Operating Manual

Chain actuator – EA-K-30/xxx-T(-DA)
– EA230-K-30/xxx(-S)

BA EA-K-30/xxx-T(-DA) / EA230-K-30/xxx(-S) EN 1.2

Valid for the following article numbers:

EA-K-30/xxx-T(-DA)

- M2 5315 (DA) 400 mm stroke
- M2 5316 (DA) 600 mm stroke
- M2 5317 (DA) 800 mm stroke
- M2 5318 (DA) 1000 mm stroke
- M2 5319 (DA) 1200 mm stroke

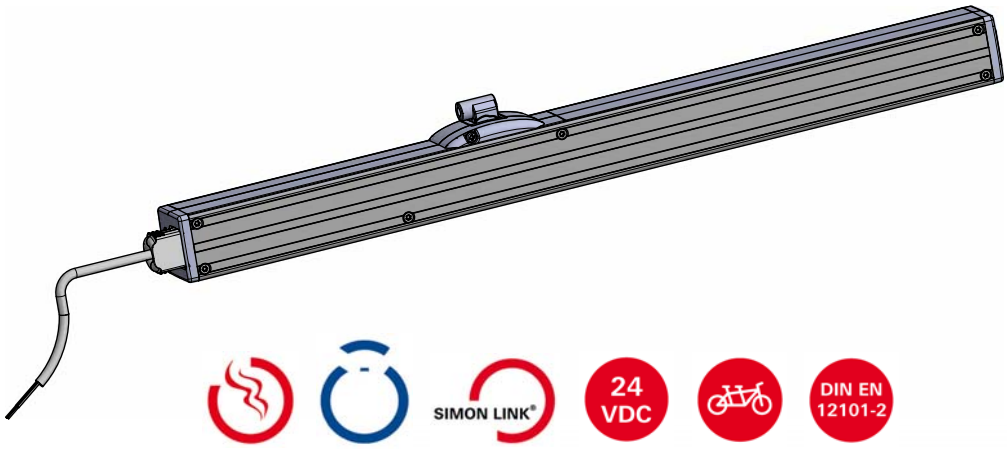
EA230-K-30/xxx

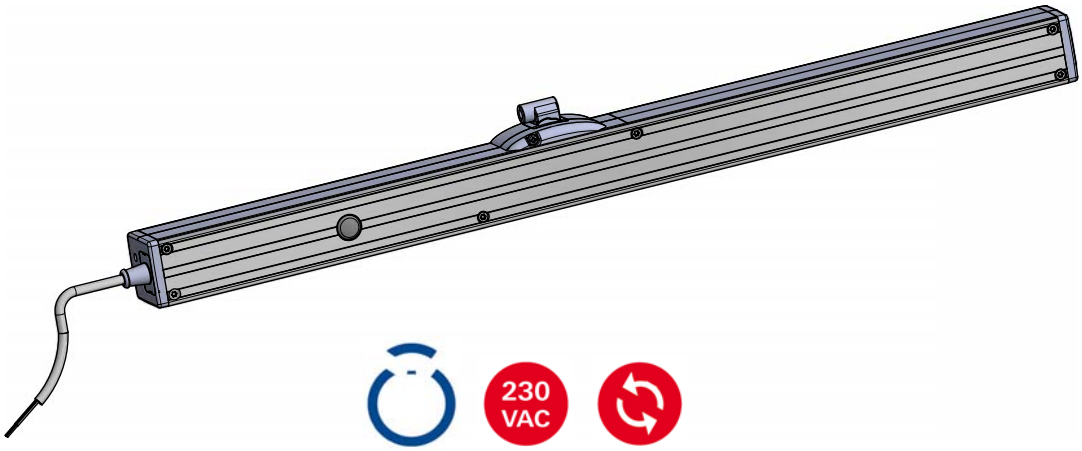
- M2 5140 300 mm stroke
- M2 5141 600 mm stroke
- M2 5142 800 mm stroke
- M2 5143 1000 mm stroke

EA230-K-30/xxx-S

- M2 5144 300 mm stroke
- M2 5145 600 mm stroke
- M2 5146 800 mm stroke
- M2 5147 1000 mm stroke

For further information please visit our product website
short.simon-protec.com/eaken





Only valid with the supplementary sheet: “Safety Instructions and Warranty Conditions”!

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General

1. General

1.1 Foreword to this manual

This manual is intended for professional operation, installation and maintenance by trained, knowledgeable and qualified personnel (such as mechatronics engineer or electrician) and/or qualified personnel who know how to install electrical equipment.

Read this operating manual carefully and pay particular attention to the hazard warnings. Store this operating manual for future reference/maintenance. Please pay close attention to the terminal assignment, the minimum and maximum performance data (see “Technical Data”) and the installation instructions. Incorrect use or improper operation/mounting may cause loss of system functionality and damage to property and/or people.

The following symbols can be found in this manual:

INFORMATION
An information text gives you additional hints!

ATTENTION
This warning notice alerts you to potential hazards that may impact the product!

DANGER
This warning notice alerts you to potential hazards to your life or health!

ENVIRONMENT NOTICE
This notice alerts you to potential environmental hazards!

➢ Operating procedures are marked this way.

➘ Consequences are presented this way.

- **Buttons** or **switches** to be pressed/activated are shown in bold.
- “Indicators” are placed in quotation marks.

1.2 Intended use

Opening units (actuators) are used for the power-operated opening and closing of building covers that are installed in walls or in roofs and are used for the ventilation of rooms or for the removal of fire smoke.

See chapter 2.1 “Risk assessment” on page 5.

1.3 EA-K-30 – Product description

The EA-K-30/xxx-T(-DA) is an an electromotive chain actuator that can be used in accordance with Chapter 1.2 of this operating manual.

The technical features include:

- soft start
- intelligent, microprocessor-controlled overload cut-off
- low noise emission
- soft-close range
- configurable stroke and force

SIMON LINK®

- double-sided connection option (EA-K-30/xxx-T-DA) for the supply cable (with connector)
- DUO operation of two actuators[1] with a connection cable, the power supply is looped through from one actuator to the other

1.4 EA230-K-30 – Product description

The EA230-K-30/xxx(-S) is an electromotive chain actuator that can be used in accordance with Chapter 1.2 of this operating manual.

The technical features include:

- soft start
- low noise emission
- soft-close
- electronic zero point reset by means of a teach-in run in the “CLOSED” direction
- stroke programming
- synchro operation of up to eight EA230-K-30/xxx-S actuators

1. A minimum of one actuator is required with a double-sided connection – EA-K-30/xxx-DA.

Safety Regulations

2. Safety Regulations

See supplementary sheet “Safety Instructions and Warranty Conditions”!

2.1 Risk assessment

INFORMATION

Perform a risk assessment according to the application (e.g. the mounted system).

Information can be found in the **guidance sheet** KB.01 “Power-operated windows” issued by the VFF (window, door and facade manufacturers)

www.eurowindoor.eu/news-and-proceeding/position-papers-and-publications/

2.2 Restrictor stay

ATTENTION

A restrictor stay with an adequate stroke must be installed in bottom hung wings.

It is important to ensure that the fastening of the actuator on the window or wing frame is designed to be permanent and suitable for the actuator force specified on the type plate.

3. Figures

Figure 1: EA-K-30/xxx-T(-DA) chain actuator

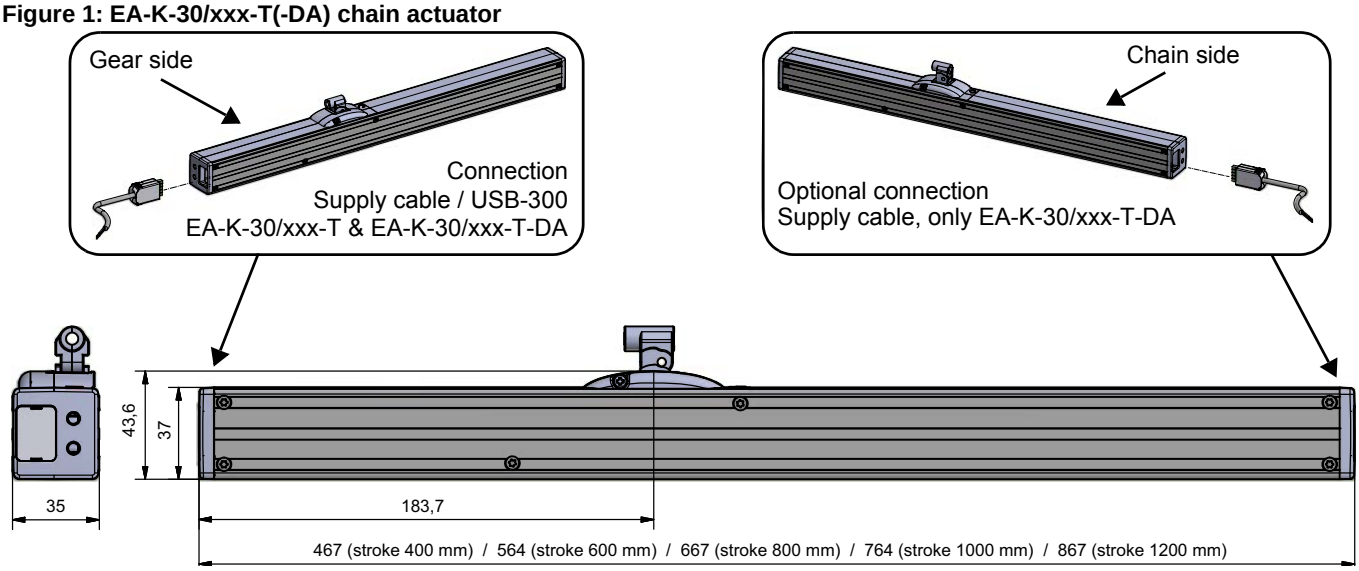
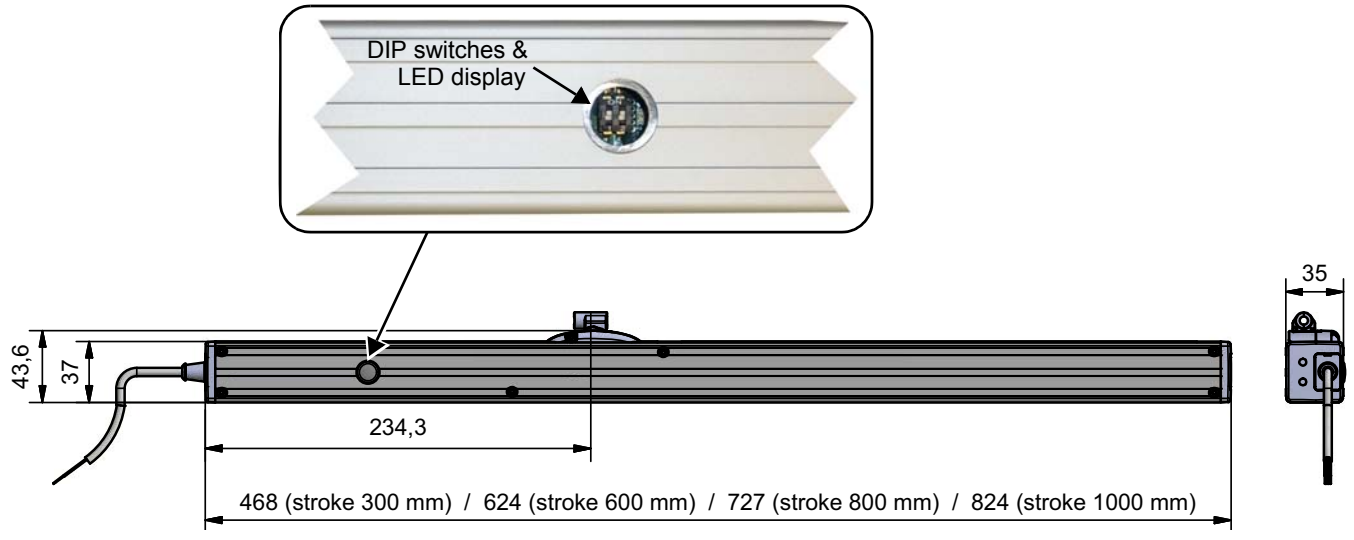


