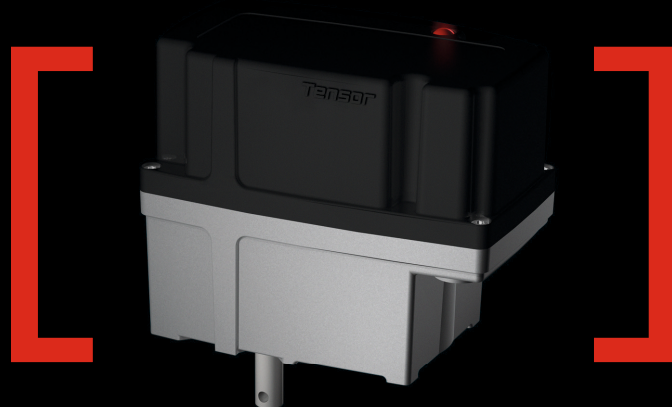


Tensor

The electric actuator
for future-proof applications



Tensor

Product Catalogue

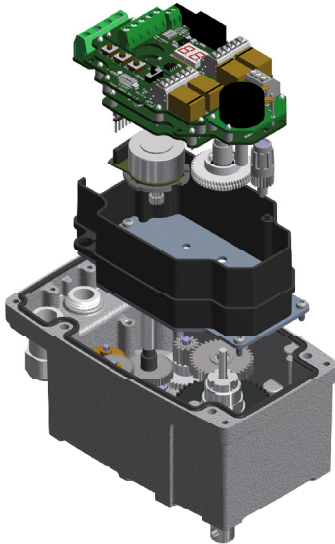
www.stellantriebe.de

Intelligent Line

The next generation actuator technology

Innovative electronics versus classic mechanics

With the series Tensor ARIS offers an innovative generation of electronically controlled actuators. The Tensor is based on a low-backlash precision gear in combination with a brushless DC motor. The Tensor's complete mechanical shut-off system has been replaced by a wear-free, non-contact position detection, which is based on the Hall effect. This sensor technology was developed many years ago for use in the automotive industry and has proved extremely robust, wide temperature range and high reliability.



Previously, with the classic actuators the user had to hold many actuators with different shutdown systems for different adjustment paths. Now the electronic system comfortably covers all control options with a single version. With the non-contact position sensing system it is practically wear-free and guarantees constant precision. Problems and long-term drift effects caused by switching hysteresis at potentiometers and switch point hysteresis at micro switches, are also a thing of the past. In total, the result for the user is a noticeably higher control accuracy for the entire drive, which also remains practically constant over the drive's lifetime.

In addition to precise control, the electronic positioning system provides a significantly simpler and faster start-up by programming using buttons. A permanent torque monitoring protects actuator and valve reliably against overloading.

BLDC motors have Hall sensors according to their poles, with which the electronic controls the phase currents of the motor and realizes the electronic commutation. In addition, the motor management system monitors the line current itself. Malfunctions as a movement in the wrong direction, the wrong speed or overload condition are detected immediately and lead to shutdown of the drive. Since the motor is driven over a defined signal sequence, an undesired or even uncontrolled movement is excluded here.

The possibility of speed control combines the functions of multiple drives in a single device, thus reducing the investment costs. The multi-voltage power supply in connection with the adjustment range of a few degrees up to several revolutions significantly reduce the stock list and storage costs. The permanent control of the drive system, increases the operational reliability of the plant.

ARIS Stellantriebe GmbH – Your experienced partner. For many years, the ARIS brand stands for high quality and customized solutions in all areas of industrial plant and machinery:

- ☐ Environmental engineering
- ☐ Pharmaceutical industry
- ☐ Food industry
- ☐ Heater/Burner
- ☐ Furnaces
- ☐ Public services
- ☐ Supplier

ARIS Actuators and valves work in various applications:

- ☐ Dosing pumps
- ☐ Industrial burners
- ☐ Air conditioning and ventilation
- ☐ Boilers
- ☐ Painting lines
- ☐ Blinds
- ☐ Industrial furnaces
- ☐ Autoclaves



With the Tensor the model variety reduced from 16 (classic technology) to seven models (new generation).

”

„By introducing the electronic actuators, we more than halved our warehousing.“



The parameters of the electronic actuator Tensor can be copied and transmitted via bus interface on identical drives.

”

„Thanks to the Tensor's electronic settings, the adjustment of our serial drives goes 20% faster.“

The mechanical elements of the Tensor are replaced with largely wear-free and contactless components.

”

„Our valves have to be moved in continuous operation. The Tensor extended our replacement intervals fourfold.“



Powerful arguments for a future-proof technology

Whether industry 4.0 or IIC, for the global industry is a new age dawned and the automation technology is rapidly gaining in intelligence.

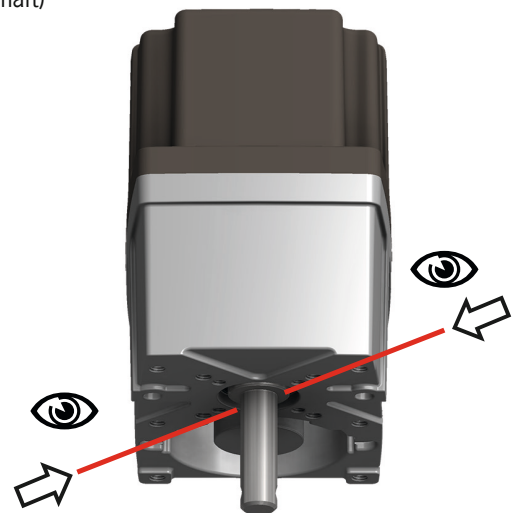
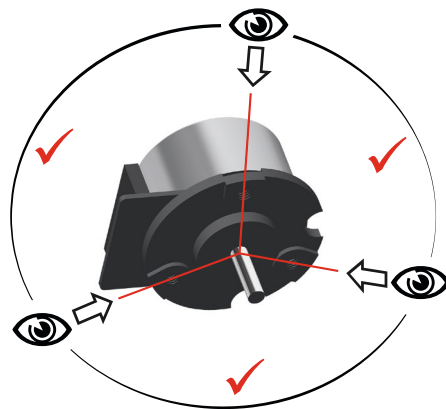
The ARIS actuator Tensor is fit for tomorrow's technology and is used wherever it comes to precise automation and flexible applications. By using the latest technologies the Tensor can be operated safe, economical and very user-friendly.

