Linear actuator Insolis 3 for solar tracking systems

Follow the sun – with our drives for solar photovoltaic systems

Insolis 3

made in GERMANY

Linear actuator Insolis 3

Description and applications

The actuator for solar photovoltaic systems
With the developed Insolis 3 linear actuator, elero Linearantriebstechnik offers reliable drive solutions for users of solar photovoltaic systems.

Twenty years of motor engineering experience and proven solutions for façade architecture and mechanical engineering have contributed to the development of the Insolis 3 linear actuator.

The actuator has been specially developed for solar photovoltaic systems (Elevation and Azimuth). This combination significantly increases the efficiency of complex solar tracking systems and ensures a quicker amortisation of investment costs.

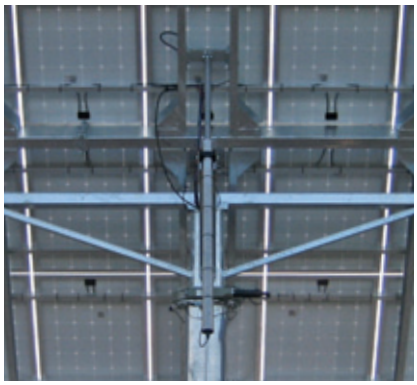
Eight actuator versions (24V DC and 230V AC) are available. Linear actuators with (adjustable) electronic limit switches offer various advantages. For instance, they allow for the adjustment of different stroke lengths and provide overload protection.

230V AC actuators with RS-232 interface are available on request. Also there are versions with encoders for position feedback.

elero and solar systems – a perfect combination!
Insolis 3 actuators are ideally suited to the requirements of solar tracking systems.

With a static holding load of as much as 60,000 newtons with dynamic forces of as much as 10,000 newtons it aligns plants in accordance with the position of the sun and keeps them in position.

The housing of the Insolis 3 is protected as standard to IP 65 against the entry of dust and is also hose-proof and maintenance-free.



Insolis 3 actuators are fitted with sophisticated technology. They combine long service life with highest quality “Made in Germany”.
Benefit from our know-how for the optimum use of solar energy!

User advantages:
- Extremely high static loads compared to required dynamic loads
- Corrosion resistance over long periods
- Very high reliability
- Modular system, flexible integration into existing and new systems
- Maintenance-free throughout the entire service life
- High cost-effectiveness

Special advantages of actuators with electronic limit switches:
- Electronically adjustable limit switches
- Integrated overload protection
- Stepless adjustment of different stroke lengths

Our innovative model for solar tracking systems

Technical data

	Version AC	Version DC
Rated voltage	230V 1 AC, 50 Hz	24V DC
Dynamic load peak	10,000 N	10,000 N
Static load peak	up to 60,000 N	up to 60,000 N
Stroke speed	approx. 1.5 mm/s	approx. 1.8 mm/s
Stroke length	600; 800; 1,000 mm	600; 800; 1,000 mm
Rated current	0.8 A	4.5 A
Power	185 VA	108 W
Rating	12 min.	12 min.
Impulses per stroke mm	56.2	56.2
Length of the control and connecting cable	1.50 m[1]	1.50 m[1]
Protection class	IP 65	IP 65
Operating temperature range	-20 to +60 °C	-20 to +60 °C
Emitted airborne noise	< 70 dB (A)	< 70 dB (A)
Weight	up to 30 Kg	up to 30 Kg
Fixing on piston end	joint rod head	
Fixing on housing end	pivot	
Housing and piston material	anodised aluminium	
Mounting position	always facing downwards	
Special features	torsion lock piston end	

(1) Cable lengths from 1.5 m to 10.0 m are available on request.
All technical data represent average values and are based on an ambient temperature of 20 °C.
During installation please observe that the piston rod has to face upwards and that the PG cable glands on the actuator tube have to face downwards. Prior written approval from the manufacturer is required for differing mounting positions.