Figure 2: EA230-K-30/xxx(-S) chain actuator



Figures

Figure 3: Top bracket K-K50-OK

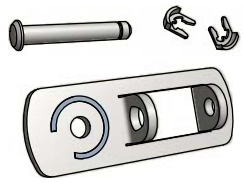


Figure 4: Top bracket K-K-OK-SK

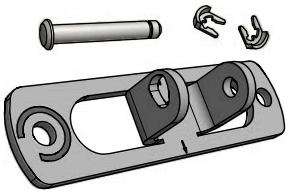


Figure 5: Inward opening bracket K-K30-AKI

Figure 6: Lower bracket K-K30-A

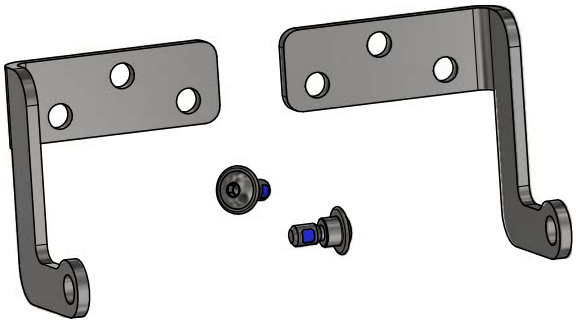


Figure 7: Lower bracket K-K30-K

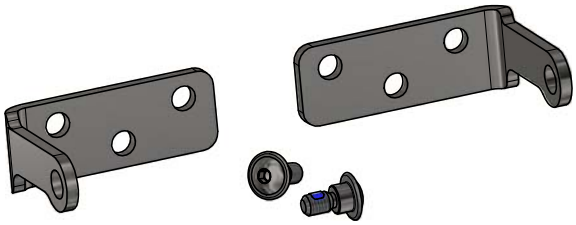
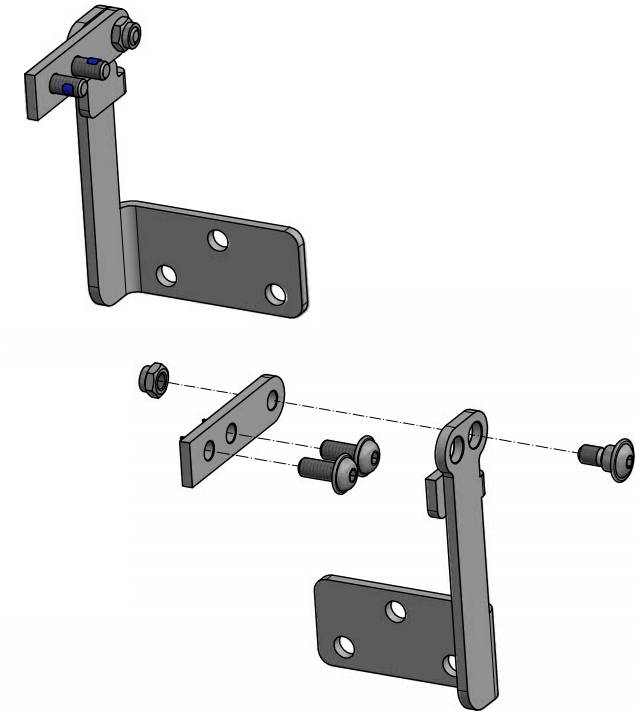


Figure 8: Lower bracket – K-K30-FLEX



4. EA-K-30 – Functions

24 VDC

4.1 Soft-close range

4.1.1 Speed reduction

The actuator has a factory-activated speed reduction function, the last 75 mm before reaching the “CLOSED” end position (see Table 1: “Electrical properties” on page 24 and Figure 10: “Configurable ranges” on page 8).

ATTENTION

In order to avoid damage to the window and actuator or injuries to individuals, the cut-off current limit is automatically reduced to **0.3 A** when the speed reduction function is activated; this corresponds to a force of approx. 150 N. The cut-off current limit can be increased to a maximum of 0.5 A (300 N) via SIMON LINK when the speed reduction function is activated.

4.1.2 Current reduction

After reaching the last 75 mm before end position "CLOSED", the soft-close current becomes active, 0.3 A by default. This value can be increased to 1.0 A via SIMON LINK (when the speed reduction function is deactivated).

4.2 SIMON LINK

INFORMATION

You need a service cable (USB-300) and the associated software (from version 2.0.0) for configuration of the actuator via SIMON LINK.

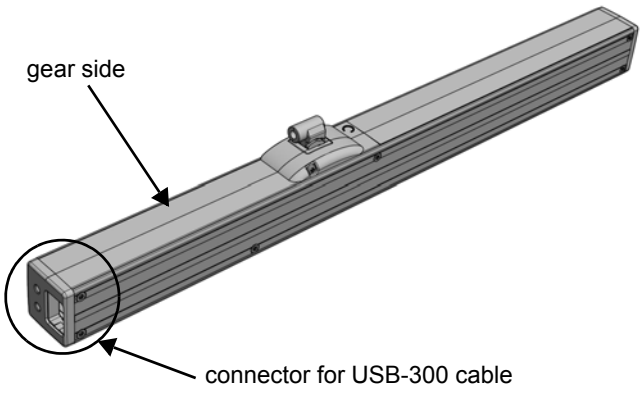
For more information visit

short.simon-protec.com/slen

The actuator has a configuration interface (gear side) on which the following functions can be performed via SIMON LINK:

- The stroke can be electronically limited from 100 mm on.
- Forces can be set in the “OPEN” and “CLOSED” direction.
- The soft-close current can be adjusted.
- The speed reduction before the “CLOSED” end position for the soft-close range can be set (see Figure 10: “Configurable ranges” on page 8).
- The switching behaviour of the dry contact can be set.
- A detailed status message from the actuator and data logger can be read.

Figure 9: Configuration interface for SIMON LINK



ATTENTION

The cut-off of the actuator in the configuration is provided by the USB-300 cable.

There must be **no** external power supply at this point in time (EA-K-30/xxx-T-DA on the chain side).

EA230-K-30 – Functions

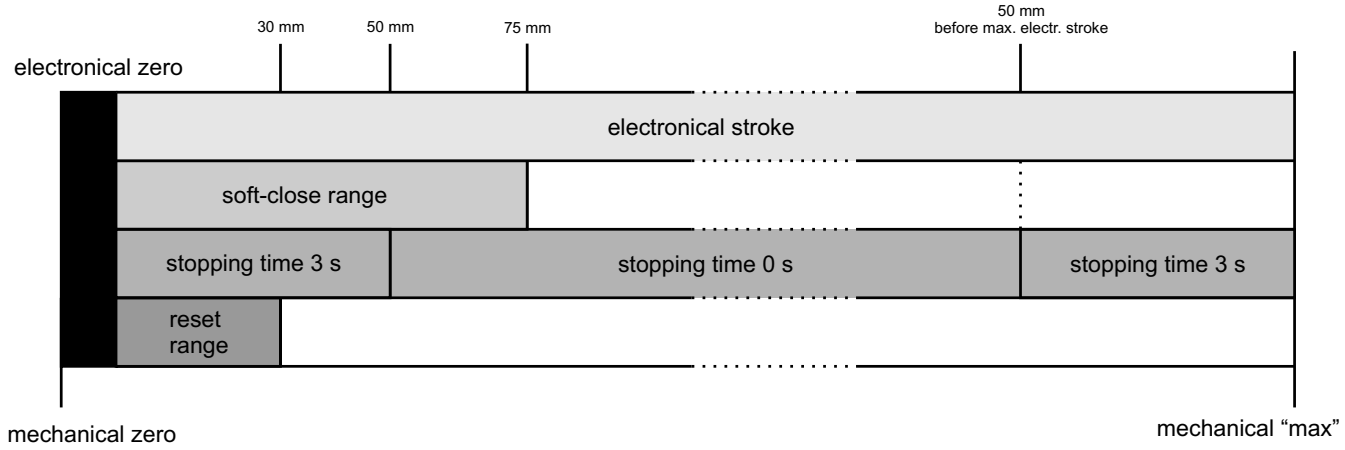
4.3 Configurable ranges

Soft-close range: moves with the electronic zero point, the soft-close current I_{SC} and the speed reduction can be configured via SIMON LINK.

Reset range: the electronic zero point is reset when switching off via load in direction of the “CLOSED” driving direction within the first 30 mm before the “CLOSED” end position.

Stroke: electronic stroke limitation depending on programming.

Figure 10: Configurable ranges



5. EA230-K-30 – Functions

230 VAC

5.1 End position cut-off while closing

The end position cut-off while closing occurs automatically (load depending) and is not programmable. The electronic switches off the actuator, when reaching a threshold value, if, for example, the window is completely closed and moved into the gaskets.
After the window is closed each time or the cut-off current has been exceeded, the chain is extended slightly again to protect the gaskets and the window.

5.2 End position cut-off while opening

The cut-off in the OPEN end position occurs automatically and can be set with the DIP switches 1-2.

A teach-in run must be performed after setting the DIP switches (three switch combinations for the STROKE setting).

5.3 DIP switches

ATTENTION

The actuator must be de-energised before the DIP switches can be changed. After setting the DIP switches, a pause of approx. 5 seconds must be observed before the drive can be supplied with power again.

(See Figure 2: “EA230-K-30/xxx(-S) chain actuator” on page 5.)

DIP switch 1	DIP switch 2	Function
ON	ON	Maximum stroke (delivery condition)
OFF	ON	STROKE reduced by 100 mm
ON	OFF	STROKE reduced by 200 mm
OFF	OFF	RESET (See chapter 5.4 “RESET” on page 9)

EA230-K-30 – Functions

5.4 RESET

ATTENTION

The chain end piece must not be connected to the bracket when performing the RESET process.

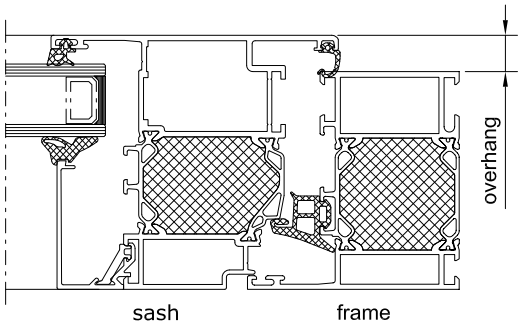
ATTENTION

The communication cables of the actuators must be connected to each other during the RESET process in synchronous mode (red with red and white with white).

- ➢ If necessary, release the connection between the chain end piece and the top bracket.
- ➢ Drive the actuator in the OPEN direction and extend the chain by approx. 10 cm.
- ➢ Disconnect the actuator from the power supply.
- ➢ Check the communication cables in the case of actuators connected in parallel (red/white).
- ➢ Set both of the DIP switches 1 and 2 to OFF.
- ➢ Wait for five seconds.
- ➢ Drive the actuator in the OPEN direction.
- ➘ The RESET procedure is performed, the orange LED lights up continuously during this procedure. The actuator immediately moves in the CLOSED direction up to the end position, then approx. 5 cm back in OPEN direction.
- ➘ The orange LED flashes continuously after performing the RESET process correctly.
- ➢ Disconnect the actuator from the power supply again.
- ➢ Set the DIP switches 1 and 2 to the desired setting.
- ➢ Wait for five seconds.
- ➢ Connect the chain end piece to the top bracket again.
- ➢ Let the actuator perform a teach-in run
  (see chapter 5.6 “Performing a teach-in run” on page 9).