In future Tensor ... that's for sure!



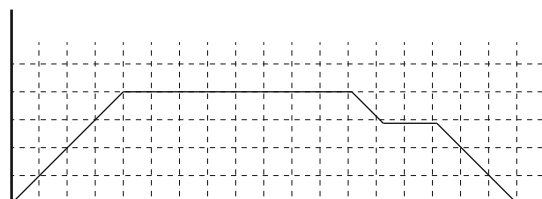
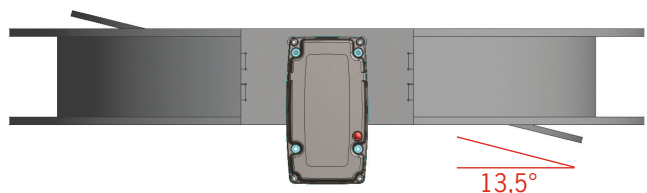
Safe operation

- ⊙ Permanent monitoring of actuator movements
- ⊙ No loosening or shifting of switch cams, even at vibrations
- ⊙ Permanent validation between motor- and sensor movement
- ⊙ Electronical position indication via two Hall sensors (directly mounted on the drive shaft)
- ⊙ Indication of speed and rotation direction via three Hall sensors (inside motor)
- ⊙ Permanent current monitoring
- ⊙ Torque shutdown



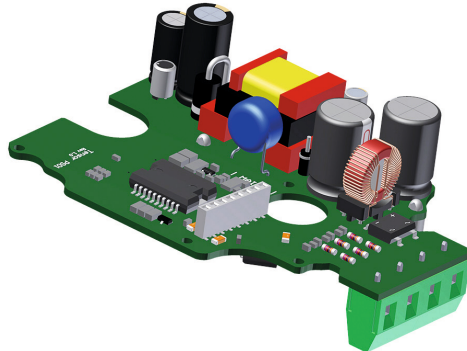
Intelligent and precise

- ⊙ Adjustable ramps for motor start and stop
- ⊙ Short brake and accelerate times
- ⊙ 12 bit zero backlash on the drive shaft
- ⊙ Position is indicated absolutely
- ⊙ Zero backlash basic gear
- ⊙ No switching hysteresis
- ⊙ Simple re-adjustment
- ⊙ Bus control (option)



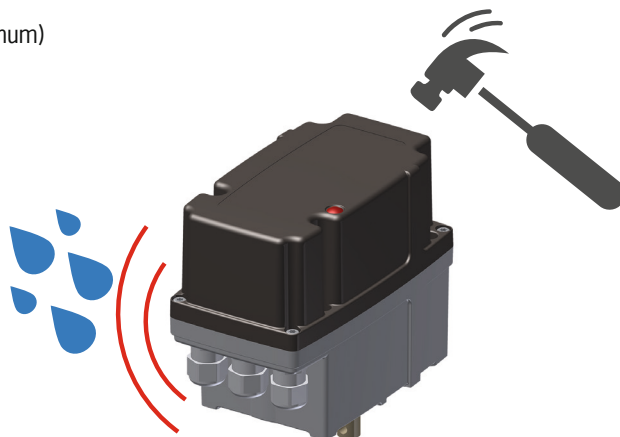
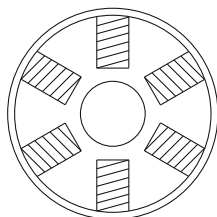
Flexibility – very economical

- ⊙ Easy adjustment via buttons, i.e. short setup times
- ⊙ Free choice of desired travel range via programming
- ⊙ Various standard fastening bores, incl. ISO 5211
- ⊙ Multi current power supply unit 85...265 V AC (alternative AC/DC low voltage power supply)
- ⊙ Special characteristic curves for I-ACT (PMR) controller (option)



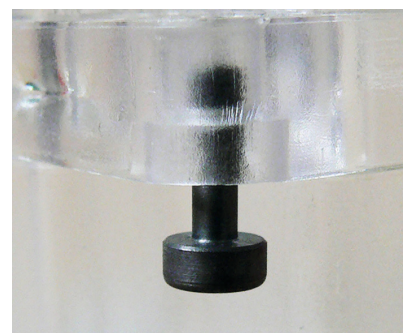
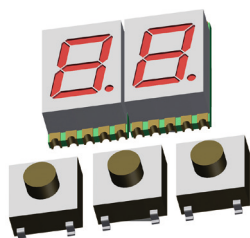
Long-lasting technology

- ⊙ Absolute wear-free, i.e. permanent exact shut-off
- ⊙ No abrading contacts
- ⊙ Powder coated aluminum basic housing
- ⊙ Shock-resistant polycarbonate cover (alternative aluminum)
- ⊙ Protection class IP 65 (optional up to IP 67)
- ⊙ Brushless power supply (BLDC-Motor)
- ⊙ No starting capacitors



User friendly

- ⊙ Electronic adjustment of torque and speed
- ⊙ Electronic adjustment of end positions and additional switches
- ⊙ Programming PCB with 3 buttons and LEDs
- ⊙ Electronic position indicator (option)
- ⊙ Captive cover screws
- ⊙ Tool-free adjustment



