

BA PA-K(I)-20/xxx EN 1.0

For further information,
please visit our product
website:



short.simon-protec.com/
pak20en



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These operating instructions are only valid with the supplied supplementary sheet „Safety instructions and Warranty conditions“!

Figures

1. Figures

Figure 1: Dimensions actuator PA-K-20/xxx

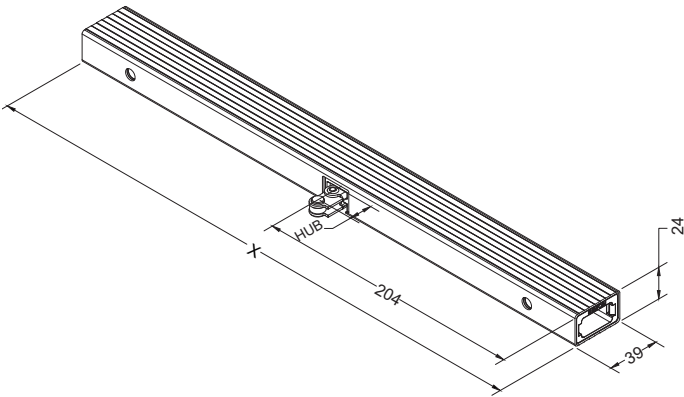


Figure 2: Dimensions actuator PA-KI-20/xxx

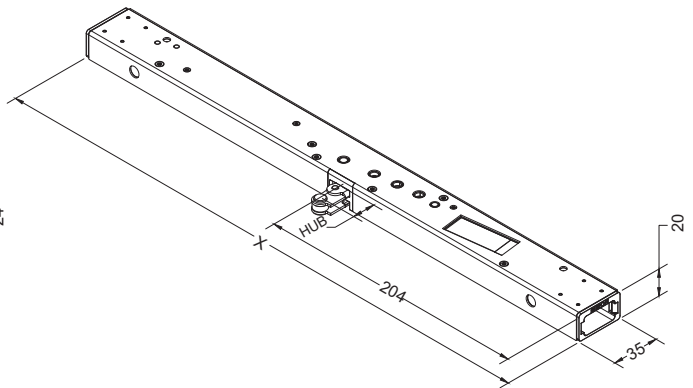


Table 1: Total lengths

| Stroke | Total length X |
|---------|----------------|
| 200 mm | 419 mm |
| 400 mm | 522 mm |
| 600 mm | 625 mm |
| 800 mm | 729 mm |
| 1000 mm | 832 mm |



INFORMATION

Actuator and brackets must be ordered separately. Fasteners are not included!

Figure 3: Lower bracket K-K20-HK

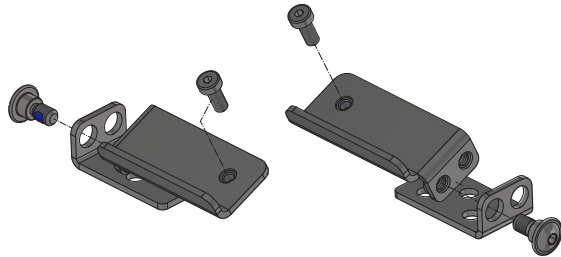


Figure 4: Insertion bracket inside K-K20-AKI-SB

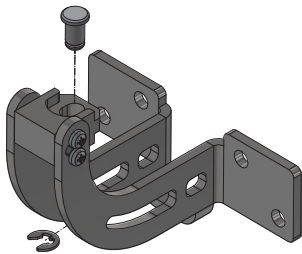


Figure 5: Upper bracket K-K20-OK-SB

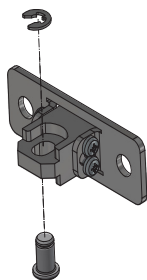


Figure 6: Lower bracket K-K20-S-SB

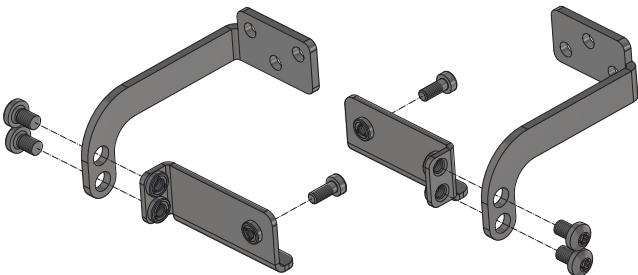


Figure 7: Insertion bracket inside K-K20-AKI-DL

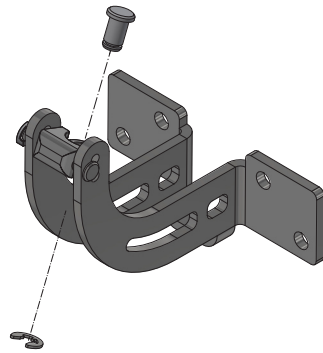


Figure 8: Upper bracket K-K20-OK-DL

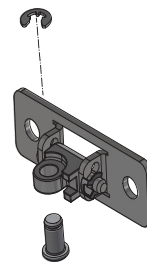
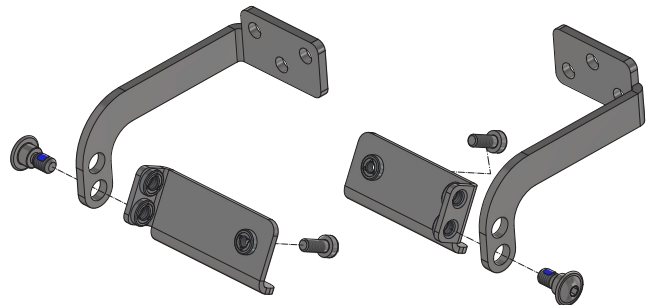


Figure 9: Lower bracket K-K20-S-DL



2. General

2.1. Use for the intended purpose

See supplementary sheet „Safety instructions and warranty conditions“!

3. Mounting

3.1. Safety instructions

See supplementary sheet „Safety instructions and warranty conditions“!

3.2. Mechanical connection



ATTENTION

All dimensions given in this chapter are minimum specifications and may vary depending on the type and design of the window.



INFORMATION

We recommend using the enclosed drilling template EZ-611-0101 for mounting.



INFORMATION

We recommend the following mounting positions.



ATTENTION

Consider the static properties of the frame when installing the actuator.

Leave enough space for plugging in / out the SICO PLUG.
Use appropriate fastenings depending on the material of the window.

- Select mounting type according to Figure 12: „Applications and mounting type“ on page 4.



ATTENTION

Consider the permissible pulling and pushing forces depending on application and mounting type (see Figure 13: „Permissible pulling and pushing forces“ on page 4)!