Protective systems for actuators with electronic limit switches

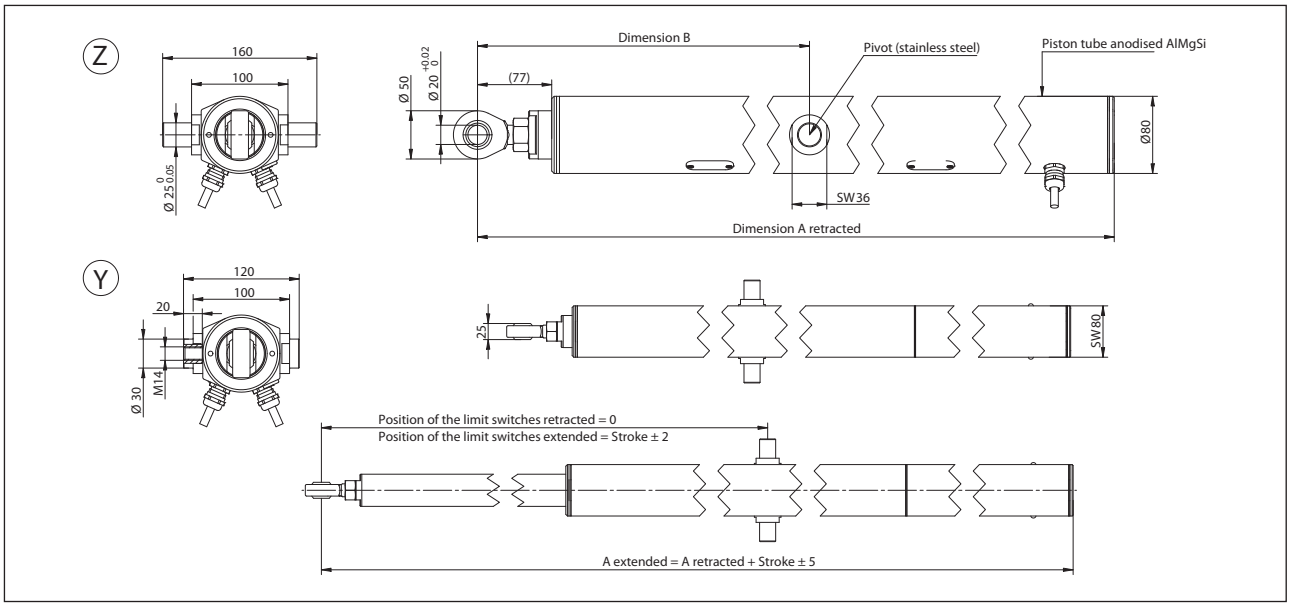
Internal limit switches
The internal limit switches ensure that the piston rod moves between two adjustable end positions.

Undervoltage protection
The actuator is switched off if the voltage drops below the admissible operating voltage.

Overload protection
The actuator is switched off if the maximum dynamic load of 10,000 N is exceeded.
This protective system must not be used as a limit switch system.

Linear actuator Insolis 3

Technical data and dimensions



Insolis 3 – Dimension chart for 230V AC and 24V DC

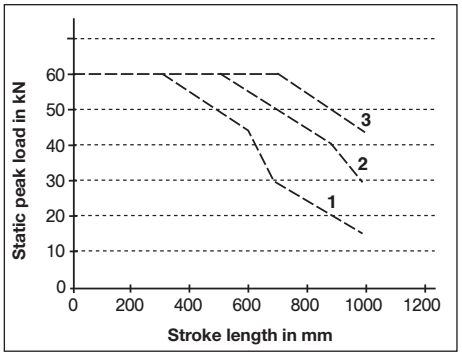
Stroke length (mm)	**Dimension B** selectable from to (mm)	**Dimension A** retracted (mm)	**Dimension A** extended (mm)
600	260 – 730	1,484	2,084
800	260 – 930	1,684	2,484
1,000	260 – 1,130	1,884	2,884

The pivot is positioned according to customer requirements. Please specify dimension “B“.