5.5 Teach-in run

The actuators detect and store the distance between sash and frame fully automatically during operation (when the window is fully closed). The dimensional difference between wing and frame is called overhang.



This teach-in takes place when the actuator fully closes the window for the first time after a RESET.

5.6 Performing a teach-in run

ATTENTION

After RESET, e.g. after a stroke setting via the DIP switches or after installation, you must perform a teach-in run.

- ➢ Open the actuator slightly and then drive it in the CLOSED direction and let it cut off in the end position.
- ➘ If the teach-in process has worked correctly, the actuator signals this by the flashing of the orange LED (next to the DIP switches) for approx. 3 seconds.
- ➢ If the orange LED does not flash as described, a RESET must initially be performed (see chapter 5.4 “RESET“).

EA230-K-30 – Functions

5.7 LED displays

The EA230-K-30 has three status LEDs (see Figure 2: “EA230-K-30/xxx(-S) chain actuator” on page 5) with the following meanings.

Red LED		
Number of flashes	**Type of error**	**Possible solution**
1	**Overload cut-off**	• Check the drives for correct installation (mechanical/electrical); • Is the force of the installed actuators adequate.
2	**Communication error (Synchro)** • Perhaps there are actuators connected that do not have a common RESET.	• Check the red/white connection cable; • Perform a RESET procedure for the interconnected actuators.
3	—	—
4	**Inconsistent DIP switch settings (Synchro)** • The DIP switch settings of the interconnected actuators do not match.	• Check and correct the DIP switch settings.
5	**Error during the RESET procedure**	• Repeat the RESET procedure.
6	**Cabling error (Synchro)** • The power input of the the interconnected actuators does not match.	• Check and correct the connection of the actuators.
7	**Addressing error (Synchro)** • The assignment of the internal addresses of interconnected actuators has failed.	• Perform a RESET procedure.
8	**Power supply error** • The supply voltage is not within the permissible range or is not stable.	• Check the electrical connection; • Check the supply voltage.
9	**Chain alignment error (Synchro)** • The chain position (STROKE) of the interconnected actuators is not within the permissible range	• Perform a RESET procedure.
10	**Memory error (Synchro)** • The storage process in the internal memory was not successful.	• Repeat the RESET procedure.
11	**Connection error** • A RESET procedure is performed at the same time in the case of several non-synchronous actuators.	• Perform the RESET procedures individually.

Green LED	
LED status	**Meaning**
Continuously lighting	The voltage supply to the actuator is correct. The actuator is closed correctly and the storage of the STROKES has been performed successfully.
Flashing	The voltage supply to the actuator is correct. The set STROKE has been reached. The number of flashes indicates the internal address to which the actuator has been assigned during the RESET procedure in the case of synchronous actuators.

Mounting — Mechanical connection

Orange LED	
LED status	**Meaning**
Continuously lighting duration < 0.5 sec.	Write process in the internal memory of the actuator is running.
Continuously lighting	RESET procedure is running.
Continuously lighting for 3 sec.	Teach-in procedure of the teach-in run has been completed correctly.
Flashing	RESET procedure completed correctly. The number of flashes indicates the internal address to which the actuator has been assigned during the RESET procedure in the case of synchronous actuators.

6. Mounting

See supplementary sheet “Safety Instructions and Warranty Conditions”!

INFORMATION

Further information on mounting can be found in the **guidance sheet** KB.01 “Power-operated windows” issued by the VFF (window, door and facade manufacturers)
www.eurowindoor.eu/news-and-proceeding/position-papers-and-publications/

DANGER

The system must be mounted by specialist personnel (qualified electricians) only. All relevant national safety regulations and directives apply to mounting, installation and commissioning.

Improper mounting can create a risk of electric shock. All safety regulations must be complied with. Follow the current assembly instructions. Incorrect mounting can lead to serious injury.

6.1 Mechanical connection

You need different combinations of brackets for mounting the actuator depending on the mounting position and the shape of the window or building cover; the brackets (see page 6), with the exception of the top bracket K-K50-OK, must be ordered separately.

ATTENTION

Please note the static properties of the window frame when mounting the actuator.

Use suitable fixings depending on the window material on which the actuator is to be mounted. (The fixings are not included in the delivery!)

➢ In order to ensure that the window is sealed securely, check that the chain of the actuator is extended slightly before mounting the actuator. However, the chain should not extend more than 30 mm after mounting the actuator otherwise the electronic zero point reset can no longer be guaranteed (see Figure 10: “Configurable ranges” on page 8).

Mounting — Mechanical connection

6.1.1 Mounting brackets

- Determine the mounting position of the brackets so that the chain of the actuator will not collide with the (window/wing) frame in any opening position of the window and the position of the chain is in the centre of the window; centre line markings are provided on the K-K-50-OK for this purpose (see Figure 14 on page 13). In parallel/duo operation the actuators should be positioned in such a way that the chains are located on 1/4 of the edges (left/right) of the window sash.
- Secure the brackets with screws that are suitable for the respective window or the desired surface (screws/fixings are **not** included in the delivery), see Figures page 15 and page 16.
- Insert the actuator in the support brackets and secure it with the two self-locking screws.

Figure 11: K-K30-K

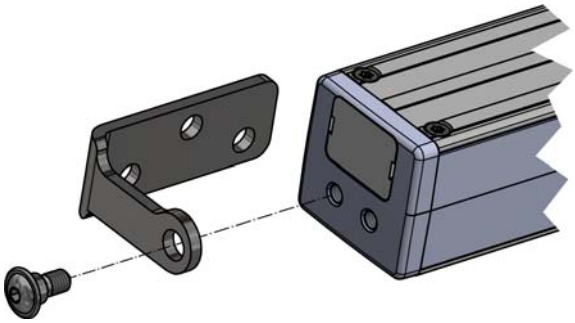


Figure 12: K-K30-A

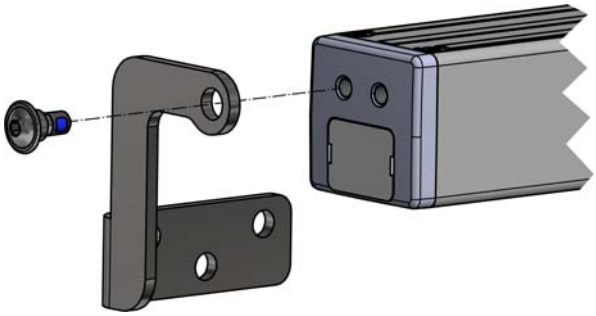
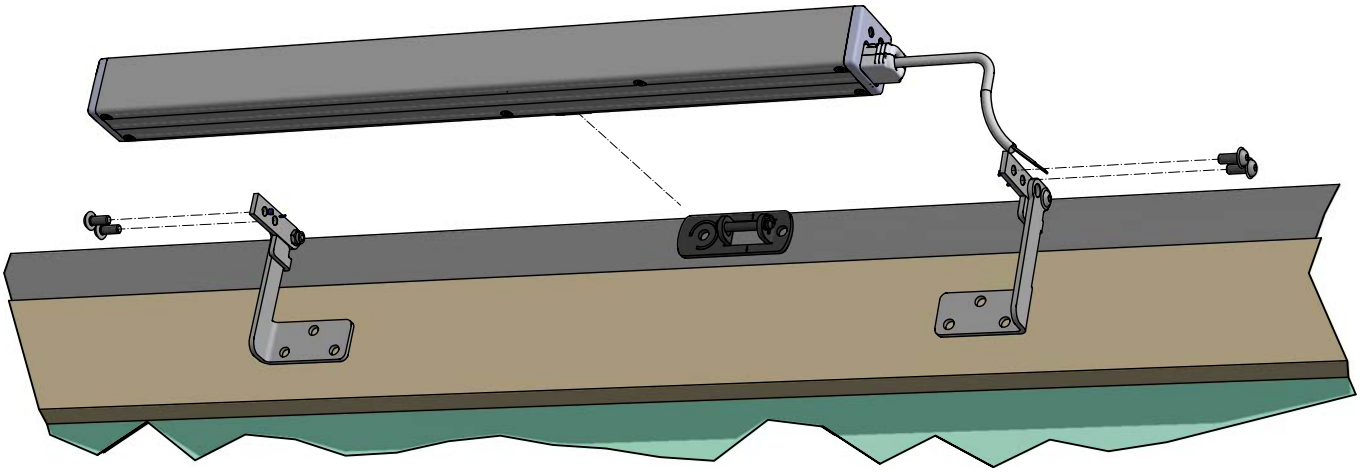


Figure 13: K-K30-FLEX



Mounting — Mechanical connection

6.1.2 Top bracket K-K50-OK

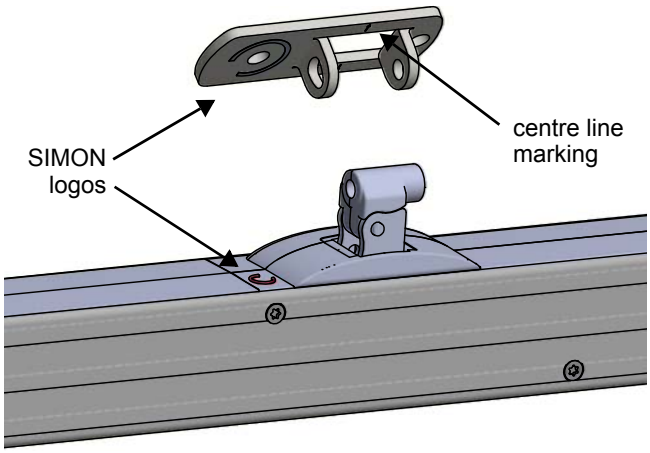
ATTENTION

The top bracket must always be aligned in such a way that the SIMON logo on the bracket is on the same side of the chain as the SIMON logo on the chain exit.

INFORMATION

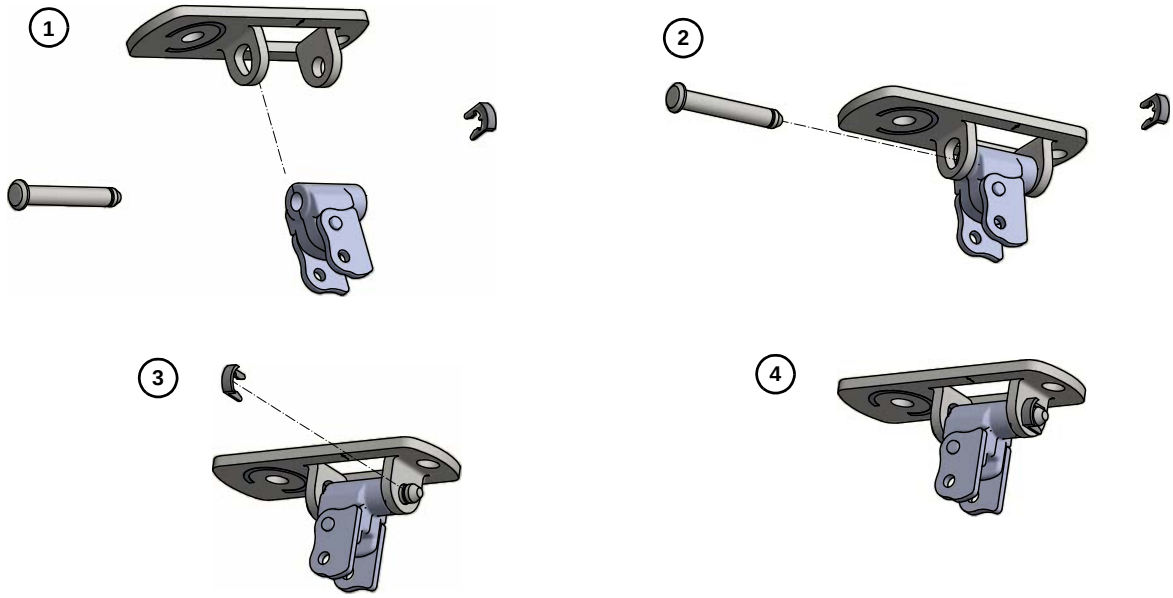
Centre line marking **(see Figure 14)** for aligning the bracket on the middle of the wing (single variant) or at a distance of 1/4 away from the edge (left/right) in parallel operation.