- Extend the chain of the actuator for approx. 100 mm for mounting. We recommend fixing the chain end piece on the bracket before mounting the actuator. The direction from which the safety bolt is inserted can be chosen freely.
- Mount the actuator to the window with the appropriate brackets using the enclosed drilling template.
- After mounting, check that the chain of the actuator is extended no more than 25 mm. Otherwise the proper function of the electronic zero-reset cannot be guaranteed.

Figure 10: Recommended mounting position (one actuator in solo operation mode)

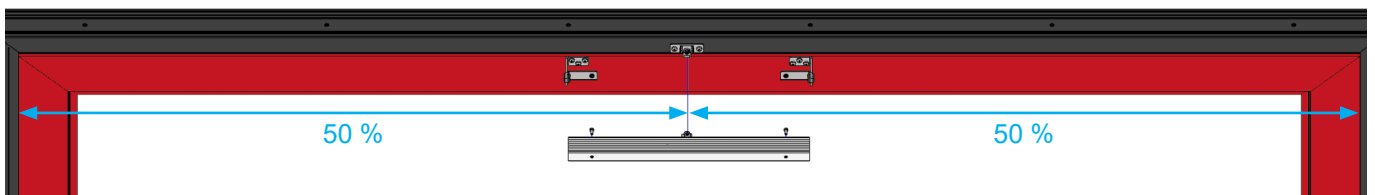
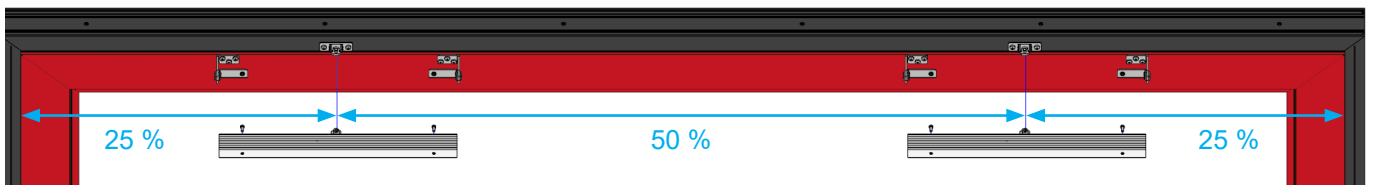


Figure 11: Recommended mounting position (two actuators in synchro operation mode)



Mounting

Figure 12: Applications and mounting types

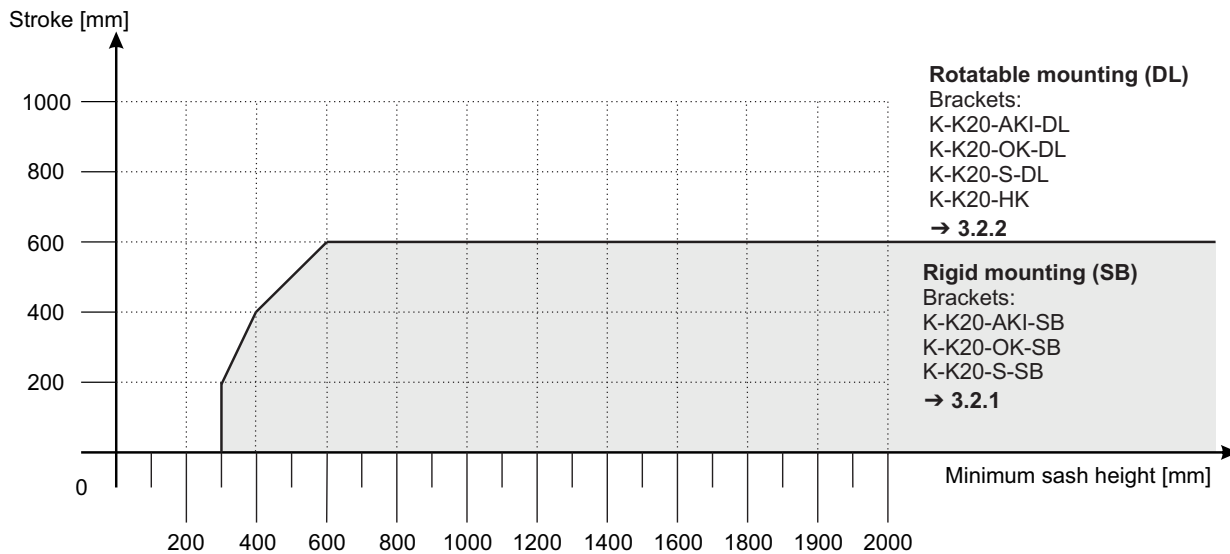
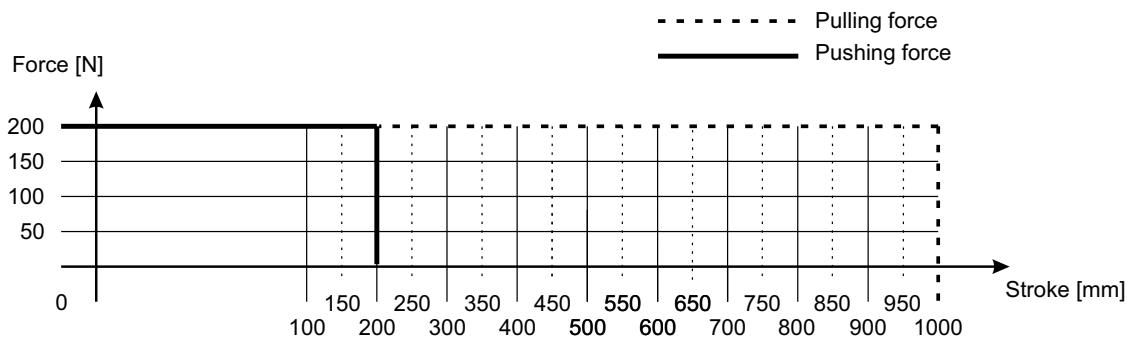


Figure 13: Permissible pulling and pushing forces



INFORMATION

To calculate the required installation parameters (stroke, force, opening angle), our calculator is available at www.simon-protec.com/products/calculator.