Static load capacity depending on dimension B and stroke length

Load Peaks – Insolis 3 (example, stroke 1,000)

1 Dimension B = 1,130 mm
2 Dimension B = 695 mm
3 Dimension B = 260 mm



Wide variety of versions

Versions

Version	Configuration	Wiring diagrams	
		24V DC	230V AC
1	Basic configuration without limit switches without feedback signals without encoder	GS 9801	WS 9901
2	non-adjustable mechanical limit switches with feedback signals without encoder	GS 9409	WS 9902
3	non-adjustable mechanical limit switches with feedback signals with encoder	GS 9502	WS 9905
4	mechanical limit switches and freely programmable electronic limit switches* with feedback signals with encoder	GS 9803	WS 9903

* The electronic limit switches can be steplessly adjusted using an installation cable (available as accessory).

230V AC actuators with RS-232 interface are also available on request!

Encoder

Rated voltage	24V DC
Channels	A + B
Admissible current per channel	20 mA
Pulses per stroke mm	56.2

Feedback signals

The limit switch feedback uses potential-free relay contacts in case of versions 2 and 3. The maximum ohmic load of these contacts is 24V/1A.

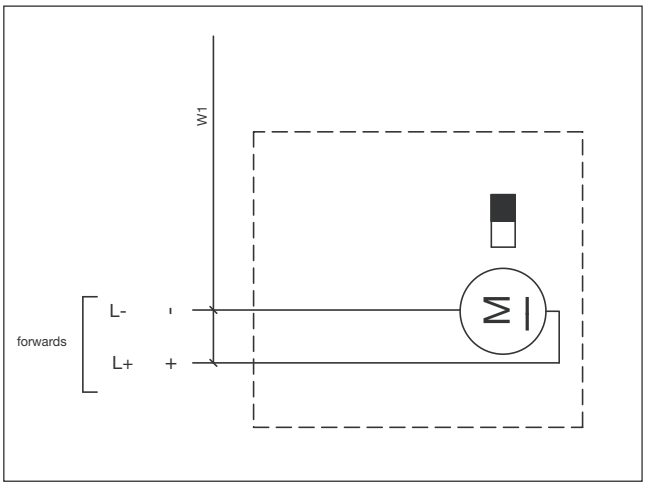
Digital outputs (24V DC) are used for the adjusted end position in case of version 4. The maximum load of these outputs is 20 mA.

Linear actuator Insolis 3

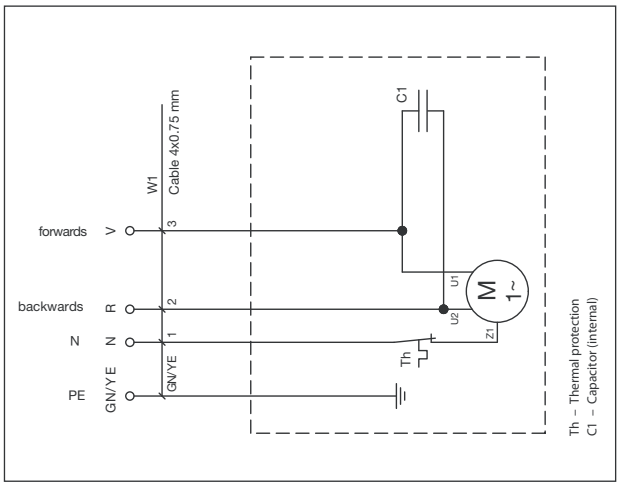
Wiring diagrams

Version 1:

Insolis 3 – Wiring diagrams for actuators without limit switches, feedback signals and encoder