Figure 14



➢ Extend the chain approx. 10 cm and connect the chain end piece to the K-K50-OK (1). To do this, insert the fixing bolt from the side with the logo (2) and secure it on the other side with the retaining ring (3).

Figure 15



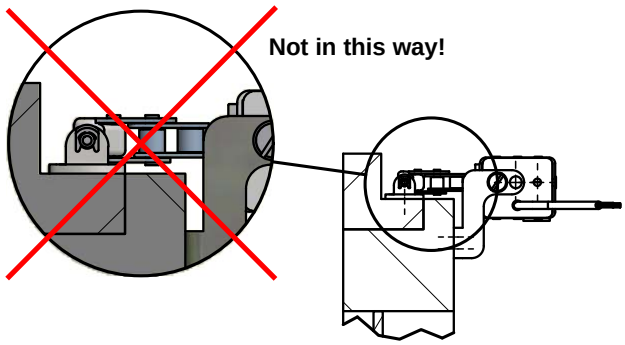
ATTENTION

The top bracket K-K50-OK must not be mounted turned, otherwise its function can no longer be fully guaranteed (see Figure 16: “Incorrect positioning of the K-K50-OK”).

INFORMATION

With the help of the alternative upper bracket K-K-OK-SK, turned mounting with lateral force flow is possible (see 6.1.4 “Top bracket K-K-OK-SK” on page 15).

Figure 16: Incorrect positioning of the K-K50-OK



Mounting — Mechanical connection

6.1.3 Inward opening bracket K-K30-AKI

ATTENTION

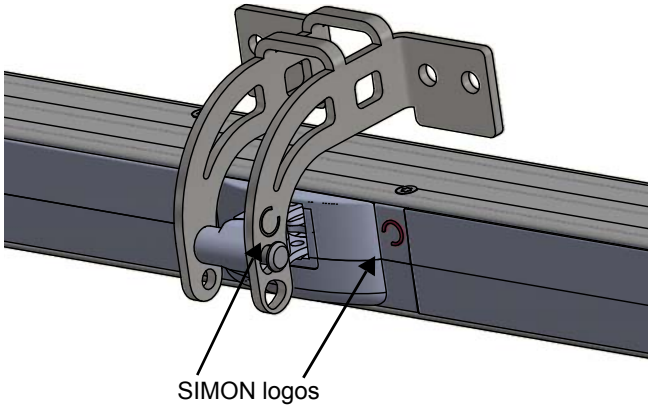
In the case of a compression force application (e.g. top hung window),the mounting bracket must always be aligned so that the SIMON logo of the bracket is on the same side as the SIMON logo of the chain outlet.

INFORMATION

Window heights in a ratio of approx. 2 : 1 to the actuator stroke (opening width) are possible for the inner hole pairs (for the fixing bolt) depending on the quality and shape of the window sash. This ratio changes to approx. 3 : 2 for the outer hole pair.

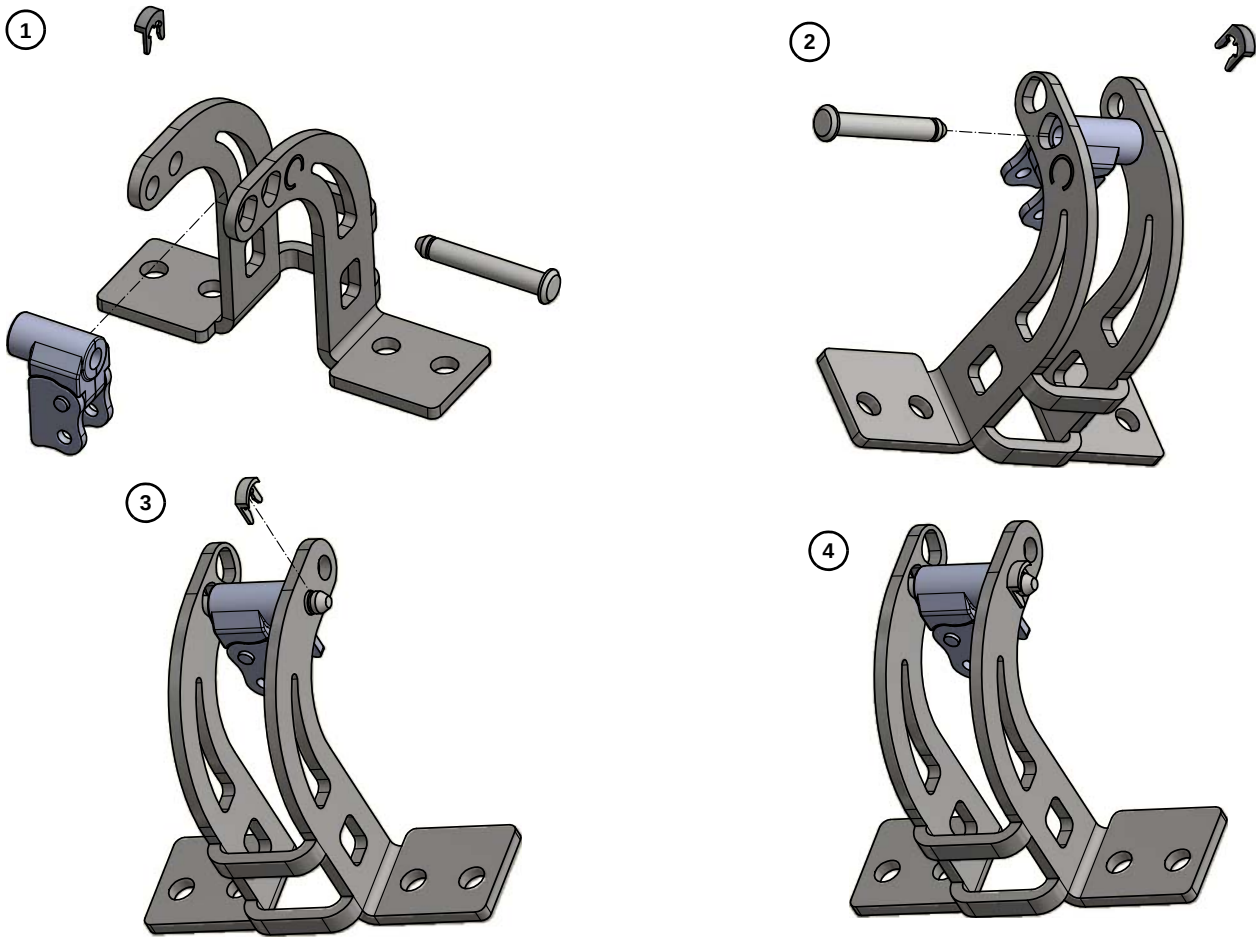
These are only approximate guideline values and must be clarified before any mounting in case of doubt!

Figure 17



➢ Extend the chain approx. 10 cm and connect the chain end piece to the K-K30-AKI (1). To do this, insert the fixing bolt from the side with the logo (2) and secure it on the other side with the retaining ring (3).

Figure 18



Mounting — Mechanical connection

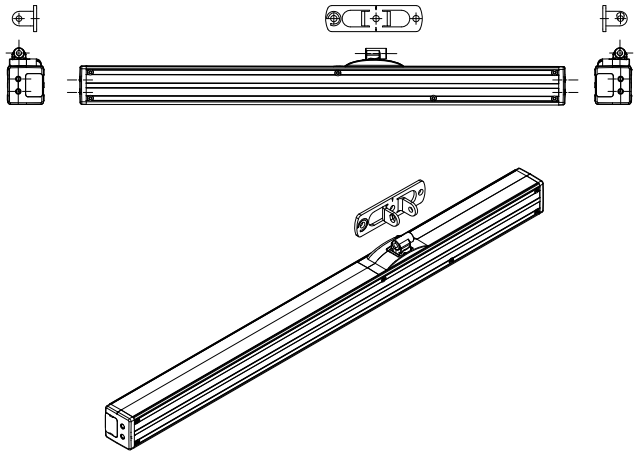
6.1.4 Top bracket K-K-OK-SK

ATTENTION

The top bracket must always be aligned in such a way that the SIMON logo on the bracket is on the same side of the chain as the SIMON logo on the chain exit in the case of top hung wing applications.

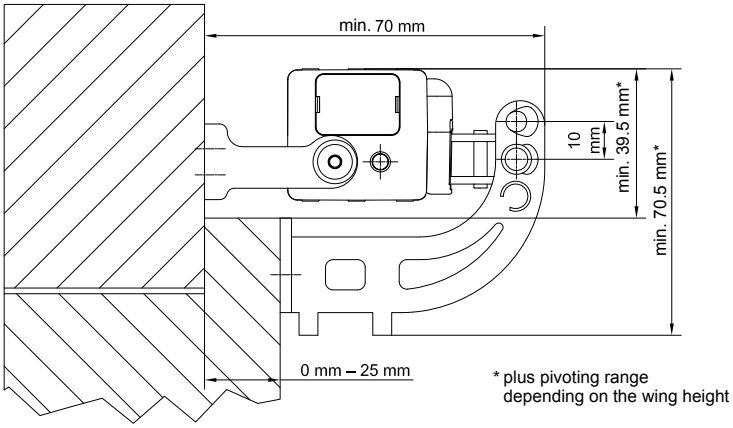
Note the resulting alignment of the actuator **(see Figure 19)**. The combination of actuator and bracket must only be used in this alignment to one another. Any other alignment will lead to the loss of the function of the bracket.

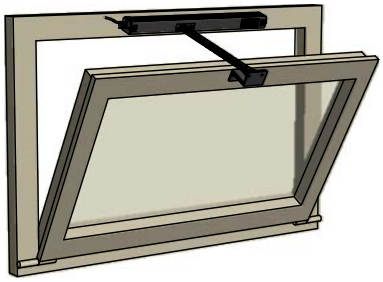
Figure 19



6.1.5 Inward opening top/bottom hung window, mounting on a blind frame

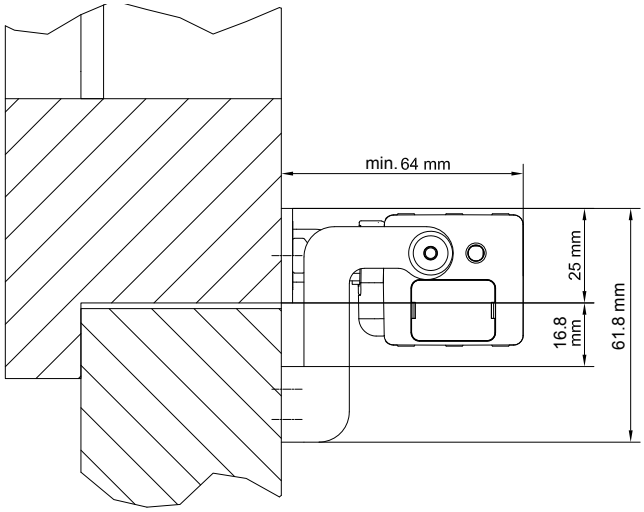
Figure 20: Inward opening bottom hung window