Mounting

3.2.1. Actuator with rigid mounting (mounting variant SB)

3.2.1.a. Top / bottom hung window, inward opening / rotary window, mounting on the frame

Figure 14: Mounting of the brackets

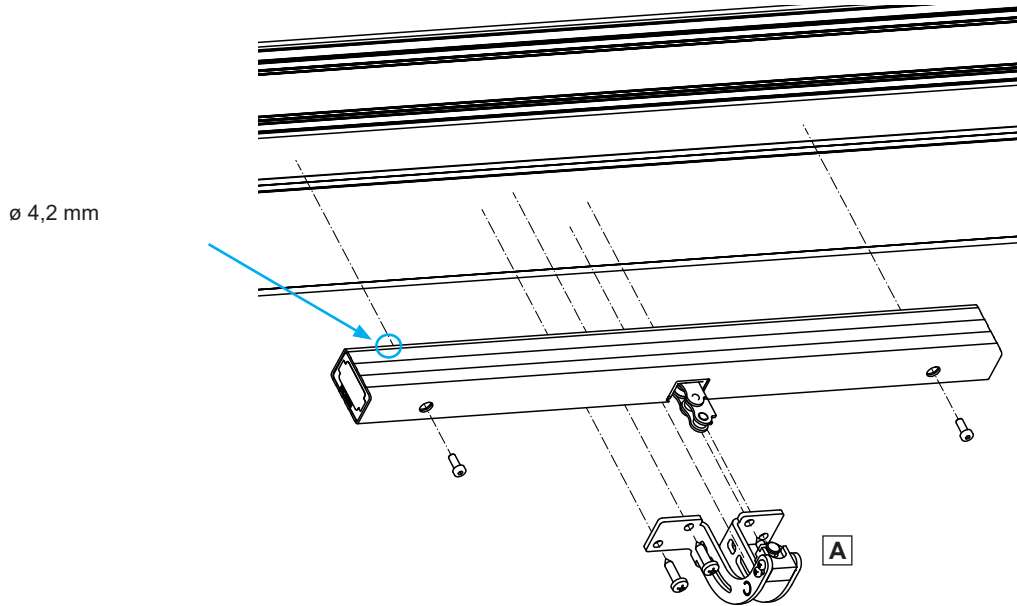
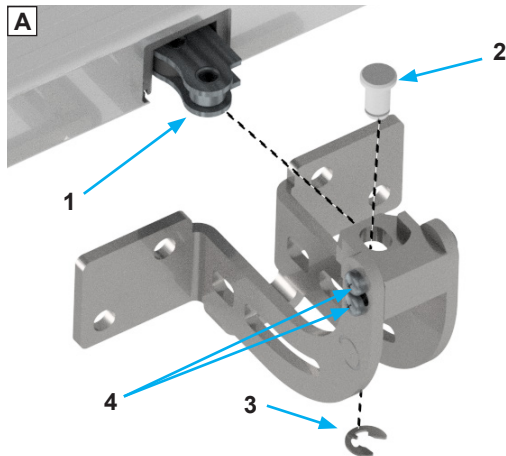


Figure 15: Mounting K-K20-AKI-SB



i REQUIRED BRACKETS
Upper bracket K-K20-AKI-SB (A)

Figure 16: Bottom hung window, profile view

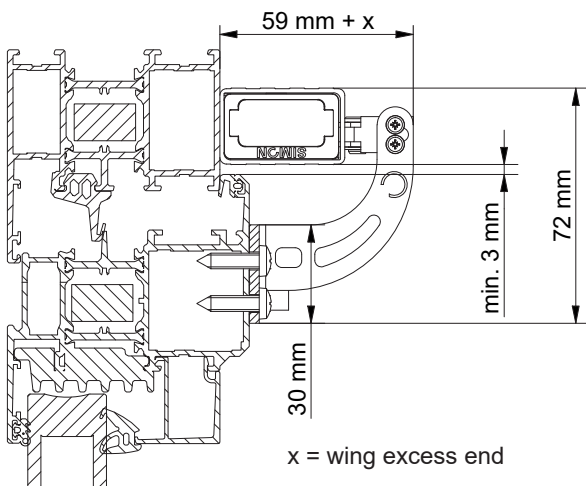
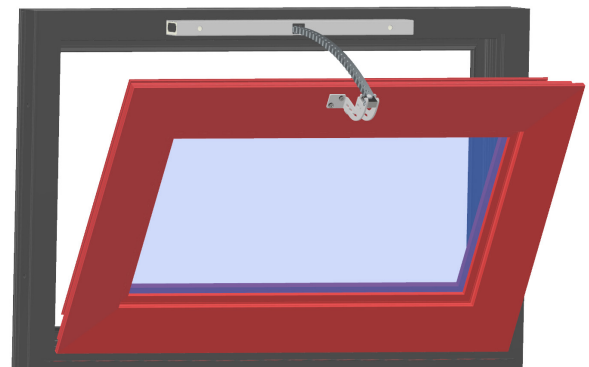


Figure 17: Bottom hung window



Mounting

Figure 18: Top hung window

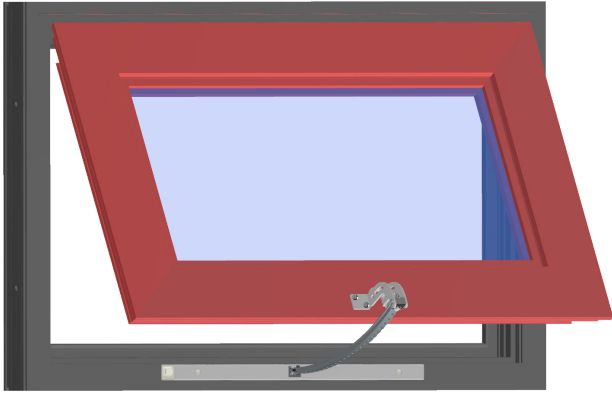
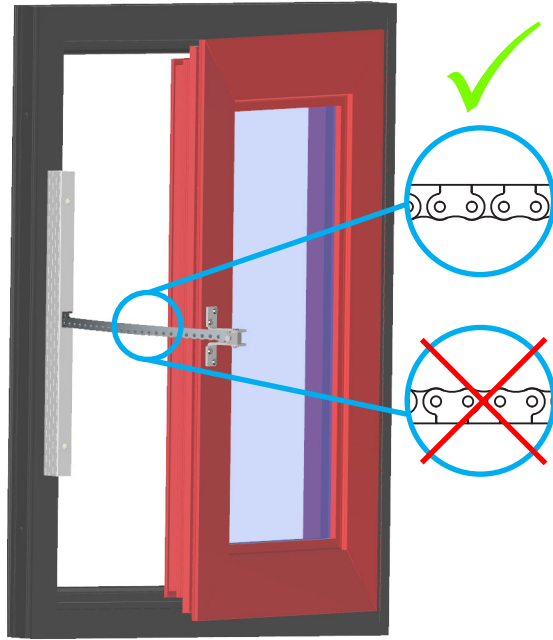


Figure 19: Rotary window



ATTENTION - ROTARY WING

The standard actuator is designed for installation on DIN **right** windows (hung on the right)! The version for DIN left windows (hung on the left) must be ordered separately.