Type list

Type	Torque [Nm]	Actuating time [s/90°]
Tensor S 05-02	5	2
Tensor S 05-03	5	3
Tensor S 05-06	5	6
Tensor S 05-15	5	15
Tensor S 05-30	5	30
Tensor S 05-60	5	60
Tensor S 10-03	10	3
Tensor S 10-06	10	6
Tensor S 10-15	10	15
Tensor S 10-30	10	30
Tensor S 10-60	10	60
Tensor S 15-03	15	3
Tensor S 15-06	15	6
Tensor S 15-15	15	15
Tensor S 15-30	15	30
Tensor S 15-60	15	60
Tensor S 20-06	20	6
Tensor S 20-10	20	10
Tensor S 20-15	20	15
Tensor S 20-30	20	30
Tensor S 20-60	20	60

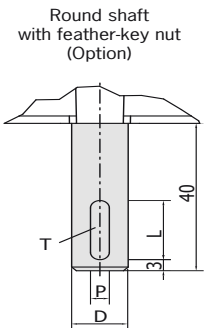
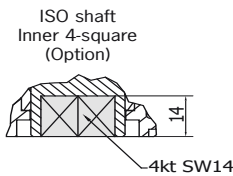
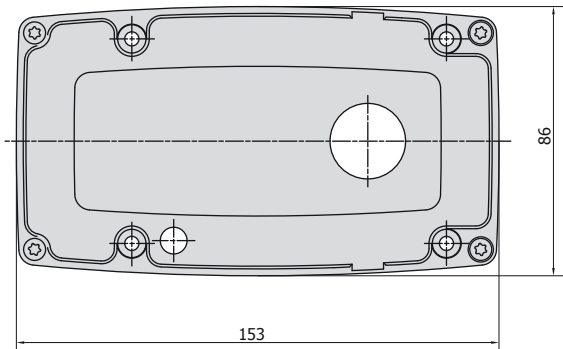
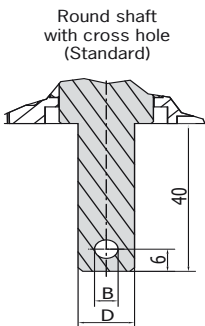
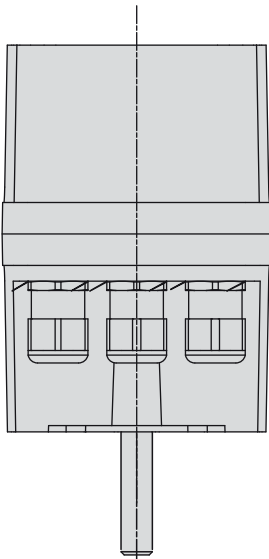
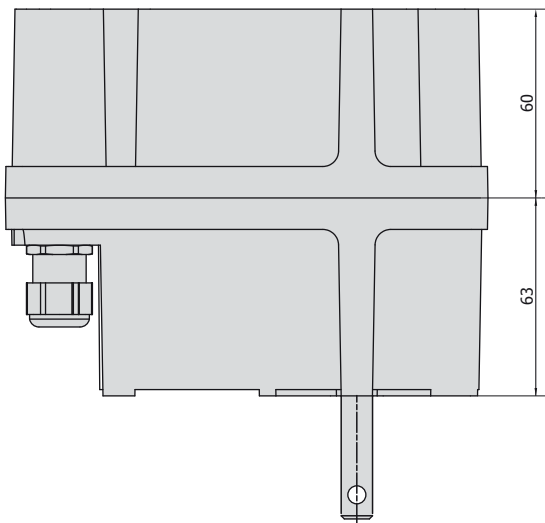
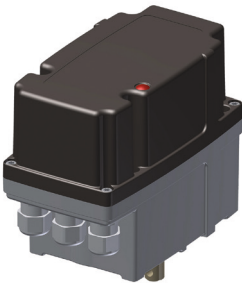
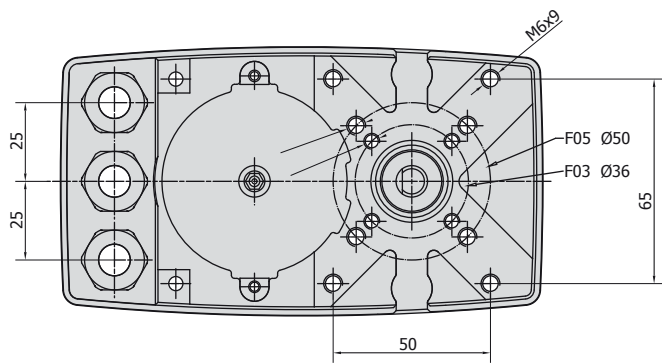
Due to the controllability of the motor (torque and speed) high-speed up to 0.8s / 90 ° can be realized.

Specifications

Protection class	IP 65 (option up to IP 67)
Ambient temperature	-15°C...+60°C (optional -40°C...+80°C)
Housing	Die cast aluminum (EN AC-44200) powder-coated
Gear	Metal
Cover	Polycarbonat (alternative aluminum)
Drive shaft	1.4021
Manual override	Outside (option)
Position indicator	Electronical
Power supply	85-265 V AC (alternative AC/DC low voltage power supply)
Additional switches	2 or 4 bistable relais (option)
Potentiometer	Electronical (option)
Travel	10°...100 turns
Duty cycle	100%
Connection	3 cable glands M16x1.5
Travel cut-off	Electronical (wear-free)
Maintenance	Lifetime lubrication (maintenance-free)
Control	3-point-step (option controller 12 bit, bus, ...)