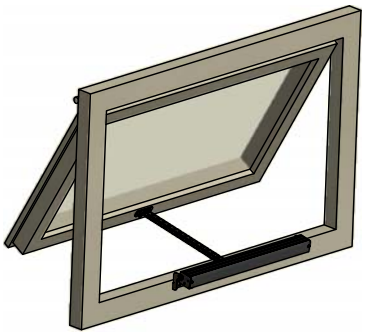




6.1.6 Outward opening top/bottom hung window, mounting on a blind frame

Figure 21: Outward opening top hung window

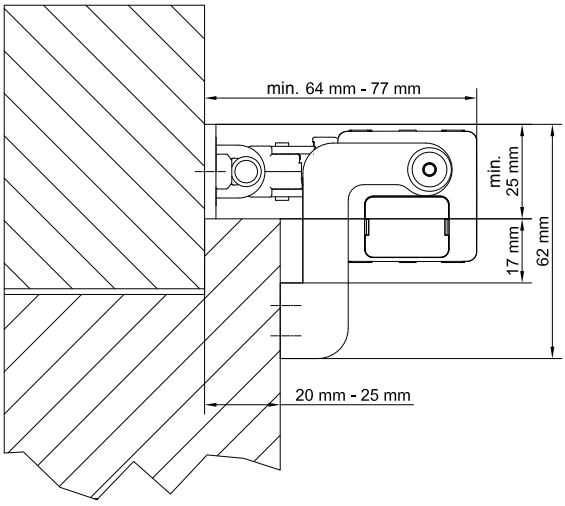


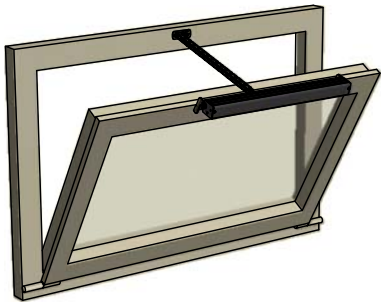


Mounting — Mechanical connection

6.1.7 Inward opening top/bottom hung window, actuator mounted on the window sash

Figure 22: Inward opening bottom hung window, at the window sash



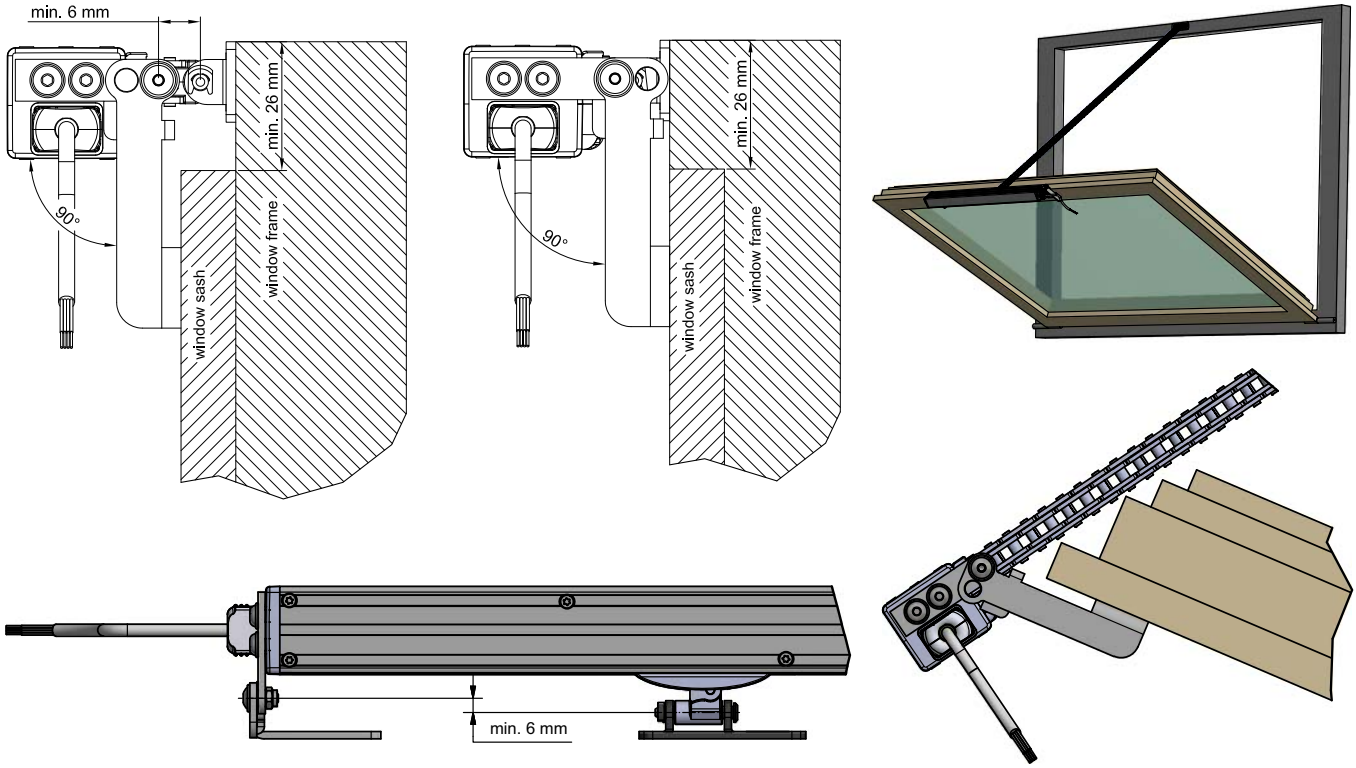


ATTENTION

Position the actuator so that the chain is as far as possible away from the window sash in order to avoid damage to the window and the chain while opening it.

6.1.8 Inward opening bottom hung window, actuator K-K30-FLEX mounted on the window sash

Figure 23



Mounting — Mechanical connection

6.1.9 Rotary window

ATTENTION

The chain actuator EA-K-30/EA230-K-30 must only be mounted upright (with the actuator side at the top) on **DIN right** windows!

Figure 24: Mounted on a blind frame

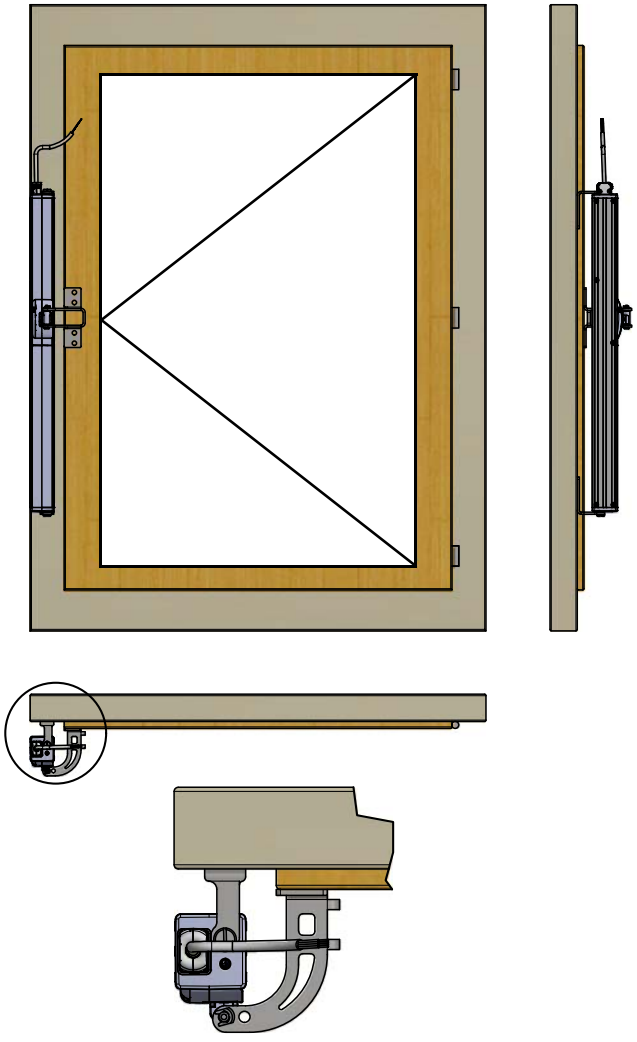
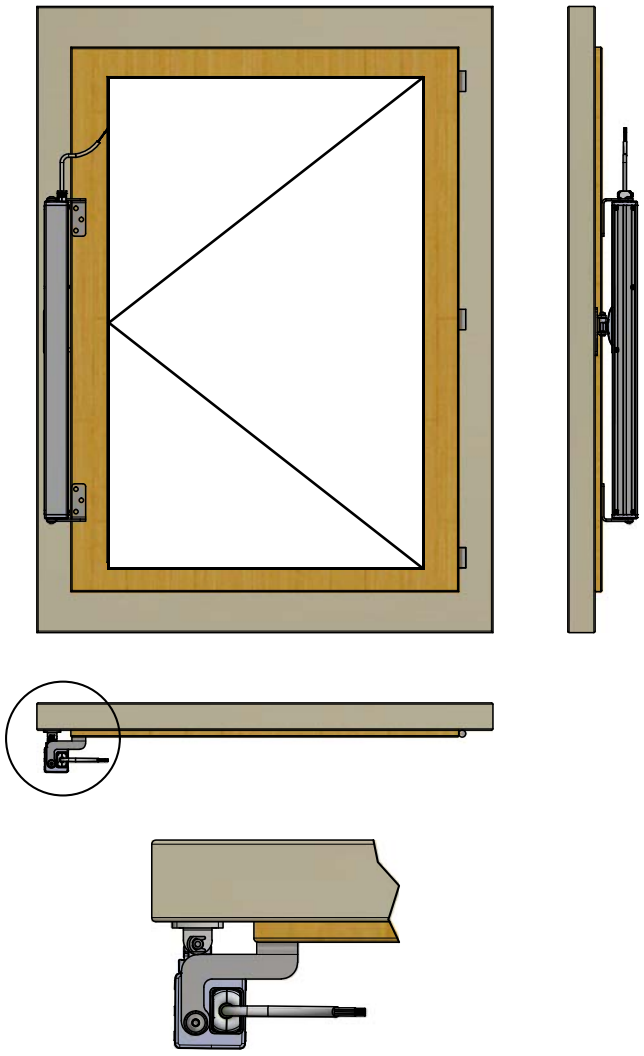
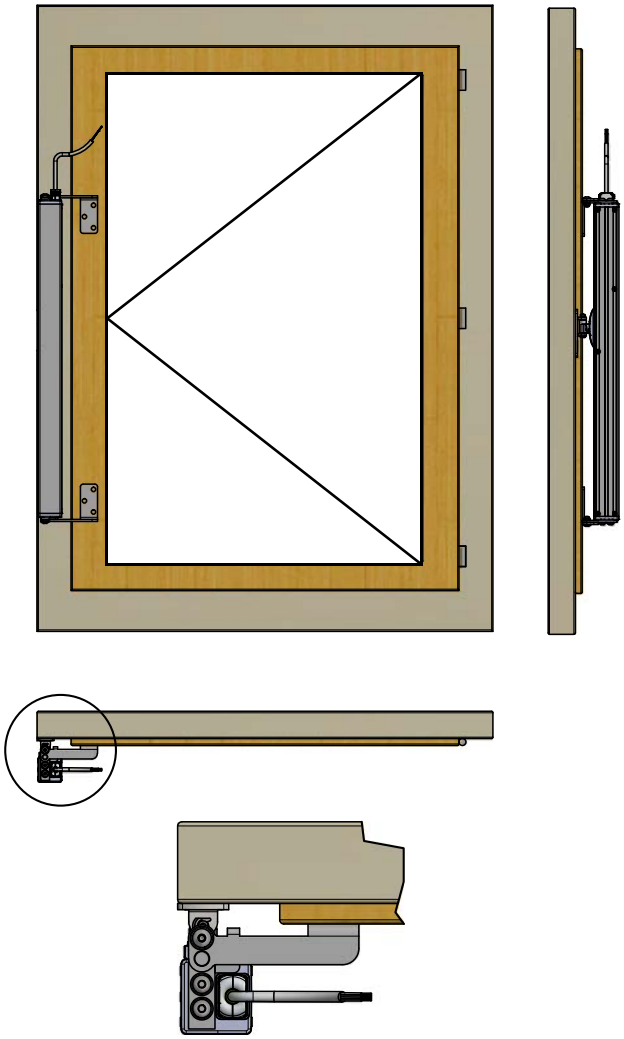


Figure 25: Mounted on the window sash



Mounting — Mechanical connection

Figure 26: K-K30-FLEX mounted on the window sash



6.1.10 Calculating forces/stroke

This calculation is only valid for wall windows mounted vertically. A detailed calculation must be made for all other mounting positions, which we will be pleased to assist you with.