3.2.1.b. Bottom / top hung window, outward opening, mounting on the frame

Figure 20: Mounting of the brackets

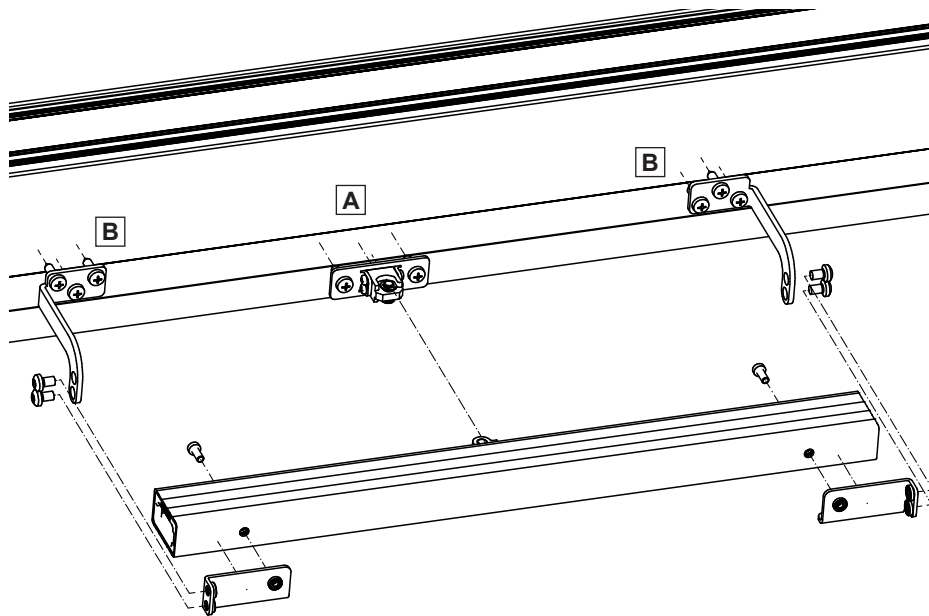


Figure 21: Mounting K-K20-OK-SB

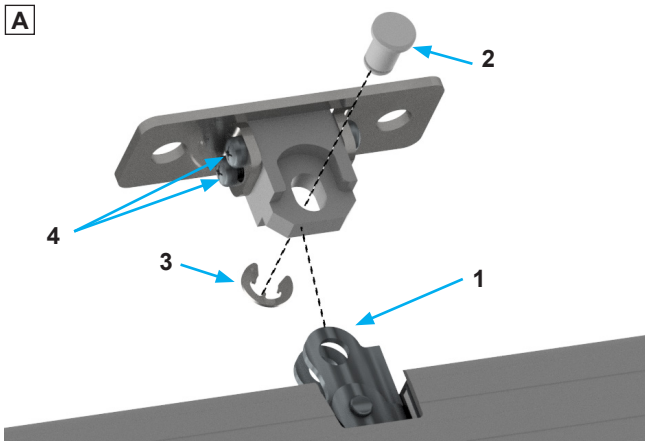
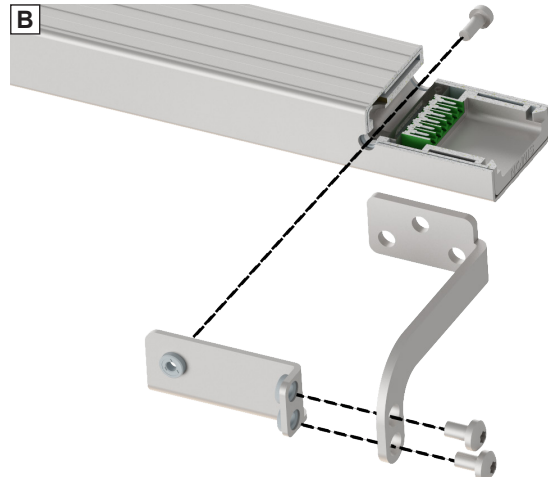


Figure 22: Mounting K-K20-S-SB



Mounting



REQUIRED BRACKETS

Upper bracket K-K20-OK-SB (A)

Lower bracket K-K20-S-SB (B)

Figure 23: Bottom hung window, profile view

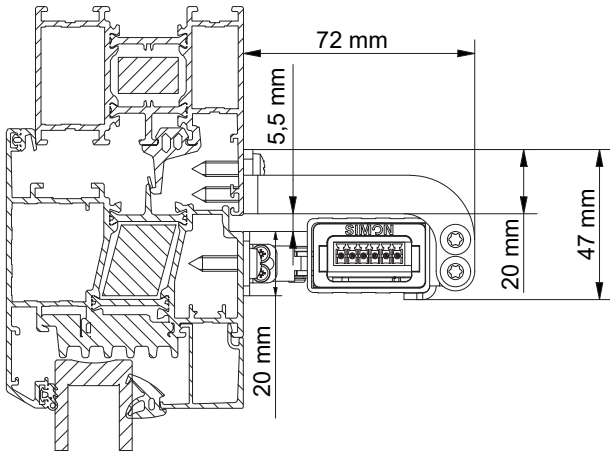


Figure 24: Bottom hung window

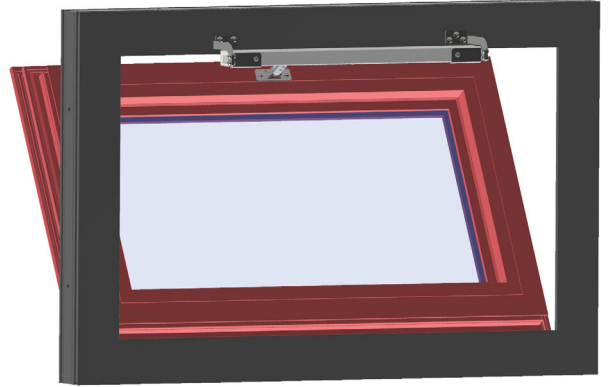
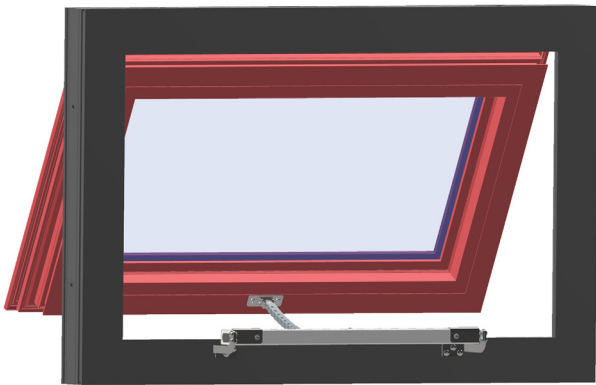


