EN12101-2 Glazed Casement.

PROPER ASSEMBLY

This modern aluminium window maintains its excellent operational properties provided the element is properly assembled in the wall. Proper assembly of the window in the wall is determined by the proper performance of the following activities: checking and preparation of the wall opening, setting of the window in the opening, reinforcement of the frame in the wall, frame insulation, adjustment of the mechanisms for opening the frame and finishing the surface around the window.

PREPARATION OF THE WALL OPENING

Every installed window must be set in a prepared wall opening. The frame of the window in the wall cannot be constructed during setting as the window can be badly settled, without any play and without the necessary insulation, which means that stresses from the structure of the wall are transferred to the window. Windows installed in this way cannot function properly. Therefore the principle for integration of the windows must be that the opening has slightly greater dimensions than the external dimensions of the window frame whilst the frames are introduced. The opening in the wall must be 3-4 cm wider than the width of the frame (1-2 cm on each side) and 6-8 cm higher (1-7 cm above and 5-6 cm below). The angles of the opening must be 90°, and the diagonals may differ by more than 1 cm, which can be checked by using a tape or string for example. If the opening is greater than that permitted, then unnecessary additional insulation material will be required, and if the corners are not straight, this could lead to “distortion” of the frame. All the internal surfaces of the opening must be smooth without cavities. The lower surface of the opening must be uniform, even and supplied with a layer of covering material on which the window can stably rest.

SETTING OF THE FRAME IN THE WALL

In order to facilitate the manipulation of the window during settlement, the sash must be detached and the frame itself used. The frame is set on the windowsill, which is a steel bar in the structural element 009035. The windowsill is always treated for rust and reinforced to the wall aligned to the external edge at the level of the internal insulation. For the depth of the window settlement and its projection in the opening of the wall the crucial factor is that the isothermal red point (10°C) for the wall is transferred to the window. Only then will condensation on the internal side of the window be prevented. In a layered wall insulated by mineral wool or isothermal Styrofoam the frame is located in the band of the insulation material, and so it is necessary to assemble the window at that depth. After setting the frame in the sill the vertical sides of the window must be adjusted and then inclined to the appropriate positions. It should be borne in mind that the distance on both sides should be the same.

REINFORCEMENT OF THE WINDOW IN THE WALL

Recommendations are to reinforce the window using factory-produced steel anchors. These anchors reinforce the frame even before it is introduced in the opening, at a distance of around 40 cm. After the initial settlement of the frame and its inclination, the anchors are reinforced to the wall by using separating rings for this purpose. After reinforcing the anchors, the inclination is adjusted by dragging the frame and then the verticals are checked, as well as the level and the diagonals of the frame.

REGULATION OF THE FIT ON BOTH SIDES

These modern windows are equipped with fits on both sides which regulate the sash in several places across its entire length and facilitate control of opening and shutting the window by a single handle. The bilateral fit is a mechanism which is highly precise and has a tolerance of several millimetres for regulation in three directions. In the commercial package there are instructions for the regulation of the fit, on the basis of which each user can use it as he pleases. Regulation is carried out after assembly of the sash in the frame.

COMPLETION OF WINDOW

The modern aluminium window is characterised by high thermal insulation in the entire frame against water present in the atmosphere. Although these parameters should be preserved for the entire opening, it is also necessary to seal the gap between the frame and the wall, which is required to counteract the presence of heat in the water. For this purpose the best method is to use mineral wool, assembly mousse or polyethylene, silicon or foil water resistant and vapour insulating rollers. The layer of insulation around the frame should be even, without interruptions and of a uniform thickness. On the external side hydro-insulation is ensured, in particular for the lower part of the frame, corners and tin plate units.

ACTUATOR ELECTRICAL CONNECTION

ATTENTION

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

DANGER

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

INFORMATION

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

ATTENTION

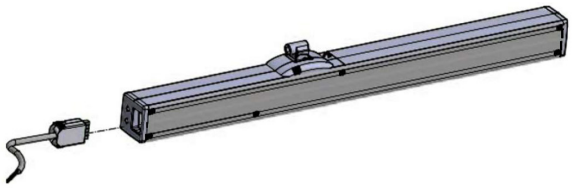
Do not earth the electrical connection. The actuator must only be operated with a 24 V DC safety extra-low voltage. Unused cores must be insulated.

SUPPLY

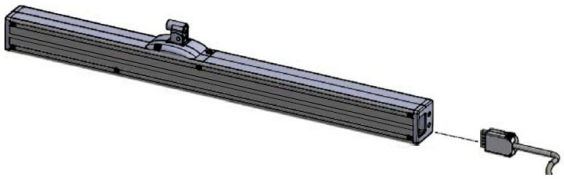
The power supply must be designed for the actuator. The voltage and current must correspond with the information on the legend plate. The supply cabling must be checked before the initial commissioning, the cable cross section in particular must be taken into account. The valid regulations regarding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

Cable cross section [mm^2] = single cable length [m] x number of actuators x current consumption per actuator [A] / 73.