F := the force of the actuator [N]
S := the stroke of the actuator [mm]
H := the height of the window sash [mm]
W := the weight of the window sash [kg]

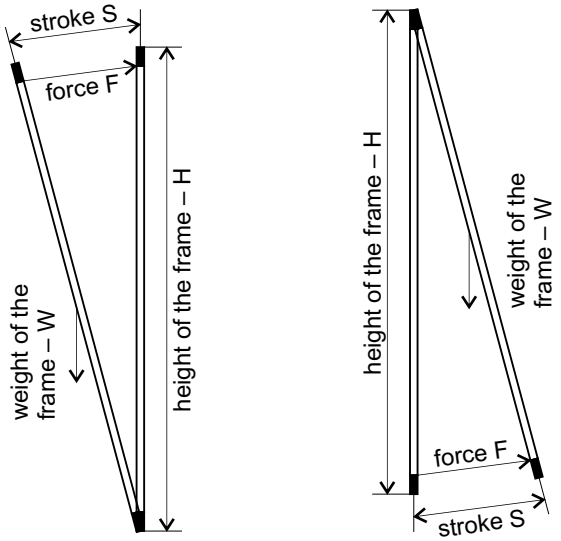
Required actuator force for the specified stroke:

F = (W / 2) x (S / H) x 10
= (W x S x 5) / H

Maximum possible actuator stroke for the specified force:

S = (2 x F x H) / (W x 10)
= (F x H) / (W x 5)

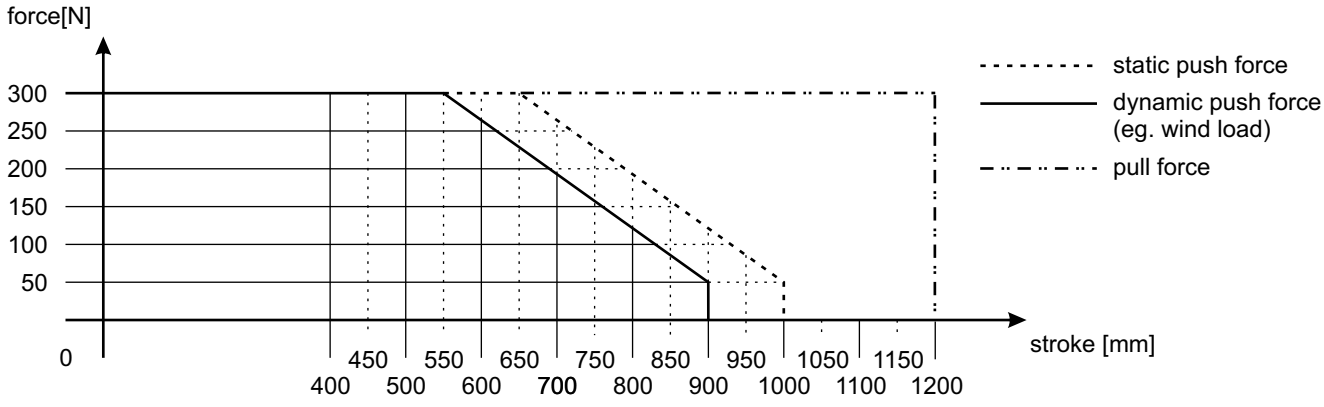
Figure 27



bottom hung window | top hung window

6.1.11 Permissible pushing force on the chain

Figure 28



Mounting — EA-K-30 Electrical connection

6.2 EA-K-30 Electrical connection

24 VDC

ATTENTION

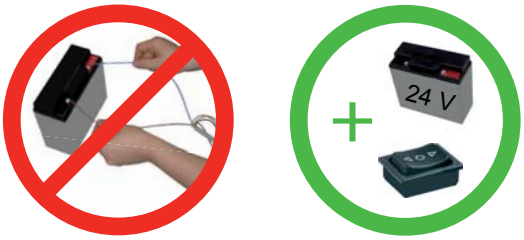
Make sure that the loops of the supply cable are adequately sized on moving parts, taking account of the bending radii, in order to prevent the pinching or tearing of the supply cable.

DANGER

Connect to the power supply (24 VDC) only after checking the entire system.

INFORMATION

We recommend performing a trial run with a suitable mobile power supply (incl. a control device, not just a battery). This means that it is quick and easy to respond to malfunctions.



ATTENTION

Do not earth the electrical connection.

The actuator must only be operated with a 24 VDC safety extra-low voltage.

Unused cores must be insulated.

6.2.1 Supply

The power supply must be designed for the actuator. The voltage and current must correspond with the information on the type plate. The supply cabling must be checked before the initial commissioning, the cable cross section in particular must be taken into account. The valid regulations regarding minimum values for the cable sizing must be observed! Sample calculation (this is only an approximate value and does not replace an exact calculation):

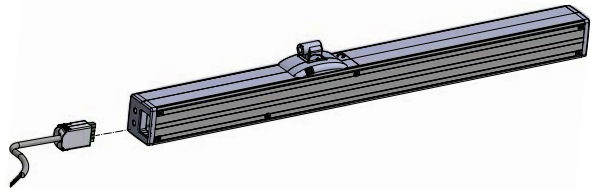
INFORMATION

Size information for actuator cable (empirical formula):

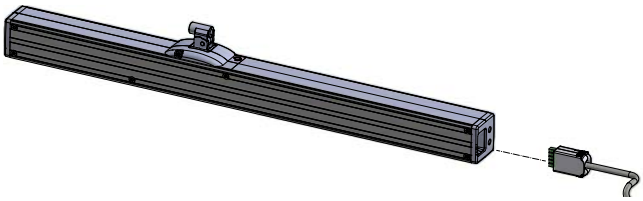
Cable cross section [mm²] = single cable length [m]
x number of actuators
x current consumption per actuator [A]
/ 73.

The DIN VDE 0100 and DIN VDE 0298 regulations continue to apply.

The power is supplied to the EA-K-30/xxx-T on the gear side.



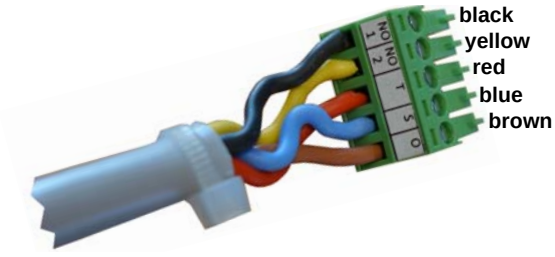
The power can also be supplied via the chain side on the EA-K-30/xxx-T-DA (double-sided connection). The supply voltage is relayed internally to the opposite connection point, this can then be used to connect another actuator (see chapter 6.2.8 “DUO operation / parallel connection” on page 21).



6.2.2 Supply / connection cable

It is possible to supply power to the second actuator directly through the first actuator (DA variant) in tandem / duo operation. The supply cable can therefore be changed into a connection cable.

- Cut the second supply cable to the desired length (plus approx. 3 cm).
- Strip the cable over a length of 18 mm and remove 4 mm of insulation from the 5 cores.
- Screw the 5 cores into the connector and secure the cable with a cable binder (e.g. 100 x 2.5) as traction relief.



Mounting — EA-K-30 Electrical connection

➢ Place the green connector and the cable binder in the upper shell of the connector housing and screw the top shell to the bottom shell.

6.2.3 Feedback signal – “F” contact

It is possible to create a classic “F” contact via the dry contact by connecting the yellow core (NO2) to the blue (S) core (see chapter 6.2.7 “Single connection – “F” contact” on page 20). The alarm triggering of the contact must therefore be activated in the “OPEN” and “CLOSED” end position via SIMON LINK.

6.2.4 Feedback signal – dry contact

The normally open contact (NO1, NO2) is activated in the CLOSED driving direction when the actuator is cut off in the “CLOSED” end position, the message is stroke-dependent and can be evaluated as a “CLOSED message”.
Other switching settings, such as in “OPEN” end position, can be set via SIMON LINK.

INFORMATION

The output of the dry contact occurs only on the gear side of the actuator (see Figure 9: “Configuration interface for SIMON LINK” on page 7).

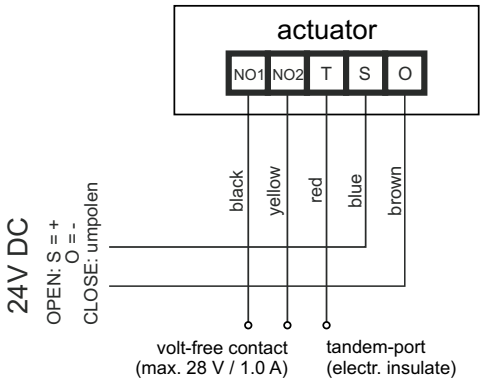
6.2.5 Feedback signal – tandem port

ATTENTION

Only a cut-off signal (e.g. overload cut-off) is switched over to the actuator connected in parallel. Monitoring of the cables or function of the actuators connected in parallel does not take place and therefore also does not lead to the cut-off of the actuators connected in parallel.

6.2.6 Single connection – dry contact

➢ Connect the cables according to the connection plan.

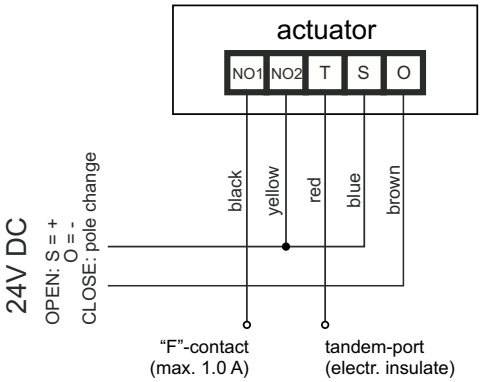


ATTENTION

When not in use, the red wire (T) must be electrically insulated. The red core must only be connected to the red core of an actuator connected in parallel.

6.2.7 Single connection – “F” contact

➢ Connect the cables according to the connection plan.



ATTENTION

When not in use, the red wire (T) must be electrically insulated. The red core must only be connected to the red core of an actuator connected in parallel.

The “F” contact (black) must not be earthed or clamped in parallel!

Mounting — EA-K-30 Electrical connection

6.2.8 DUO operation / parallel connection

A maximum of **2 actuators** can be operated in parallel in **DUO operation** (via a connection cable) with the associated tandem.