Figure 25: Top hung window



Mounting

3.2.2. Actuator with rotatable mounting (mounting variant DL)

3.2.2.a. Bottom / top hung window, inwards opening, mounting on the frame

Figure 26: Mounting of the brackets

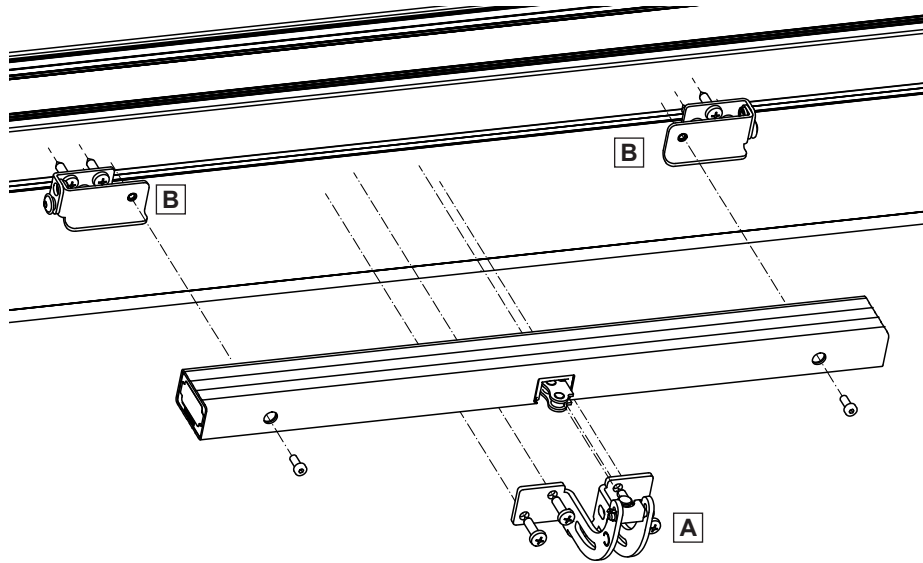


Figure 27: Mounting K-K20-AKI-DL

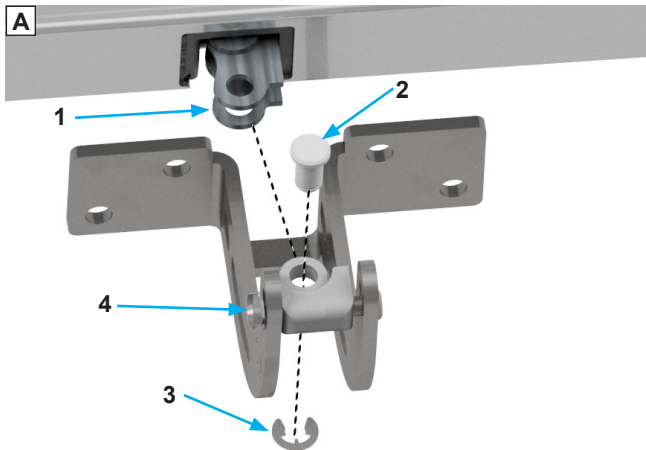
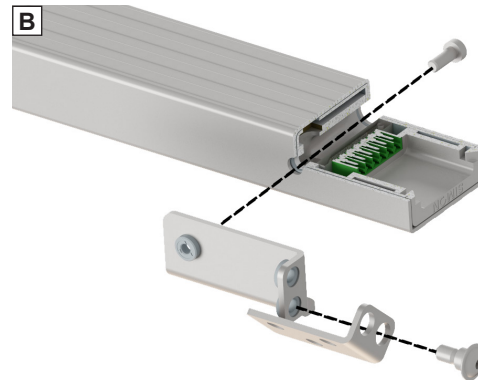


Figure 28: Mounting K-K20-HK



REQUIRED BRACKETS

Upper bracket K-K20-AKI-DL (A)

Lower bracket K-K20-HK (B)

Figure 29: Bottom hung window, profile view

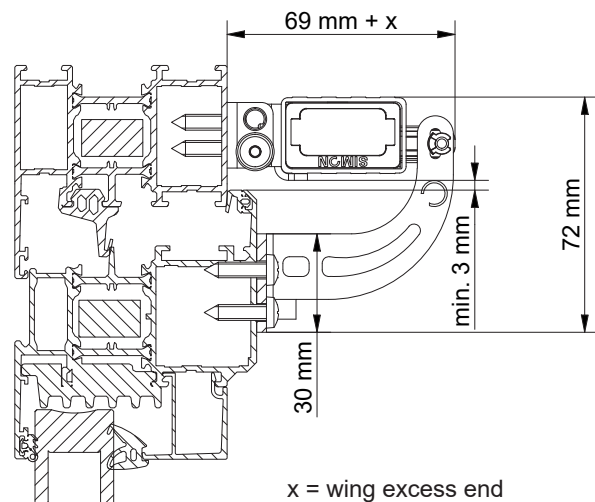
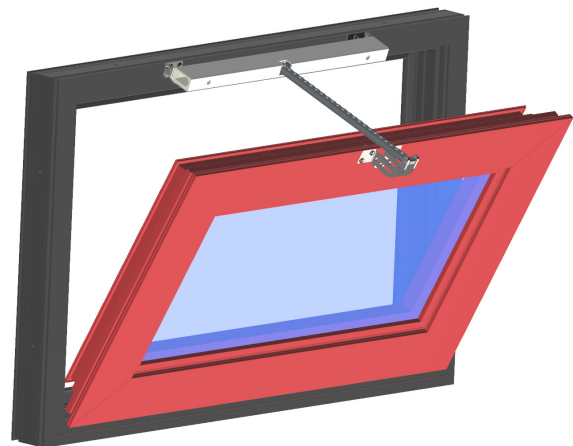