Dimensions

Tensor S



Special shaft types upon request



Type list

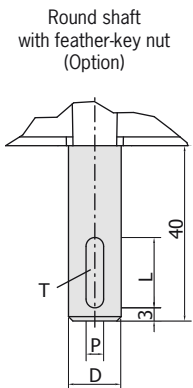
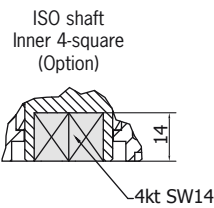
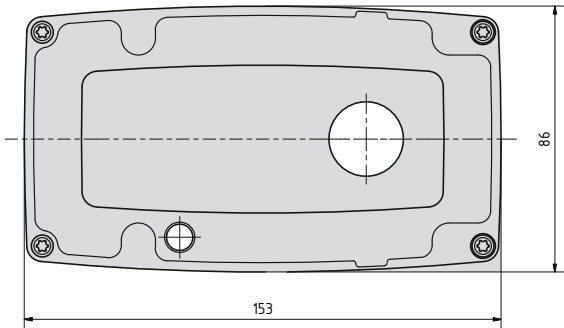
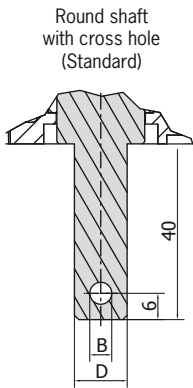
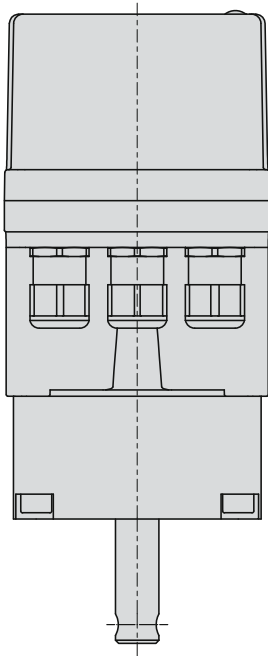
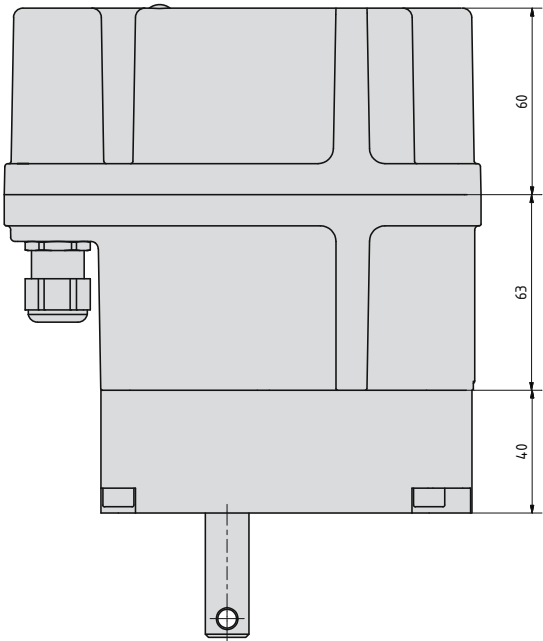
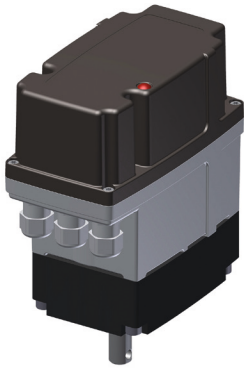
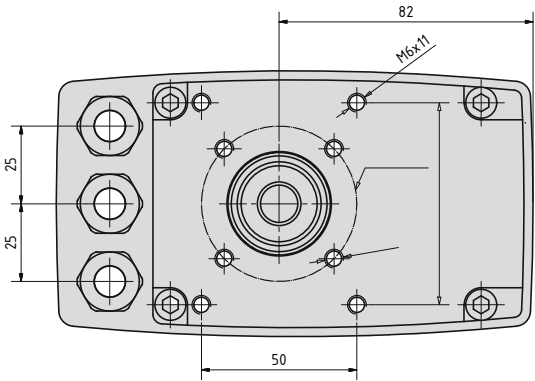
Type	Torque [Nm]	Actuating time [s/90°]
Tensor M 30-08	30	8
Tensor M 30-12	30	12
Tensor M 30-15	30	15
Tensor M 30-30	30	30
Tensor M 30-60	30	60
Tensor M 30-120	30	120
Tensor M 40-12	40	12
Tensor M 40-15	40	15
Tensor M 40-30	40	30
Tensor M 40-60	40	60
Tensor M 40-120	40	120
Tensor M 50-15	50	15
Tensor M 50-20	50	20
Tensor M 50-25	50	25
Tensor M 50-30	50	30
Tensor M 50-60	50	60
Tensor M 50-120	50	120
Tensor M 60-20	60	20
Tensor M 60-25	60	25
Tensor M 60-30	60	30
Tensor M 60-60	60	60
Tensor M 60-120	60	120

Specifications

Protection class	IP 65 (option up to IP 67)
Ambient temperature	–15°C...+60°C (optional –40°C...+80°C)
Housing	Die cast aluminum (EN AC-44200) powder-coated
Gear	Metal
Cover	Polycarbonat (alternative aluminum)
Drive shaft	1.4021
Manual override	Outside (option)
Position indicator	Electronical
Power supply	85–265 V AC (alternative AC/DC low voltage power supply)
Additional switches	2 or 4 bistable relais (option)
Potentiometer	Electronical (option)
Travel	10°...30 turns
Duty cycle	100%
Connection	3 cable glands M16x1.5
Travel cut-off	Electronical (wear-free)
Maintenance	Lifetime lubrication (maintenance-free)
Control	3-point-step (option controller 12 bit, bus, ...)