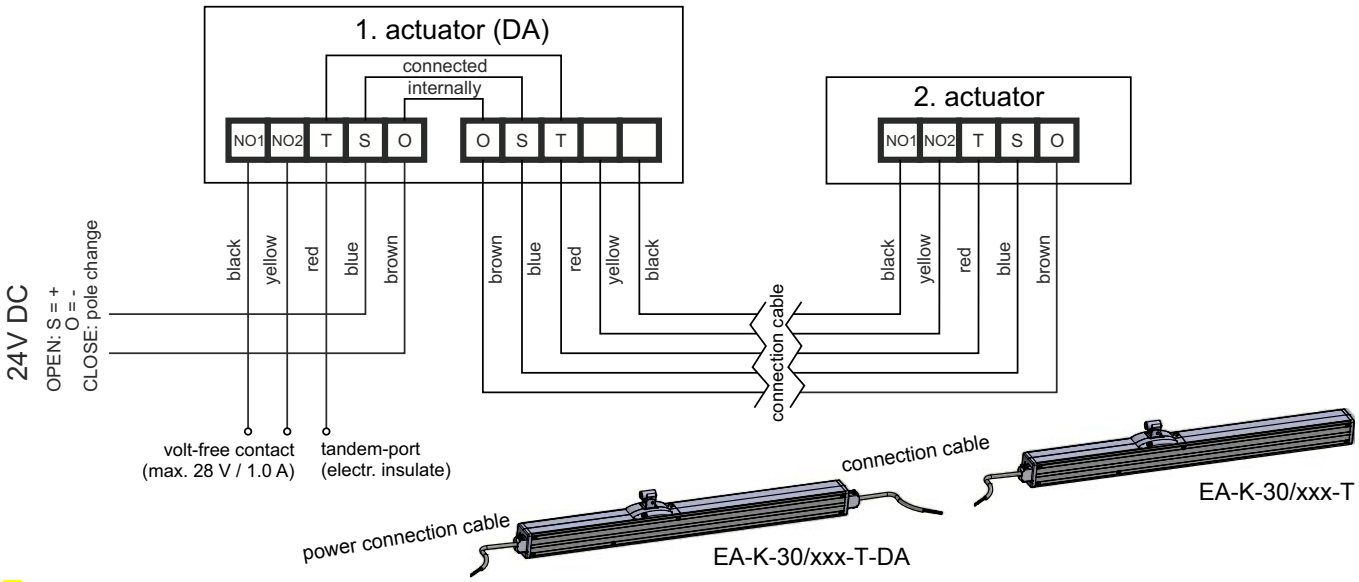
A maximum of **4 actuators** can be operated **in parallel** with the associated tandem (e.g. on large wings).

If an actuator stops due to overloading, the actuator connected in parallel is also stopped after a predetermined run-on time (see Table 1: “Electrical properties” on page 24 and Figure 10: “Configurable ranges” on page 8).

ATTENTION

The actuators run at the same time, the power supply and the cable dimensions must be adapted to the total current of the system.

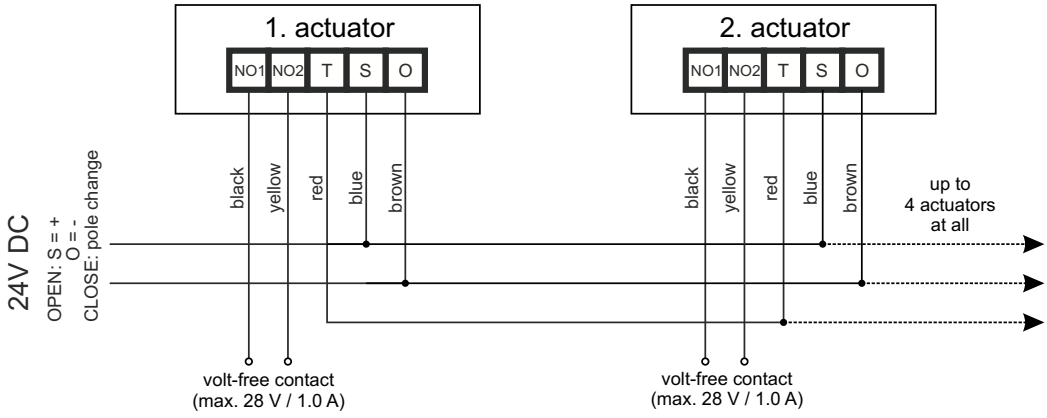
➢ **DUO operation:** Connect the cables according to the connection plan.



ATTENTION

Only connect 2 actuators to each other. Maximum cable length of 10 m between the actuators.

➢ **Parallel connection:** Connect the cables according to the connection plan.



ATTENTION

Only connect 4 actuators in parallel to each other. Maximum cable length of 10 m between two actuators.

Mounting — EA230-K-30 Electrical connection

6.3 EA230-K-30 Electrical connection

230 VAC

DANGER

Please note

- The VDE 0833 standard for hazard alert systems,
- The VDE 100 standard for electrical systems,
- The local fire department regulations,
- The energy supply company regulations for the mains connection,
- And the DGUV V3/V3DA/V4 regulations and the workplace regulation ASR A 1.6.

All the relevant national safety regulations and directives apply when installing, commissioning and putting the actuator into operation outside the country of manufacture (Germany).

DANGER

It is important to observe the five safety rules in accordance with EN 50110-1 or DIN VDE 0105-100.

1. Disconnect completely!
2. Secure against reconnection!
3. Verify that the installation is dead!
4. Carry out earthing and short circuiting!
5. Provide protection from adjacent live parts!

ATTENTION

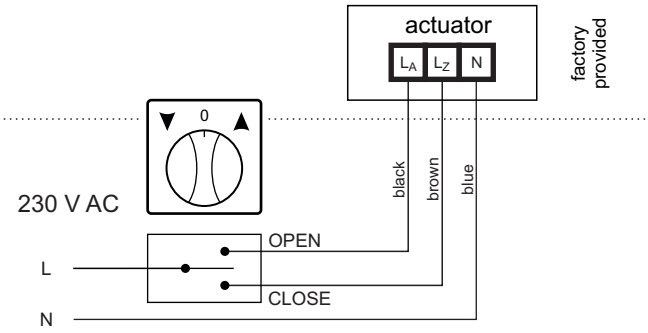
Make sure that the loops of the supply cable are adequately sized on moving parts, taking account of the bending radii, in order to prevent the pinching or tearing of the supply cable.

ATTENTION

Never supply 230 V AC to L_A (OPEN) and L_Z (CLOSE) at the same time and observe the prescribed pause time of 300 ms for the switchover. Any infringement will lead to the destruction of the actuator.

6.4 Single connection – standard variant (EA230-K-30/xxx)

➢ Connect the cables according to the connection plan.



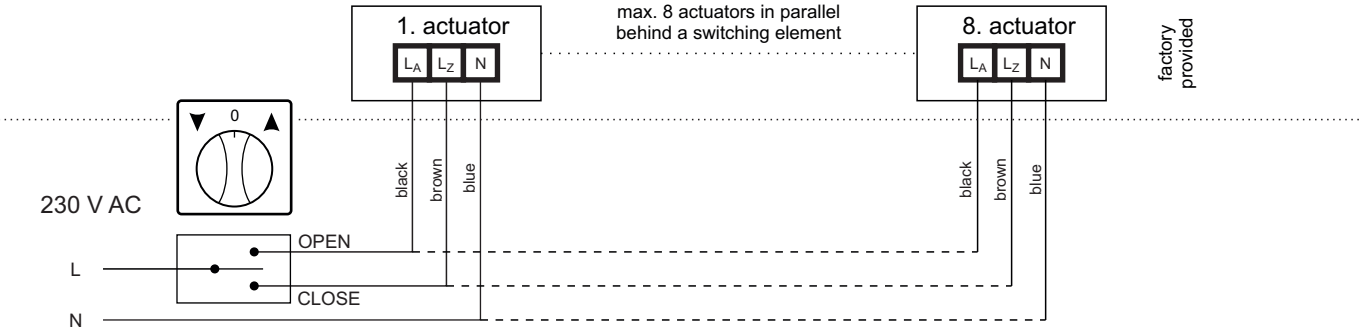
Mounting — EA230-K-30 Electrical connection

6.4.1 Parallel connection (EA230-K-30 / xxx)

ATTENTION

Connect a maximum of 8 actuators in parallel to a switching element.

➢ Connect the cables according to the connection plan.

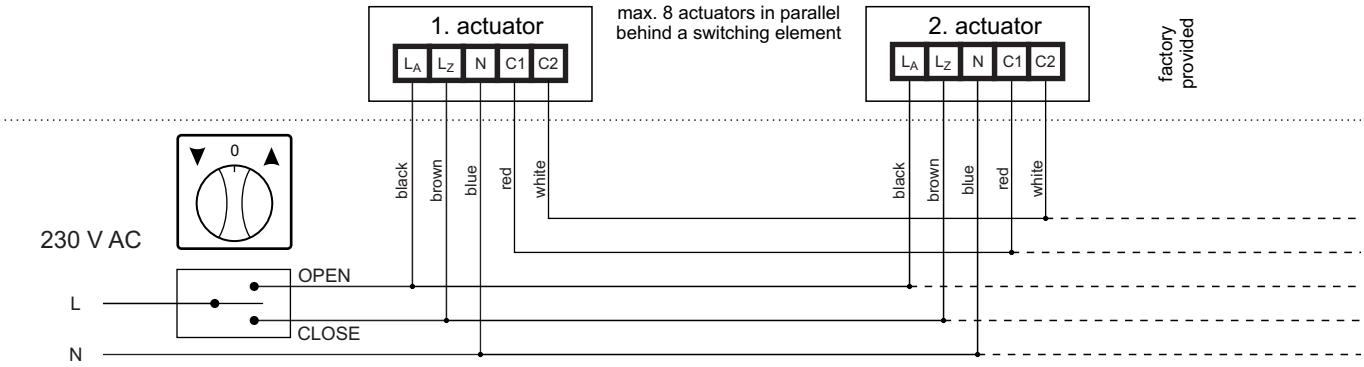


6.4.2 Synchronous connection (EA230-K-30/xxx-S)

ATTENTION

Connect a maximum of 8 actuators in parallel to a switching element.

➢ Connect the cables according to the connection plan.



7. EA-K-30 – Technical Data

24 VDC

Table 1: Electrical properties

Actuator type/version	EA-K-30
Rated voltage	24 VDC
Permissible rated voltage range	24 VDC -15%; +15%
Ripple of the rated voltage Vpp	max. 500 mV
Undervoltage detection	yes
Nominal current[1]	1.0 A
Maximum starting current in “OPEN” and “CLOSED” direction	1.1 A
Maximum cut-off current in “OPEN” and “CLOSED” direction, after start-up[2]	1.1 A
soft-close current[3]	0.3 A
Current consumption after cut-off (closed current)	40 mA
Cut-off via	Integrated electronic overload cut-off
Maximum permissible number of actuator units connected in parallel in tandem operation[4]	2 in DUO operation 4 in parallel operation (see chapter 6.2 “EA-K-30 Electrical connection” on page 19)
Cable length between two actuators in tandem operation	max. 10 m
Tandem run-on time[5]	3 s
Pulse time[6]	300 ms
Protection class	III

1. Maximum current consumption at nominal load
2. Can be configured via SIMON LINK.
3. Soft-close range: last 75 mm before reaching the “CLOSED” end position, soft-close current can be configured via SIMON LINK – current range: 0.3 A – 1,0 A; when the speed reduction function is activated 0.3 A – 0.5 A.
4. With a common cut-off function (tandem function).
5. The tandem run-on time indicates how long the actuator connected in parallel continues to run after cutting off the triggering actuator. The run-on time is 3 s in each case 50 mm before reaching the end position and 0 s in the range between (see Figure 10: “Configurable ranges” on page 8).
6. The pulse time indicates how long the internal or external overload cut-off provides the cut-off signal at the output.

Table 2: Dry contact (NO1, NO2)

Actuator type/version	EA-K-30
Rated voltage	max. 28 V DC
Contact load relay	1.0 A

The normally open contact (NO) is only activated in the “CLOSED” end position when the actuator is cut off. This means that the message is stroke-dependent and can be evaluated as a “CLOSED message”. Activation of the actuator at the “OPEN” end position can also be configured via SIMON LINK, as well as other settings.

ATTENTION

The maximum load capacity of the contact must not be exceeded (see Table 2: “Dry contact (NO1, NO2)”).

INFORMATION

The output of the dry contact occurs only on the gear side of the actuator (see Figure 1: “EA-K-30/xxx-T(-DA) chain actuator” on page 5)!