Figure 30: Bottom hung window



Mounting

3.2.2.b. Bottom / top hung window, outward opening, mounting on the frame

Figure 31: Mounting of the brackets

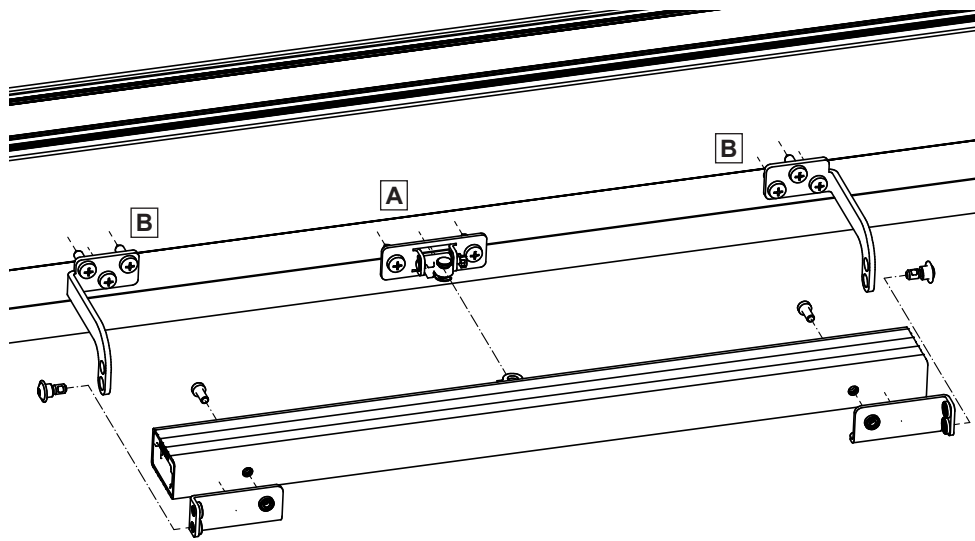


Figure 32: Mounting K-K20-OK-DL

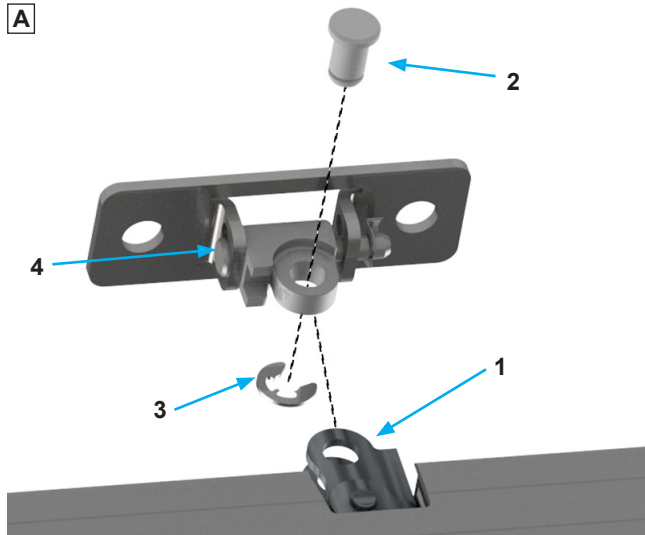
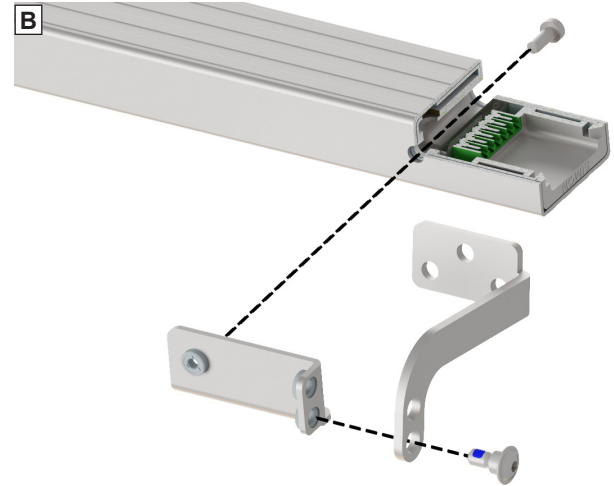


Figure 33: Mounting K-K20-S-DL



REQUIRED BRACKETS

Obere Konsole K-K20-OK-DL (A)

Untere Konsole K-K20-S-DL (B)

Figure 34: Bottom hung window, profile view

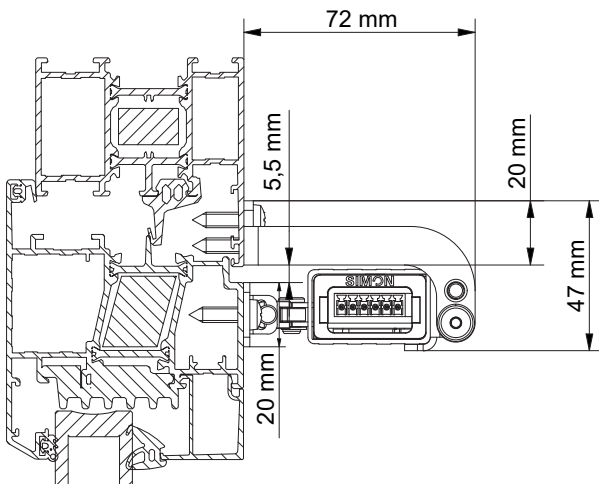
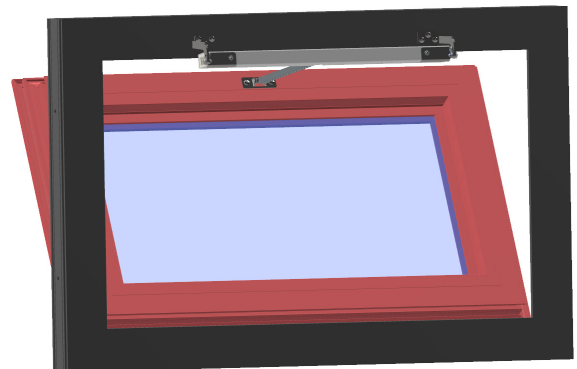


Figure 35: bottom hung window



Mounting

3.2.3. Internal mounting (PA-KI-20/xxx)



INFORMATION

With internal mounting, the actuator is integrated into the window profile. **Technical clarification** is required in advance. Our sales department will be happy to advise you.

Figure 36: Example internal mounting, profile view with Aliplast Imperial window profile

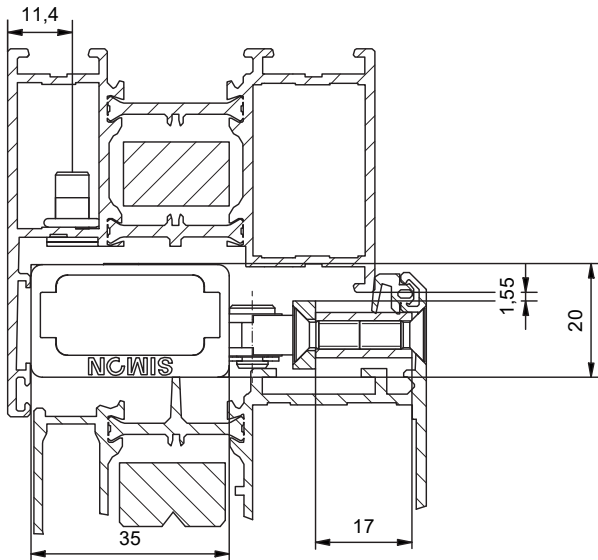


Figure 37: Example internal mounting (Aliplast Imperial window profile)



Mounting

3.3. Electrical connection

See the attached sheet “safety instructions and warranty conditions”!