Dimensions

Tensor M



Type	D	B	L	P	T
30 to 40 Nm	12	5	16	4	2.5
50 to 60 Nm	14	6	22	5	3

Special shaft types upon request



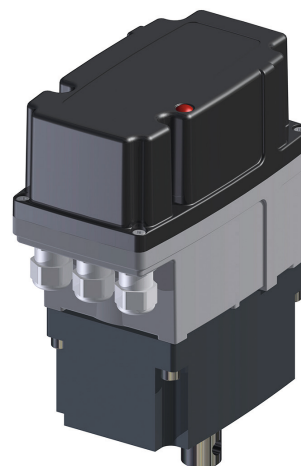
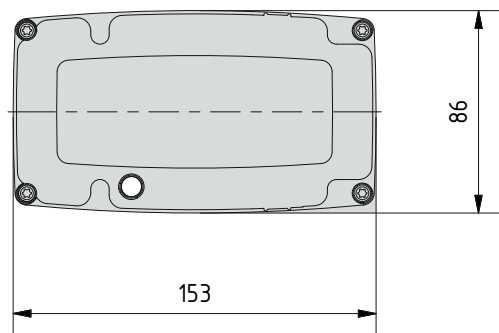
Type list

Type	Torque [Nm]	Actuating time [s/90°]
Tensor L 80-25	80	25
Tensor L 80-30	80	30
Tensor L 80-45	80	45
Tensor L 80-60	80	60
Tensor L 80-90	80	90
Tensor L 80-120	80	120
Tensor L 80-150	80	150
Tensor L 80-210	80	210
Tensor L 100-25	100	25
Tensor L 100-30	100	30
Tensor L 100-45	100	45
Tensor L 100-60	100	60
Tensor L 100-90	100	90
Tensor L 100-120	100	120
Tensor L 100-150	100	150
Tensor L 100-210	100	210
Tensor L 120-42	120	42
Tensor L 120-60	120	60
Tensor L 120-90	120	90
Tensor L 120-120	120	120
Tensor L 120-150	120	150
Tensor L 120-210	120	210

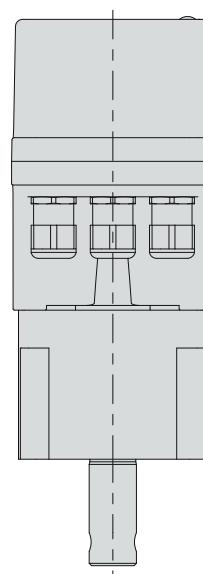
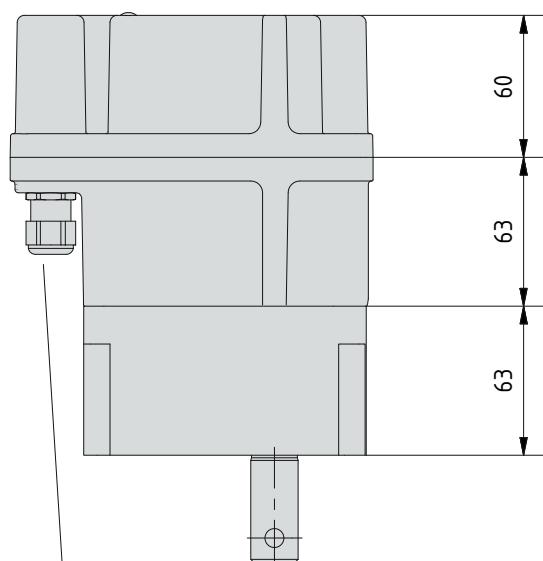
Specifications

Protection class	IP 65 (option up to IP 67)
Ambient temperature	-15°C...+60°C (optional -40°C...+80°C)
Housing	Die cast aluminum (EN AC-44200) powder-coated
Gear	Metal
Cover	Polycarbonat (alternative aluminum)
Drive shaft	1.4021
Manual override	Outside (option)
Position indicator	Electronical
Power supply	85-265 V AC (alternative AC/DC low voltage power supply)
Additional switches	2 or 4 bistable relais (option)
Potentiometer	Electronical (option)
Travel	10°...15 turns
Duty cycle	100%
Connection	3 cable glands M16x1.5
Travel cut-off	Electronical (wear-free)
Maintenance	Lifetime lubrication (maintenance-free)
Control	3-point-step (option controller 12 bit, bus, ...)

Dimensions

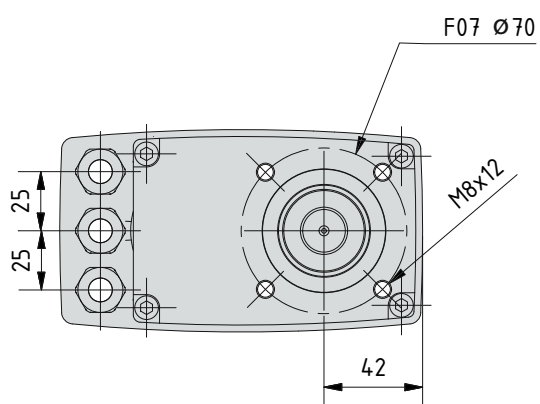
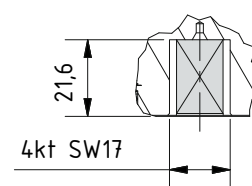


Tensor L

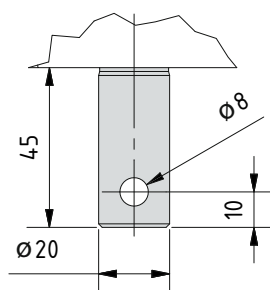


ISO shaft
Inner 4-square
(Option)

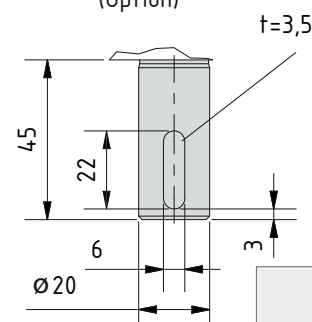
Cable glands optional
(Standard=Blind plugs)