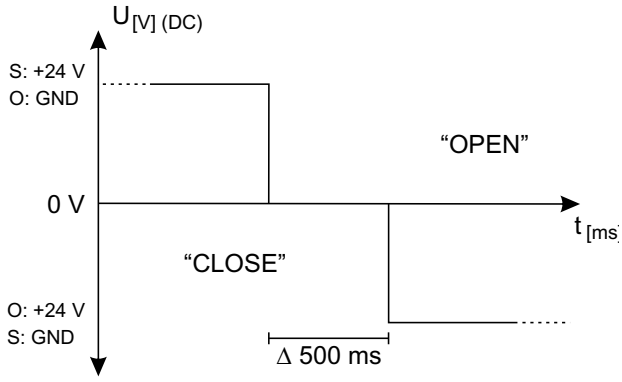
Table 3: Connection and operation

Actuator type/version	EA-K-30
Silicone connection cable with connector	5 x 0.75 mm²
Supply cable length[1]	3 m
Pause time at a change in the driving direction[2]	at least 500 ms
Switch-on duration	S2 ED 30% (short-time duty 3 of 10 minutes)
Stability of opening and closing cycles	11000
Sound level[3]	≤ 55 dB (A)
Re-triggering in accordance with prEN 12101-9	permitted
Re-triggering after a stop	permitted
Maintenance	See chapter 11.1 “Care and Maintenance” on page 28.

1. Optional lengths possible.
2. It is necessary that the supply voltage ensures a pause time (zero volt range) of at least 500 ms for a change in the driving direction (pole reversal) (see Figure 29: “Zero volt range at a change in the driving direction” on page 25).
3. Measured at a distance of one metre under normal conditions.

EA-K-30 – Technical Data

Figure 29: Zero volt range at a change in the driving direction



ATTENTION

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

This also applies in particular to switching processes from a primary (mains operation) to secondary energy source (backup batteries).

Table 4: Installation and ambient conditions

Actuator type/version	EA-K-30
Nominal operating temperature	20 °C
Permissible ambient temperature range	from 0 to 75 °C
Temperature stability (smoke and heat exhaustion)	300 °C
Protection rating	IP 32
Area of application	Central European environmental conditions ≤ 2000 metres above sealevel

Table 5: Approvals and certificates

Actuator type/version	EA-K-30
CE-compliant	In accordance with the EMC Directive 2014/30/EU and the Low Voltage Directive 2014/35/EU
Further approvals	on request

Table 6: Mechanical properties

Actuator type/version	EA-K-30
Nominal pushing force[1]	300 N
Nominal pulling force[2]	300 N
Conditions of loading	Opening against the nominal load /closing with nominal load support
Nominal locking force[3]	≤ 2000 N
Nominal stroke[4] – EA-K-30/400-T(-DA) – EA-K-30/600-T(-DA) – EA-K-30/800-T(-DA) – EA-K-30/1000-T(-DA) – EA-K-30/1200-T(-DA)	 400 mm 600 mm 800 mm 1000 mm 1200 mm
Stroke speed[5] – 300 N – 200 N – 100 N	 9.7 mm/s 11.1 mm/s 12.5 mm/s
Material – surface	Aluminium E6/EV1 Coatings[6]are possible in all RAL and DB colours
Material – chain	Corrosion-resistant, monostable steel chain, silver nickel-plated (a high-grade steel chain is optionally available)
Dimensions (W x H[7] x D) – EA-K-30/400-T(-DA) – EA-K-30/600-T(-DA) – EA-K-30/800-T(-DA) – EA-K-30/1000-T(-DA) – EA-K-30/1200-T(-DA)	 467 x 37 x 35 mm 564 x 37 x 35 mm 667 x 37 x 35 mm 764 x 37 x 35 mm 867 x 37 x 35 mm
Weight[8] – EA-K-30/400-T(-DA) – EA-K-30/600-T(-DA) – EA-K-30/800-T(-DA) – EA-K-30/1000-T(-DA) – EA-K-30/1200-T(-DA)	 1.30 kg 1.52 kg 1.80 kg 2.02 kg 2.30 kg

1. Only under optimum conditions, up to a 600 mm stroke (see chapter 6.1.11 "Permissible pushing force on the chain" on page 18), pushing force can be configured via SIMON LINK.
2. Pulling force can be configured via SIMON LINK.
3. The force may vary depending on the design of the actuator, bracket, fixing type, window material etc.
4. In the case of a stretched chain, e.g. traction relief. The nominal stroke may deviate by ± 3%, but no more than 20 mm, due to mechanical damping.
5. Based on a 600 mm stroke; deviation ± 5%.
6. Attention: Screws, nuts, discs, sliders and similar individual components are not coated.
7. Plus chain exit (7 mm).
8. Information without supply cable and brackets.

Table 7: Accessories

Actuator type/version	EA-K-30
Mechanical connection to the actuator medium (chain)	A wide selection of bracket sets is available. The technical data only applies in connection with original accessories!
Mechanical connection to the actuator housing	

8. EA230-K-30 – Technical Data

230 VAC

Table 8: Electrical properties

Actuator type/version	EA230-K-30
Rated voltage	230 VAC
Permissible rated voltage range	230 VAC -10%; +10%
Undervoltage detection	no
Nominal current[1]	0.23 A
Maximum starting current in “OPEN” and “CLOSED” direction	0.25 A
Maximum cut-off current in “OPEN” and “CLOSED” direction, after start-up	0.25 A
Current consumption after cut-off (closed current)	10 mA
Cut-off via	Integrated electronic overload cut-off
Maximum permissible number of actuators connected in parallel	8
Cable length between two actuators in synchronous operation	max. 10 m
Protection class	II ⧈

1. Maximum current consumption at nominal load

Table 9: Connection and operation

Actuator type/version	EA230-K-30
Plastic connection cable	3 x 0.5 mm² 5 x 0.5 mm² (synchronous)
Supply cable length	2 m 2.5 m (synchronous)
Pause time at a change in the driving direction	at least 300 ms
Switch-on duration	S_2 ED 30% (short-time duty 3 of 10 minutes)
Stability of opening and closing cycles	11000
Sound level[1]	≤ 55 dB (A)
Maintenance	See chapter 11.1 “Care and Maintenance” on page 28.

1. Measured at a distance of one metre under normal conditions.

Table 10: Installation and ambient conditions

Actuator type/version	EA230-K-30
Nominal operating temperature	20 °C
Permissible ambient temperature range	from 0 to 75 °C
Protection rating	IP 32
Area of application	Central European environmental conditions ≤ 2000 metres obove sealevel

Table 11: Approvals and certificates

Actuator type/version	EA230-K-30
CE-compliant	In accordance with the EMC Directive 2014/30/EU and the Low Voltage Directive 2014/35/EU
Further approvals	on request

Table 12: Mechanical properties

Actuator type/version	EA230-K-30
Nominal pushing force[1]	300 N
Nominal pulling force	300 N
Conditions of loading	Opening against the nominal load / closing with nominal load support
Nominal locking force[2]	≤ 2000 N
Nominal stroke[3] – EA230-K-30/300(-S) – EA230-K-30/600(-S) – EA230-K-30/800(-S) – EA230-K-30/1000(-S)	 300 mm 600 mm 800 mm 1000 mm
Stroke speed[4] – 300 N – 200 N – 100 N	 9.7 mm/s 10.0 mm/s 10.3 mm/s
Material – surface	Aluminium E6/EV1 Coatings[5] are possible in all RAL and DB colours
Material – chain	Corrosion-resistant, monostable steel chain, silver nickel-plated (a high-grade steel chain is optionally available)

Commissioning

Actuator type/version	EA230-K-30
Dimensions (W x H[6] x D)	
– EA230-K-30/300(-S)	468 x 37 x 35 mm
– EA230-K-30/600(-S)	624 x 37 x 35 mm
– EA230-K-30/800(-S)	727 x 37 x 35 mm
– EA230-K-30/1000(-S)	824 x 37 x 35 mm
Weight[7]	
– EA230-K-30/300(-S)	0.90 kg
– EA230-K-30/600(-S)	1.40 kg
– EA230-K-30/800(-S)	1.80 kg
– EA230-K-30/1000(-S)	2.20 kg

1. Only under optimum conditions, up to a 600 mm stroke (see chapter 6.1.11 “Permissible pushing force on the chain” on page 18).
2. The force may vary depending on the design of the actuator, bracket, fixing type, window material etc.
3. In the case of a stretched chain, e.g. traction relief. The nominal stroke may deviate by ± 3%, but no more than 20 mm, due to mechanical damping.
4. Based on a 600 mm stroke; deviation ± 5%.
5. Attention: Screws, nuts, discs, sliders and similar individual components are not coated.
6. Plus chain exit (7 mm).
7. Information without supply cable and brackets.

Table 13: Accessories

Actuator type/version	EA230-K-30
Mechanical connection to the actuator medium (chain)	A wide selection of bracket sets is available. The technical data only applies in connection with original accessories!
Mechanical connection to the actuator housing	

9. Commissioning

See supplementary sheet "Safety Instructions and Warranty Conditions"!

9.1 EA230-K-30

Perform a **RESET procedure** (see chapter 5.4 “RESET” on page 9) and **a teach-in run** (see chapter 5.5 “Teach-in run” on page 9) after mounting the actuators.

230 VAC

10. Troubleshooting

10.1 EA-K-30

24 VDC

Malfunction	Possible causes	Troubleshooting
The actuator is not working.	– Mains power supply is missing; – Supply cable is faulty; – Wind/rain sensor has triggered.	– Check the fuse and the supply cable; – Check the supply cable; – No failure
The actuator has the wrong running direction.	– Terminals “+ / -” are mixed up; S = blue; O = brown.	– Change the polarity of terminals “S” and “O”.
The actuator continues to run beyond its programmed stroke.	– Displacement of the electronic zero point.	– Drive the actuator in the “CLOSED” direction and let it cut off in the “CLOSED” end position.

10.2 EA230-K-30

230 VAC

See chapter 5.7 “LED displays” on page 10.

11 Annex

11.1 Care and Maintenance

See supplementary sheet "Safety Instructions and Warranty Conditions"!

short.simon-protec.com/sugen

11.2 General business and delivery terms

Deliveries and services are subject to the currently applicable terms for products and services of the electrical industry (green delivery terms), including the supplementary clause “Extended retention of title”. These are published by the German Electrical and Electronic Manufacturers' Association (ZVEI), Frankfurt. If you are not aware of these, we will gladly send them to you. You can also download these agreements from

short.simon-protec.com/agben

The place of jurisdiction is Passau.

11.3 Company Addresses

11.3.1 System manufacturer

SIMON PROtec Systems GmbH
Medienstraße 8
94036 Passau
Tel.: +49 (0)851 98870-0
Fax: +49 (0)851 98870-70
E-Mail: info@simon-protec.com
Internet: www.simon-protec.com

11.3.2 Germany

SIMON PROtec Deutschland GmbH
Medienstraße 8
94036 Passau
Tel.: +49 (0)851 379368-0
Fax: +49 (0)851 379368-70

SIMON PROtec Deutschland GmbH
Ammerseestraße 75
D – 82061 Neuried
Tel.: +49 (0)89 79170-11
Fax: +49 (0)89 79179-72

E-Mail: info@simon-protec.de
Internet: www.simon-protec.de

11.3.3 Switzerland

SIMON PROtec Systems AG
Allmendstrasse 38
8320 Fehraltorf
Tel.: +41 (0)44 9565030
Fax: +41 (0)44 9565040
E-Mail: info@simon-protec.ch
Internet: www.simon-protec.ch

11.3.4 Hungary

SIMON PROtec Systems Kft.
Sodras utca 1. fszt. 1
1026 Budapest
Tel.: +36 (0)30 5520424
E-Mail: info@simon-protec.hu
Internet: www.simon-protec.hu

12 Manufacturer's declaration

CE We hereby declare that the product complies with the applicable directives. The declaration of conformity can be read at the company's premises and will be sent to you upon request. This declaration certifies that the product complies with the mentioned directives, but does not represent any guarantee of the product's features. This declaration loses its validity, if the product is modified without seeking our prior authorisation.

13 EC manufacturer’s declaration (distributor)

The installer is responsible for the proper mounting or commissioning, the preparation of the declaration of conformity in accordance with the EU directives and for affixing the CE marking. The CE marking must be affixed visibly!