ATTENTION

Unused wires must be electrically insulated.
The wires **C1** and **C2** must not be connected to each other during normal operation.

3.3.1. Power supply

The supply voltage must be dimensioned sufficiently for the actuator. Voltage and current must fit the specifications on the type label.

3.3.2. Feedback – volt-free contact

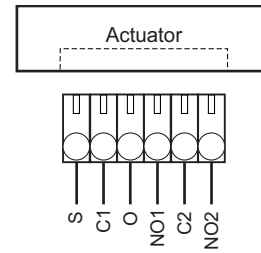
The normally open contact (NO1, NO2) is activated in direction “CLOSE” when the actuator is cut off in end position “CLOSE”. The message is stroke-dependent and can be evaluated as a “CLOSED” messages. The relay can be freely parameterized via software.

3.3.3. Preparation for installation

Before starting the installation, the required connection cable must be assembled. For this purpose use the plug included in the scope of delivery (see instructions in the accessory bag with SICO PLUG). For NSHEV according to EN 12101-2, the silicone connecting cable approved by the manufacturer must be used.

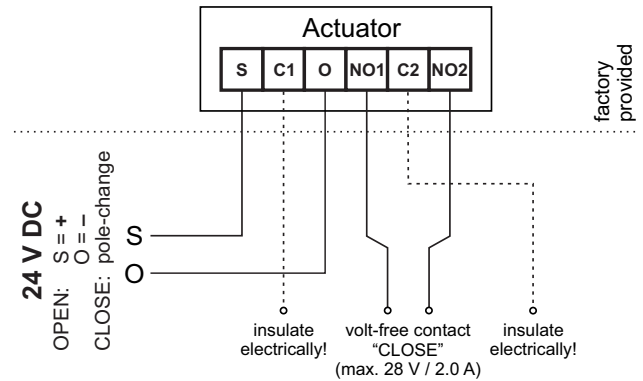


3.3.4. SICO PLUG assignment



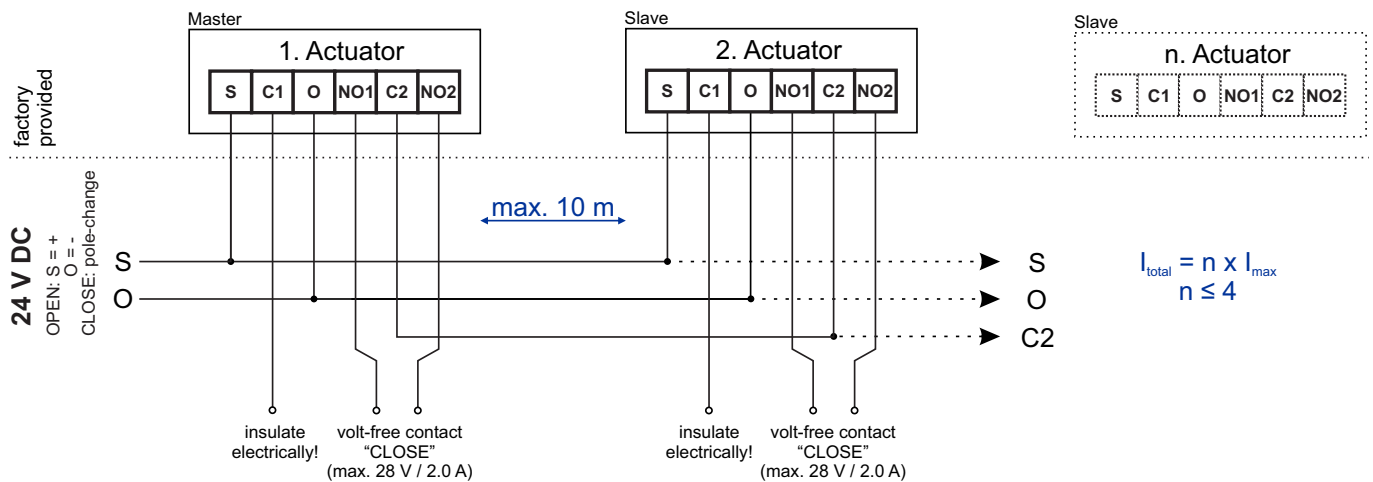
3.3.5. Single operation

➤ Connect wires according to the the wiring diagram.



3.3.6. Synchronous operation

➤ Connect wires according to the the wiring diagram.



3.3.7. Double connection (DA version)



ATTENTION

For actuators with double connection in synchronous operation, connect only the wires S, O and C2 with each other after parameterisation! Electrically insulate C1 as well as NO1 and NO2 of the SLAVE actuator.

Mounting

3.4. Setting options

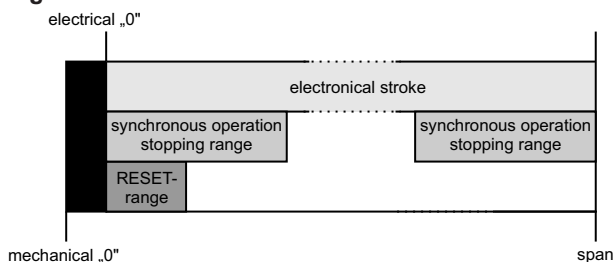
You can set **single operation** or **synchronous operation mode MASTER / SLAVE** via SICO LINK or manually.

Figure 38: Interface for SICO LINK



Connection for SICO-USB-110

Figure 39: Stroke behaviour



RESET-range: When the actuator is cut off on overload within the RESET-range, the electronic zero point will be set new.

Synchronous operation stopping range: If an actuator cuts off in synchronous operation in direction "OPEN" or "CLOSE" within the **stopping range**, the remaining actuators continue to run until cutoff in the respective end position.

3.4.1. Synchronous actuators

The synchronous actuators of the PA-K-20 series are identified by the suffix "S" in the article name (e.g. PA-K-20/600-S).

3.4.2. Zero point/RESET-range

It's necessary to reset the zero point, if the closed position of the actuator is out of the RESET-range after installation. (SICO LINK / RESET-run).

3.4.3. Operating modes synchronous actuator

If a synchronous actuator is to be used as a single actuator, the operating mode must be set to "Single operation" (SICO LINK or RESET-run) – factory setting.

If several actuators are to be used in synchronous operation, one actuator must be set to "Synchro Master" and the remaining actuators to "Slave" (SICO LINK or manual MASTER/SLAVE setting).



ATTENTION

In order to recalibrate the synchronous function, the actuator must be fully closed in the reset range after max. 50 cycles.