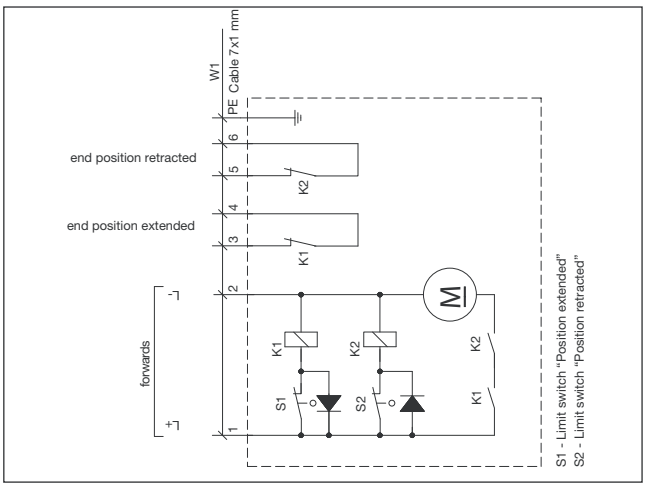
Rated voltage 24V DC / Wiring diagram GS 9801



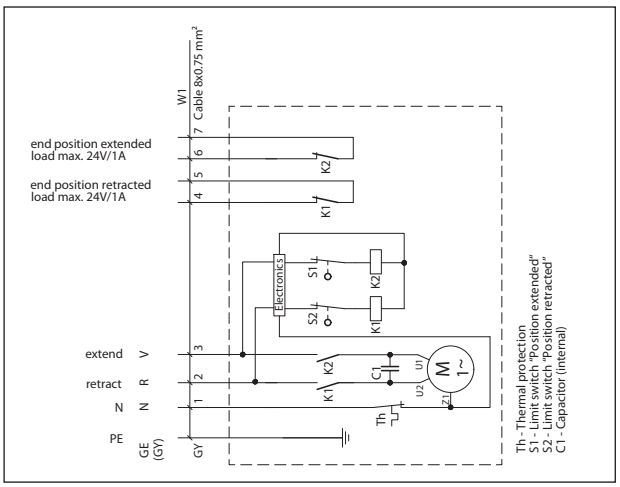
Rated voltage 230V AC / Wiring diagram WS 9901

Version 2:

Insolis 3 – Wiring diagrams for actuators with (non-adjustable) mechanical limit switches and feedback signals



Rated voltage 24V DC / Wiring diagram GS 9409

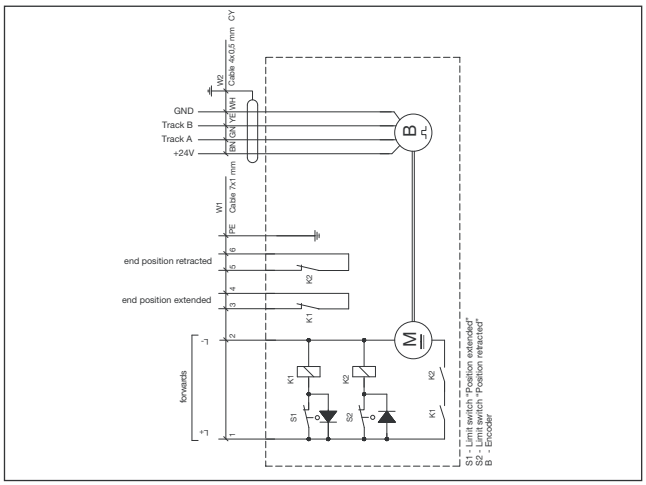


Rated voltage 230V AC / Wiring diagram WS 9902

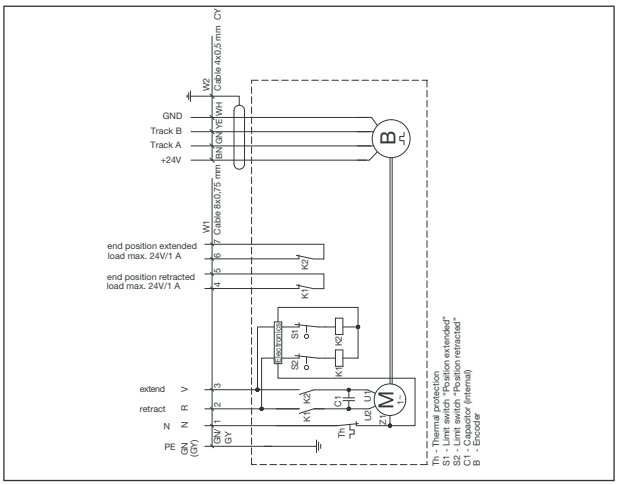
The ideal solution for solar tracking systems

