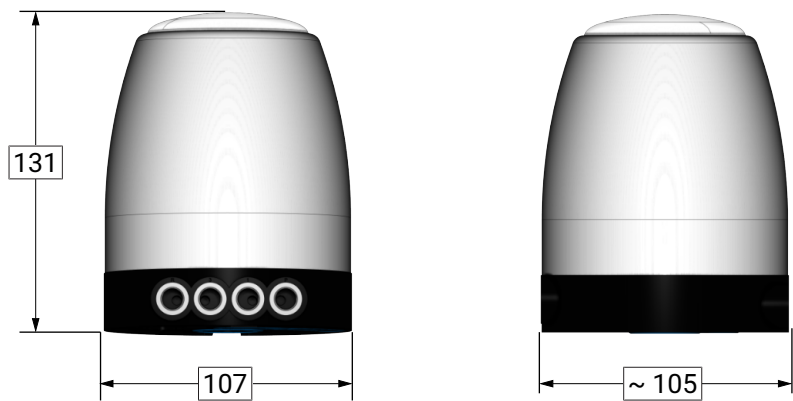
1: With holding current reduction switched off, all valves actuated and standard signalling (red/green)

2: standard signalling (red/green)

Requirements for the control air

| | |
|-------------------------------|---------------------------------|
| DIN | ISO 8573-1:2010 [3:(≤5 µm):4:4] |
| Control air pressure | 6 bar |
| Air flow / per solenoid valve | 200 l / min / 6bar |

11.1 Dimensions



12 Wearing parts

| Spare parts | Article number |
|--------------------------------------|------------------|
| Rotary encoder right | 5630 600 010-000 |
| Rotary encoder left | 5630 600 010-001 |
| Cap: stainless steel (LED with Logo) | 5631 000 110-032 |
| Cap: stainless steel (with Logo) | 5631 000 118-021 |
| Cap: Plastic (with Logo) | 5631 000 002-094 |
| Seal kit: O-ring | 5631 000 006-000 |
| Board IO-Link | 5634 000 013-00X |
| Screw set KI-TOP | 5631 000 005-000 |
| Spreader cap complete | 5631 000 111-000 |
| Valve block -321-Con | 5633 003 013-000 |
| Valve block -XX1-Con | 5633 301 013-000 |
| Valve block -X2X-Con | 5633 601 013-000 |
| Maintenance Key | 5633 001 020-000 |
| Power supply IO-Link 24V DC | 5633 001 019-000 |

13 Program setting [S]

| Program setting [S] | Designation Valve type | Function | Process Data | | Note |
|------------------------|--|-----------------|--------------|-----|----------------------------------|
| | | | IN | OUT | |
| 0 | Double seat valve with Stroke without Stroke position recognition | Closed | x00 | x01 | |
| | | Closed | x01 | x01 | |
| | | Open | x02 | x02 | |
| | | lower seat lift | x04 | x01 | |
| | | upper seat lift | x08 | x01 | |
| 1 | Double seat valve piggable without Stroke position recognition | Closed | x00 | x01 | |
| | | Closed | x01 | x01 | |
| | | Open | x02 | x02 | |
| | | lower seat lift | x04 | x01 | |
| | | upper seat lift | x08 | x01 | |
| 2 | - | - | - | - | |
| 3 | Double seat valve with Stroke position recognition | Closed | x00 | x01 | |
| | | Closed | x01 | x01 | |
| | | Open | x02 | x02 | |
| | | lower seat lift | x04 | x04 | |
| | | upper seat lift | x08 | x08 | |
| | | Pulse lower | x10 | x04 | |
| | | Pulse upper | x20 | x08 | |
| 4 | Lift valve Fail-closed [FC] | Closed | x00 | x01 | |
| | | Closed | x01 | x01 | |
| | | Open | x02 | x02 | |
| 5 | Lift valve Double-acting [DA] | Closed | x00 | x01 | MV 1 activated in basic position |
| | | Closed | x01 | x01 | |
| | | Open | x02 | x02 | |
| 6 | Lift valve Fail-open [FO] | Open | x00 | x02 | |
| | | Closed | x01 | x01 | |
| | | Open | x02 | x02 | |
| 7 | - | - | - | - | |
| 8 | Rotary valve Fail-closed [FC] | Closed | x00 | x01 | |
| | | Closed | x01 | x01 | |
| | | Open | x02 | x02 | |
| 9 | Rotary valve Double-acting [DA] | Closed | x00 | x01 | MV 3 activated in basic position |
| | | Closed | x01 | x01 | |
| | | Open | x02 | x02 | |
| 10 | Rotary valve Fail-open [FO] | Open | x00 | x02 | |
| | | Closed | x01 | x01 | |
| | | Open | x02 | x02 | |
| 11 - 15 | - | - | - | - | |
| 16 | Aseptic-Double seat valve GEMBRA with Stroke position recognition | Closed | x00 | x01 | |
| | | Closed | x01 | x01 | |
| | | Open | x02 | x02 | |
| | | lower seat lift | x04 | x04 | |
| | | upper seat lift | x08 | x08 | |
| 17 | Aseptic-Double seat valve Bellows Type 587x with Stroke position recognition | Closed | x00 | x01 | |
| | | Closed | x01 | x01 | |
| | | Open | x02 | x02 | |
| | | lower seat lift | x04 | x04 | |
| | | upper seat lift | x08 | x08 | |
| 18 | Aseptic-Single seat valve Bellows Type 586x | Closed | x00 | x01 | |
| | | Closed | x01 | x01 | |
| | | Open | x02 | x02 | |