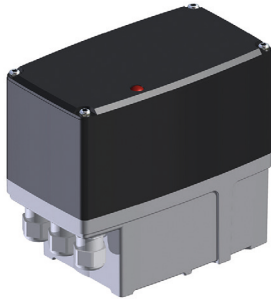


Round shaft
with cross hole
(Standard)



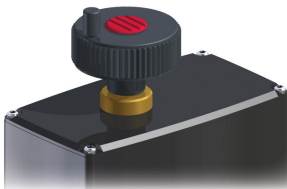
Round shaft
with feather key nut
(Option)





Metal cover

- Robust and shock-proof industrial aluminum design
- Powder-coated



Hand wheel

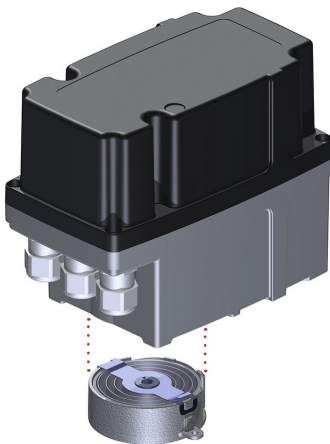
- Automatic disengaging
- Not rotating with shaft



Gauge/Position indicator

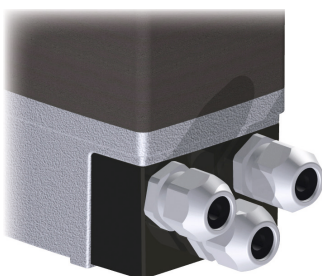
only available with metal cover

- Makes 7-segment display visible from outside



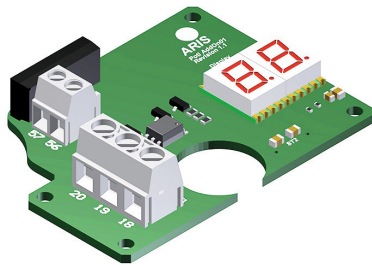
Spring return

- Mechanical emergency shutdown on power failure
- Energy storage by coil spring
- Integrated in actuator housing



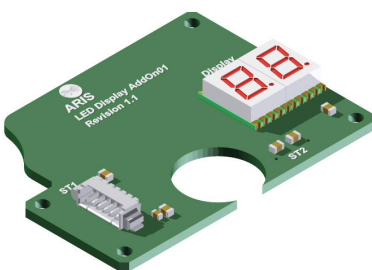
Cable entry adapter

- For cable glands 3xM20 (instead of 3xM16)
- Cable entry from the front
- Aluminum anodized



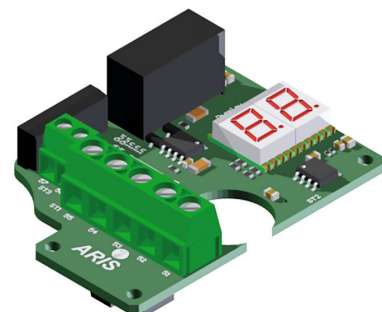
Potentiometer board

- Add-on board
- Integrated in internal system bus
- Electronic potentiometer
- Impedance 1kOhm
- Self-adjusting to the set travel range of the actuator
- 100% usage of potentiometer range
- Manual adaption via on-board keyboard possible
- Useable as voltage divider
- Fault message output as operation status signal
- 2-digit 7-segment display for easy programming and position indication



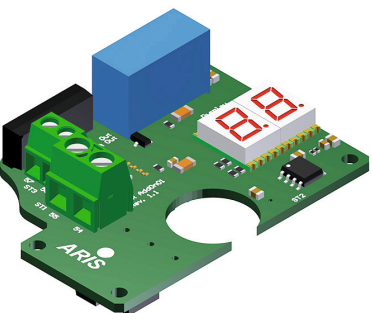
Clear text display board (7-segment)

- 2-digit 7-segment display
- Percent indication of position
- Rotating direction indication
- Menu guide during programming
- Standard at options poti, I-ACT and current output



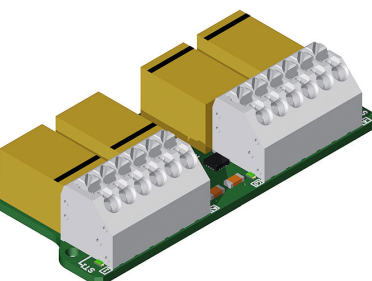
I-ACT board (Add-on)

- Electronic potentiometer
- Bus control
- Control card
- Position indication
- Current output
- Special functions



Current output

- Add-on board
- Integrated in internal system bus
- Position feedback 4–20 mA
- Fault message output for operation status signal
- With 2-digit 7-segment display for easy programming and position indication



Auxiliary switches

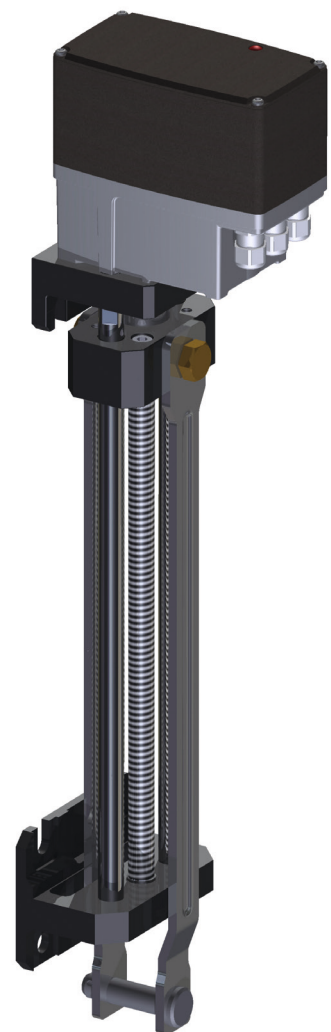
- Additional auxiliary switches with free selectable switch-on and switch-off points
- Easy adjustable via on-board keyboard
- Bistable edition (switching condition is kept even if voltage-free)
- 2 or 4 additional switches available