Version 3:

Insolis 3 – Wiring diagrams for actuators with (non-adjustable) mechanical limit switches, feedback signals and encoder



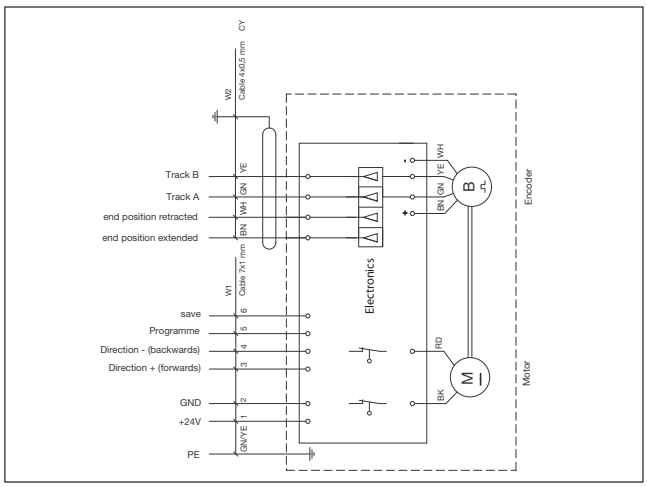
Rated voltage 24V DC / Wiring diagram GS 9502



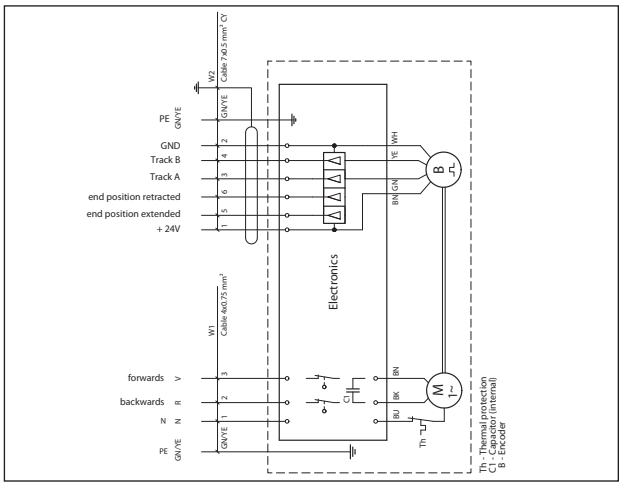
Rated voltage 230V AC / Wiring diagram WS 9905

Version 4:

Insolis 3 – Wiring diagrams for actuators with (adjustable) electronic limit switches, feedback signals and encoder