3.5. Manual setting

3.5.1. MASTER/SLAVE setting



ATTENTION

Manual setting: One MASTER and one SLAVE possible.
SICO LINK: ONE MASTER and up to four SLAVES possible.

- Drive the actuator in direction "CLOSE" (**S**="–" **O**="+") and let it cut off in the end position. If the actuator does not reach the „mechanical ZERO“ position due to its mounting position, a RESET-run must be performed.
- Leave the actuator energized!
- Connect the wires **C1** and **C2** directly. A relay click can be heard.
 - ◆ After 5 seconds you can hear a relay click, the actuator is set to MASTER with one connected SLAVE. Separate wires.
 - ◆ After 10 seconds a further relay click can be heard, the actuator is now set to SLAVE. Separate wires.
- Disconnect the actuator from power supply!
- Connect the two actuators in according to chapter 3.3.6: „Synchronous operation“ on page 5.

3.5.2. RESET-run

A RESET-run should be carried out,

- if the opening width of the closed actuator at the window is outside the RESET-range.
- if the MASTER/SLAVE setting needs to be reset.
- Disconnect the actuator(s) from power supply!
- Connect the wires **C1** and **C2** of each actuator directly with each other.
- Drive each actuator in direction "CLOSE" (**S**="–" **O**="+") and let it be cut-off in the end position!
- Again disconnect the actuator(s) from power supply and disconnect the wires **C1** and **C2**!
- The zero point is set.
- In case of "synchro capable" actuators, the operating mode is reset to "single operation" by the RESET-run. In this mode, the actuators can be operated standalone.

Technical data

4. Technical data

Table 2: Electrical characteristics

| | |
|---|--------------------------------------|
| Actuator type | PA-K(I-)20/xxx |
| Rated voltage | 24 V DC |
| Permissible rated voltage range | 24 V DC \pm 15 % |
| Ripple of rated voltage Vpp | max. 500 mV |
| Undervoltage detection | Yes |
| Rated current ⁽¹⁾ | 1.0 A |
| Current consumption after cut-off (closed current) | 35 mA |
| Cut-off via | built-in electronic overload cut-off |
| Maximum permissible number of actuators connected in parallel (with separate wiring) | 4 |
| Maximum permissible number of actuators connected in parallel (with through-wiring via double connection) | 2 |
| Cable length between to actuators in synchro mode | max. 10 m |
| Protection class | II |

(1) Maximum current consumption with nominal load.

Table 3: Feedback contact

| | |
|--------------------|----------------|
| Actuator type | PA-K(I-)20/xxx |
| Rated voltage | 24 V DC |
| Relay contact load | 1 A |



ATTENTION

The maximum load capacity of the contact must not be exceeded!

Table 4: Connection and operation

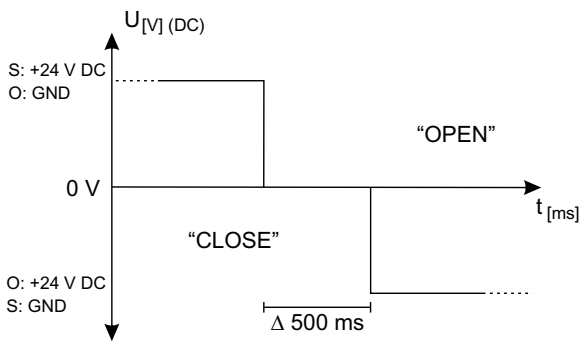
| | |
|--|--|
| Actuator type | PA-K(I-)20/xxx |
| Recommended connection cable (SICO Plug) | 6 × 0.5 mm ² |
| Pause time during change of direction ⁽²⁾ | min. 500 ms |
| Switch-on duration | ED 30 (Short-termin operation: 3 of 10 Min.) |
| Stability of opening and closing cycles | > 11,000 |
| Sound level ⁽³⁾ | < 50 dB (A) |
| Deadlock according to prEN 12101-9/ISO 21927-9 | allowed |
| Multiple triggering after stop | allowed |
| Maintenance | See supplementary sheet "Safety instructions and Warranty conditions"! |

(2) For the change of direction (pole reversal) it is necessary that the power supply ensures a pause time (zero-volt range) of at least 500 ms.

(3) Measured at a distance of one metre under normal conditions.

Technical data

Figure 40: Zero voltage range at changing of direction



ATTENTION

Voltage stability/quality: only defined cut-off processes are permitted (cut-off time from rated voltage 24 V to 0 V in $t < 10$ ms).

This applies in particular for switching operations from primary (mains operation) to secondary energy source (emergency power batteries).

Table 5: Installation and environmental conditions

| | |
|---------------------------------------|---|
| Actuator type | PA-K(I-)20/xxx |
| Rated operating temperature | 20 °C |
| Permissible ambient temperature range | from -5 to 75 °C |
| Temperature - stability (SHEV) | 300 °C |
| Ingress protection | IP 32 |
| Usage range | Central European environmental conditions \leq 2,000 metres above sea level |

Table 6: Approvals and certificates

| | |
|-------------------|--|
| Actuator type | PA-K(I-)20/xxx |
| CE conformity | In accordance with EMC directive 2014/30/EU and the low voltage directive 2014/35/EU |
| Further approvals | On request |

Table 7: Mechanical characteristics

| | |
|---|---|
| Actuator type | PA-K(I-)20/xxx |
| Maximum pushing force ⁽¹⁾ | 200 N |
| Maximum pulling force ⁽²⁾ | 200 N |
| Condition of loading | Opening against nominal load Closing with nominal load support |
| Nominal locking force | \leq 2000 N in "OPEN" and "CLOSE" |
| Nominal stroke for pulling application ⁽³⁾ | 200 mm / 400 mm / 600 mm / 800 mm / 1000 mm |
| Nominal stroke for pushing application | 200 mm / 400 mm |
| Stroke speed at nominal load ⁽⁴⁾ | 10.5 mm/s |
| Material / Surface housing | Alu E6/EV1 Coatings in all RAL and DB colours possible |
| Material chain | Steel (nickel-plated), monostable, oiled |
| Dimensions (L x W x H) ⁽⁵⁾ | see Figures 1 and 2 on page 2 |
| Weight approx. | 0.9 kg / 1.0 kg / 1.1 kg / 1.2 kg / 1.3 kg |

(1) Only under optimum conditions. Pushing force can be parameterised via SICO LINK.

(2) Pulling force parameterisable via SICO LINK.

(3) Nominal stroke can deviate by ± 3 % due to mechanical damping, but no more than 20 mm.

(4) In relation to a stroke of 600 mm; tolerance ± 10 %.

(5) Plus chain exit (approx. 21 mm).