Linearis TE

- Stainless steel high-helix lead screw Ø18
- Lead 40 mm with optimized efficiency
 - less turns per stroke length
 - long-life motor
 - slow and smooth motor movement
 - low noise and vibration
- Holding torque by self-hold of the actuator
- separately exchangeable actuator
- High-strength, anodized milled aluminum parts, corrosion resistant and lightweight
- Long holes for fastening, i.e. easy installation
- Maintenance-free by dry-run, no lubrication necessary, no dirt deposits on grease (longer life span)
- Embedded (dry) lubricants inside the lead screw nut
- Easily exchangeable with older ARIS damper actuators
- High quality „dryspin® technology“, lead screw and nut made by igus®

Actuating force	max. 5000 N (higher forces upon request)
Actuating time	0.5 mm...3.3 mm/s (load independent at AC)
Travel	150/300 mm stroke (other strokes upon request)
Voltage	85...265 V AC (alternative AC/DC low voltage power supply)
Ambient temperature	-15 °C...+60 °C (optional -40 °C...+80 °C)
Protection class	IP 65 (optional up to IP 67)
Duty cycle	100%

LABS-free according to Daimler testing standard certified by Fraunhofer Institute.

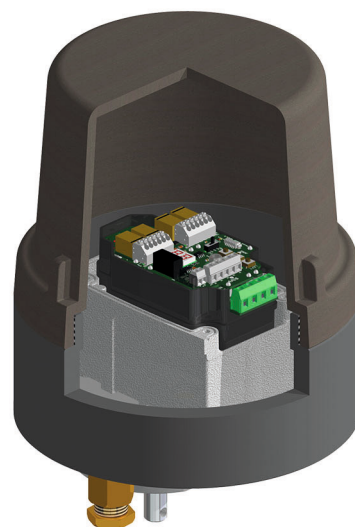


Tensor Ex (Zone 1)

Ex II 2G Ex d IIC T6 Gb

- Usable in Ex-Zones 1 and 2
- Appliance categories 2G and 3G
- Flameproof „d“
- Usable at gases with increased flame transmission capacity „C“
- Highest temperature class T6
- For gases with ignition temperature > 85 °C

Flange connection	ISO F05 and ARIS 65x50
Power supply	230 V, 115 V, 24 V AC/24 V DC
Ambient temperature	-20 °C...+60 °C
Cable entry	1x M20x1,5 bzw. 1x M20x1,5 + 1x M16x1,5
Housing	Aluminum (painted), Ground plate: steel
Ex protection	Ex II 2G Ex d IIC T6 Gb
Protection class	IP65

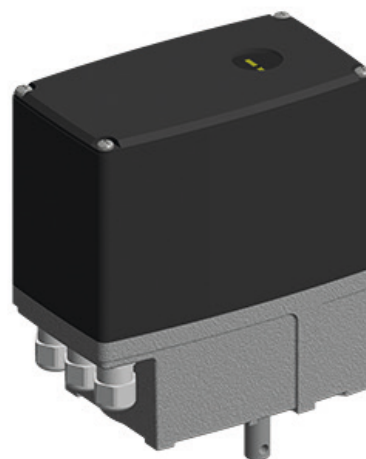


Tensor Ex (Zone 2/22)

Ex II 3G Ex ec IIC T4 Gc X (Zone 2)

Ex II 3D Ex tc IIIC T80°C Dc X (Zone 22)
Ambient temperature: -15 °C ≤ Ta ≤ 45 °C

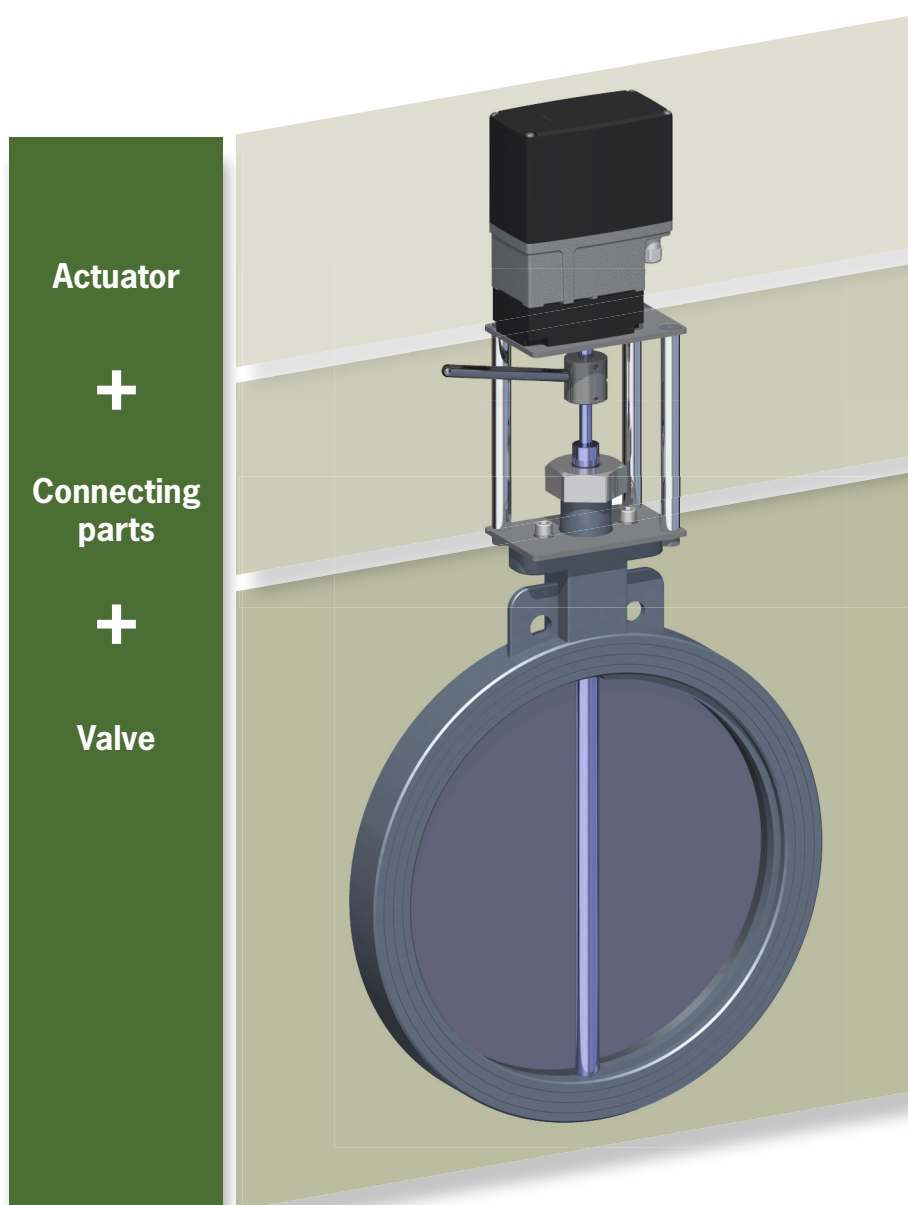
- Compact layout (identical with standard actuator)
- Small surcharge to standard actuator, lower price than with pressurized encapsulation
- Usable in zone 2 or 22
- Dimensions and specifications same as standard actuator
- High product safety by single check at factory