14 Appendix

14.1 IO-Link Process Data

| Input data from the master | |
|--------------------------------|--------------------------|
| Byte 1 | |
| Bit (low nibble) | Function |
| 1 | Close |
| 2 | Open |
| 4 | Lower seatlift |
| 8 | Upper seatlift |
| Hi Nibble | Must stay 0 |
| Byte 2 | |
| Bit 0 | Identification signaling |
| Byte 3,4 not used, further use | |

| Output data to the master | |
|--------------------------------|---------------------------|
| Byte 1 | |
| Bit (low nibble) | Function |
| 0 | Unknown position / moving |
| 1 | Closed |
| 2 | Open |
| 4 | Lower seatlift |
| 8 | Upper seatlift |
| Hi Nibble | 0 |
| Byte 2 | |
| Bit 0 | Remote Rec. plugged |
| 1 | Remote locked |
| 2 | Teaching |
| 3 - 7 | Not used |
| Byte 3,4 not used, further use | |

14.2 IO-Link Parameters

| Index (dec) | Index (hex) | Type | Size | Parameter | | Access | Value range | Default setting | Hardware |
|-------------|-------------|--------|--------------|----------------------------|---|--------|-------------|-----------------|-------------|
| 64 | 0x40 | Uint8 | 8 Bit | Vtype | Valve type | rw | 0..31 | 0 | |
| 73 | 0x49 | Uint8 | 8 Bit | LED Mode | Brightness TopLed | rw | 0..4 | 4 | |
| 75 | 0x4B | Uint8 | 8 Bit | Op Mode | Operation Mode <i>Bit0 : disable Sig. Moving</i> | rw | | 0 | |
| 76 | 0x4C | Uint8 | 5* 8 Bit | FP_Closed | Fingerprint closed | rw | | 0 | Premium |
| 77 | 0x4D | Uint8 | 5* 8 Bit | FP_Open | Fingerprint open | rw | | 0 | Premium |
| 78 | 0x4E | Uint8 | 5* 8 Bit | FP_LowerSeatlift | Fingerprint Lower Seatlift | rw | | 0 | Premium |
| 79 | 0x4F | Uint8 | 5* 8 Bit | FP_UpperSeatlift | Fingerprint Upper Seatlift | rw | | 0 | Premium |
| 80 | 0x50 | Uint16 | 16 Bit | Angle Closed | | rw | 0..1023 | 0 | Further use |
| 81 | 0x51 | Uint16 | 16 Bit | Angle Open | | rw | 0..1023 | 0 | Further use |
| 82 | 0x52 | Uint8 | 8 Bit | PosTolerance Close | Tolerance closed | rw | | 0 | Premium |
| 83 | 0x53 | Uint8 | 8 Bit | PosTolerance Open | Tolerance open | rw | | 0 | Premium |
| 84 | 0x54 | Uint8 | 8 Bit | PosTolerance LowerSeatlift | Tolerance lower seat lift | rw | | 0 | Premium |
| 85 | 0x55 | Uint8 | 8 Bit | PosTolerance UpperSeatlift | Tolerance upper seatlift | rw | | 0 | Premium |
| 65 | 0x41 | Uint16 | 16 Bit | C_PwrOn | Counter power on | ro | | 0 | |
| 66 | 0x42 | Uint16 | 16 Bit | C_Close | Counter close | ro | | 0 | |
| 67 | 0x43 | Uint16 | 16 Bit | C_Open | Counter open | ro | | 0 | |
| 68 | 0x44 | Uint16 | 16 Bit | C_LowerSeatlift | Counter Lower Seatlift | ro | | 0 | |
| 69 | 0x45 | Uint16 | 16 Bit | C_UpperSeatlift | Counter Upper Seatlift | ro | | 0 | |
| 70 | 0x46 | Int8 | 8 Bit signed | Temperature minimal | | ro | | +100 | |