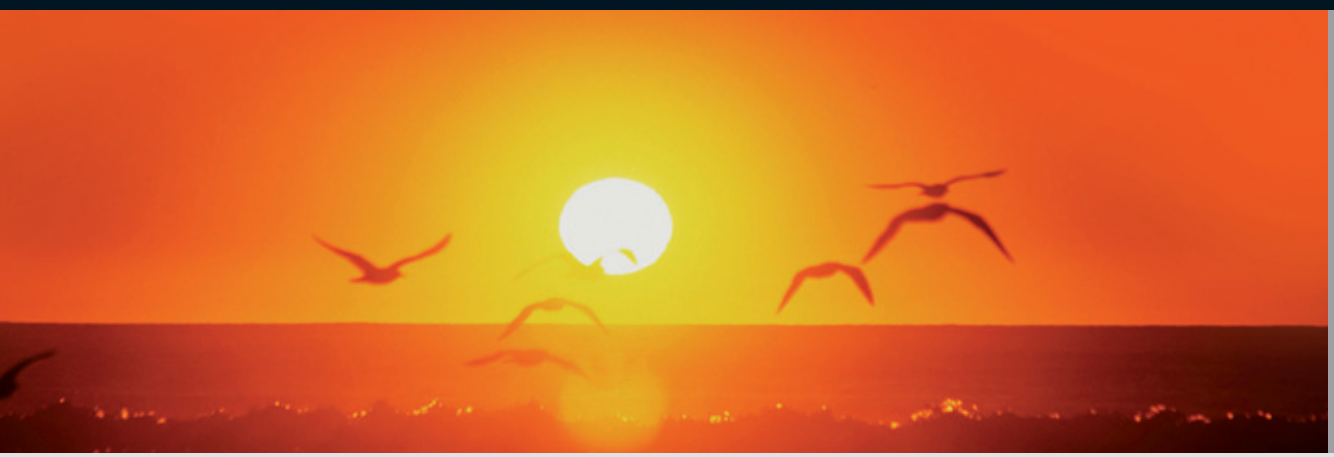


Rated voltage 24V DC / Wiring diagram GS 9803

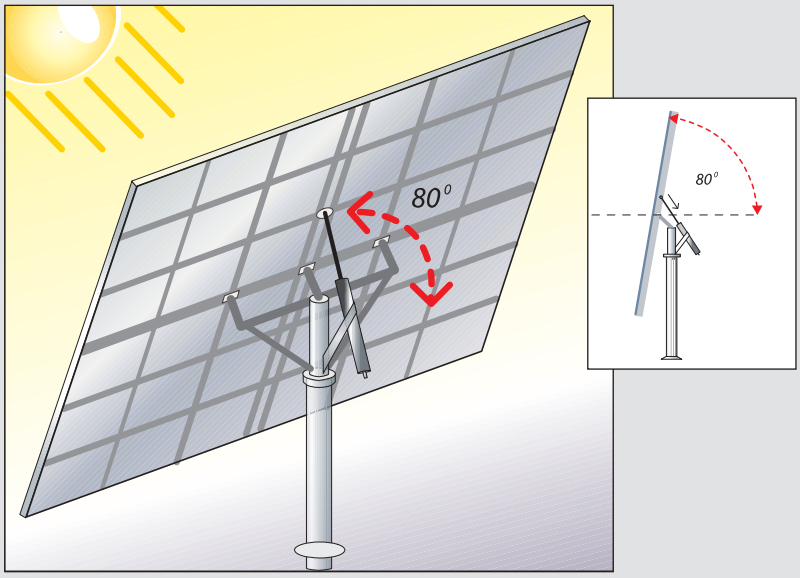


Rated voltage 230V AC / Wiring diagram WS 9903

Follow the sun and be ahead



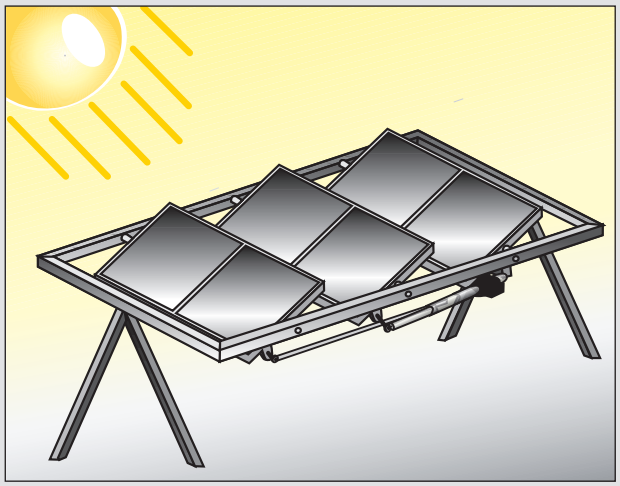
Biaxial tracking movements



Elevation (vertical movement)

Movements of solar modules
Biaxial tracking systems offer the highest efficiency. This means that the tracking movements take place in two planes: “Elevation” refers to the vertical movement, while “Azimuth” refers to the horizontal movement.

The Insolis 3 linear actuators can be used for Elevation and Azimuth.



Azimut (horizontal movement)

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Technical parameters subject to change! EN-20111226/0412