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



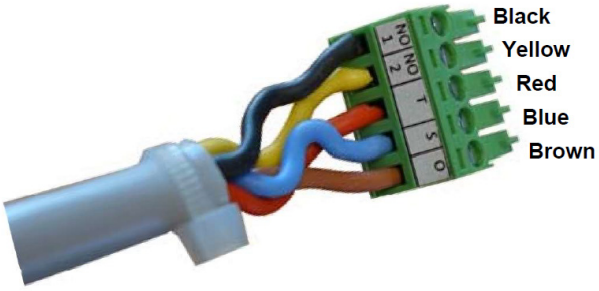
The power can also be supplied via the chain side on the EA-K-30/xxx-T-DA (double-sided connection). The supply voltage is relayed internally to the opposite connection point, this can then be used to connect another actuator.



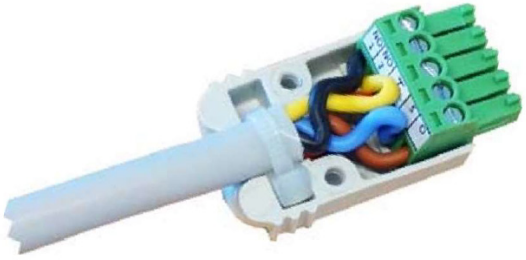
CONNECTION CABLE

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



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.



FEEDBACK SIGNAL – DRY CONTACT

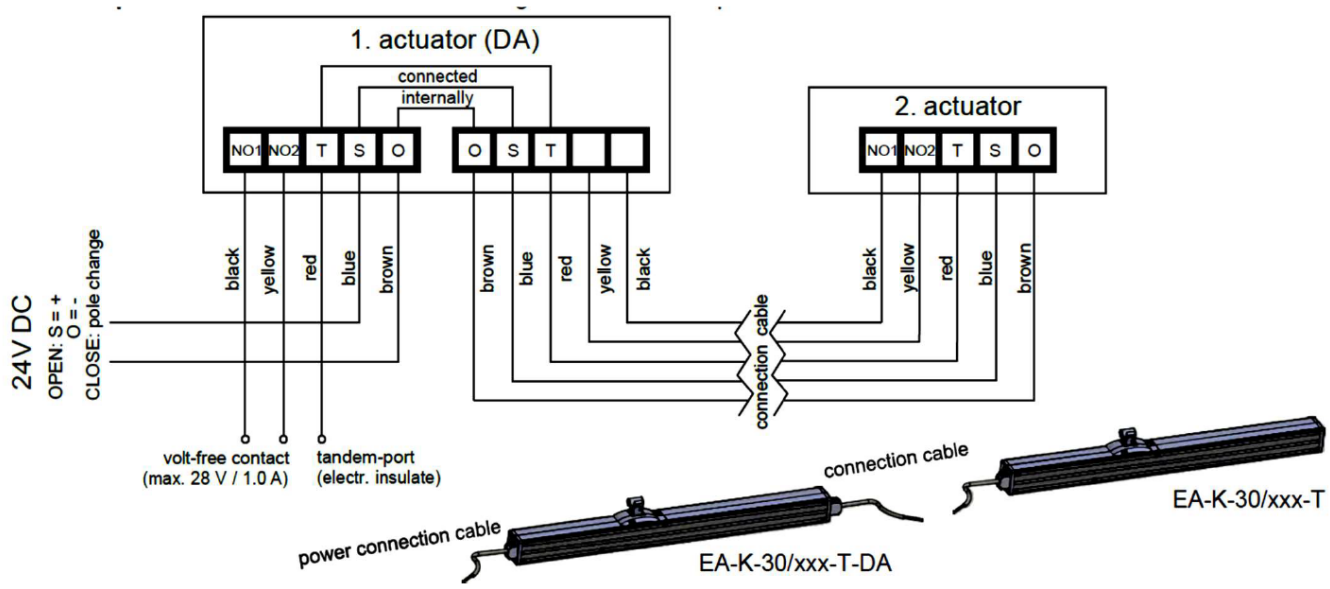
The normally open contact (NO1, NO2) is activated in the CLOSED driving direction when the actuator is cut off in the "CLOSED" end position, the message is stroke-dependent and can be evaluated as a "CLOSED message".

Other switching settings, such as in "OPEN" end position, can be set via SIMON LINK.

DUO OPERATION / PARALLEL CONNECTION

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.



TECHNICAL DATA

Electrical Properties

ACTUATOR TYPE/VERSION	EA-K-30
Rated voltage	24 VDC
Permissible rated voltage range	24 V DC -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.
6. The pulse time indicates how long the internal or external overload cut-off provides the cut-off signal at the output.