| 71 | 0x47 | Int8 | 8 Bit signed | Temperature maximal | | ro | | -100 | |
| 72 | 0x48 | Int8 | 8 Bit signed | Temperature actual | | ro | | - | |

14.3 other IO-Link Parameters

| Parameter | Function |
|----------------------------|---|
| Brightness TopLed | Brightness settings Top Led; 0-off; 4-maximum brightness |
| Operation Mode | Operation mode; Bit0 signaling of undefined position suppressed |
| Fingerprint closed | Stored position pattern "closed" (globe valves) |
| Fingerprint open | Stored position pattern "open" (globe valves) |
| Fingerprint lower seatlift | Stored position pattern "cycle bottom" (lift valves) |
| Fingerprint upper seatlift | Stored position pattern "cycle top" (globe valves) |
| Angle Closed | Stored angular position "closed" (rotary valves) |
| Angle Open | Stored angular position "open" (rotary valves) |
| Tolerance closed | Maximum tolerated deviation from learned position "position closed" |
| Tolerance open | Maximum tolerated deviation from learned position "position open" |
| Tolerance lower seat lift | Maximum tolerated deviation from learned position "cycle bottom" |
| Tolerance upper seatlift | Maximum tolerated deviation from the learned position "cycle top" |
| Counter power on | Switch-on counter |
| Counter close | Counter "position closed" |
| Counter open | Counter "position open" |
| Counter lower seat lift | Counter "cycle bottom" |
| Counter upper seatlift | Counter "cycle top" |
| Temperature minimal | Lowest operating temperature |
| Temperature maximal | Highest operating temperature |
| Temperature actual | Current operating temperature |

14.4 IO-Link commands

| IO-Link commands | | | |
|------------------|--------------|-------------------|----------------------------------|
| Value (dez.) | Value (hex.) | Command | Function |
| 160 | A0 | Counter reset | Reset all counters |
| 161 | A1 | Temperature reset | Reset min-max temperature values |
| 162 | A2 | Start teaching | Learn the valve positions |
| | | | |

14.5 IO-Link diagnostic messages

| IO-Link events | | | | | |
|----------------|--------------|---------------------|------------------|---------|--|
| Value (dez.) | Value (hex.) | Meaning | Occurrence | Type | Cause |
| 6200 | 1838 | Configuration Error | Appear/Disappear | Error | Hardware used for settings inappropriate |
| 6201 | 1839 | Impossible Item | Single shot | Warning | Control for valve type unsuitable |
| 6202 | 183A | no Fingerprint Data | Appear/Disappear | Error | No or damaged position patterns |
| 6203 | 183B | Teach error | Appear/Disappear | Error | Learning failed |
| | | | | | |



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