CONNECTION AND OPERATION

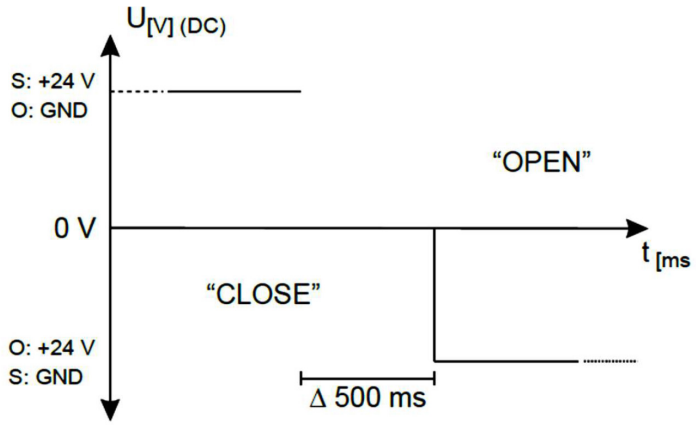
ACTUATOR TYPE/VERSION	**EA-K-30**
Silicone connection cable with connector	5 x 0.75 mm^2
Supply cable length[1]	3 m
Pause time at a change in the driving direction[2]	At least 500 ms
Switch-on duration	S2 ED 30% (short-time duty 3 of 10 minutes)
Stability of opening and closing cycles	11 000
Sound level[3]	≤ 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)
3. Measured at a distance of one metre under normal conditions.

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).



INSTALLATION & 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 sea level

APPROVALS & 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

MECHANICAL PROPERTIES

ACTUATOR TYPE/VERSION	EA-K-30
Nominal pushing force[1]	300 N
Nominal pulling force[2]	300 N

ACTUATOR TYPE/VERSION	EA-K-30
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)	400 mm
– EA-K-30 / 600-T(-DA)	600 mm
– EA-K-30 / 800-T(-DA)	800 mm
– EA-K-30 / 1000-T(-DA)	1000 mm
– EA-K-30 / 1200-T(-DA)	1200 mm
Stroke speed[5]	
– 300 N	9.7 mm/ s
– 200 N	11.1 mm/ s
– 100 N	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)	467 x 37 x 35 mm
– EA-K-30 / 600-T(-DA)	564 x 37 x 35 mm
– EA-K-30 / 800-T(-DA)	667 x 37 x 35 mm
– EA-K-30 / 1000-T(-DA)	764 x 37 x 35 mm
– EA-K-30 / 1200-T(-DA)	867 x 37 x 35 mm
Weight[8]	
– EA-K-30 / 400-T(-DA)	1.30 kg
– EA-K-30 / 600-T(-DA)	1.52 kg
– EA-K-30 / 800-T(-DA)	1.80 kg
– EA-K-30 / 1000-T(-DA)	2.02 kg
– EA-K-30 / 1200-T(-DA)	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.

TROUBLESHOOTING

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.

MAINTENANCE

To ensure continuous function and safety of the drive periodic maintenance by a specialist company is required at least once a year (as mandated by law for smoke and heat exhaust systems). Operational readiness must be checked regularly. Frequent inspection of the system for imbalance and signs of wear or damages of cables and fastening elements must be performed. During maintenance contaminations must be removed from the drive. Fastenings and clamping screws must be checked for tightness. Test runs during the opening and closing procedure of the devices must be performed. The drive itself is maintenance-free. Defect devices may only be repaired in our factory. Only replacement parts of the manufacturer may be used. When the connection cable of this device is damaged it must be replaced by the manufacturer or his customer service or a similarly qualified person to avoid endangerment.
It is recommended to conclude a maintenance contract. While cleaning the windows, drives may not have direct contact with water or cleaning agents. Drives must be protected from dirt and dust during the construction phase or renovations.

MAINTENANCE PROCESS

1. Open or extend power-operated casement completely.

2. Completely disconnect the system from the mains and secure it against automatic or manual activation.

3. Check windows and fittings for damages.

4. Check all mechanical fastenings (if required, observe information on torques in installation instructions).

5. Check electric drives for damages and contaminations.

6. Check connecting cables (drive cable) for:

- tightness of the cable screw

- functionality of the strain relief

- damages

7. Check the mobility of hinges and fittings and re-adjust or apply lubricant, e.g. silicone spray (observe the instructions of the manufacturer of this window system).

8. Check peripheral seal, remove contaminations or replace.

9. Perform cleaning to maintain functionality (e.g. clean extending elements of the drive, such as chains or spindles by damp wiping them with acid or lye-free agents and drying them and, if required, lubricate them with cleansing oil e.g., Ballistol).

10. Turn on operating voltage.

11. Open and close the power-operated window via the operating voltage (functional test).

12. If available, check and re-adjust protection systems of the safeguard fixture.

13. Check the intactness of the CE label at the power-operated system (e.g. SHEV/Natural smoke and heat exhaust ventilators).

14. Check the intactness of warning instructions and labels at the respective drive.

15. Perform a risk assessment in accordance with Machinery Directive 2006 / 42 / EG, if required, e.g., after modifying the machine.

APPENDIX

Manufacturer's declaration EC

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.

Manufacturer's declaration UK

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.

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ATTENTION: Under the Construction Products Regulations (CPR) it is a legal requirement to use only certified products for smoke ventilation. It is the responsibility of the installer to ensure installations meet the relevant standards and products are fit for purpose.

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