Tensor

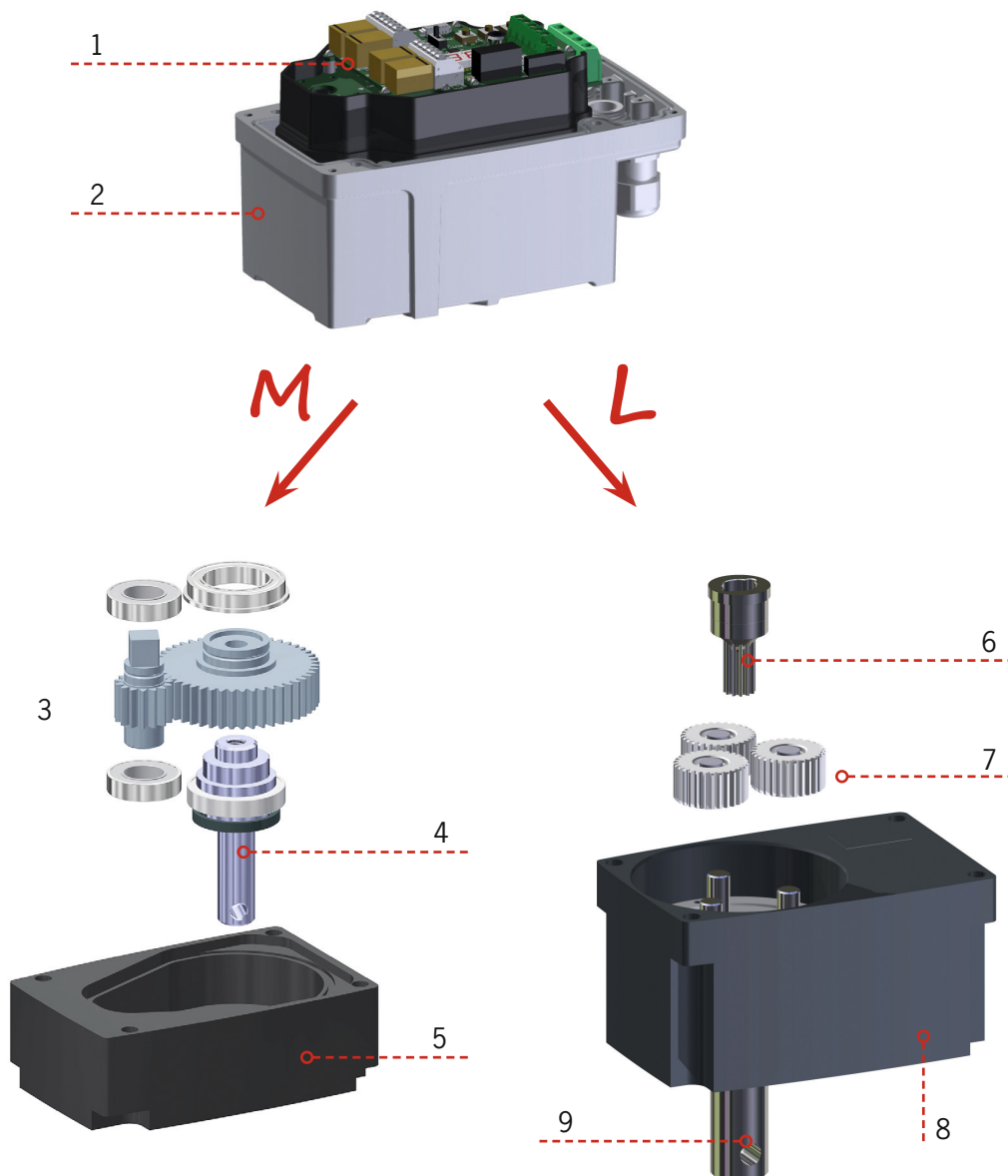
Complete units

Besides our high-tech actuators, ARIS delivers robust industrial valves too. On your demand, an ARIS technician designs a complete unit for you, consisting of valve, connecting parts and actuator. The pre-mounted complete unit is adjusted to the required parameters and tested for proper functionality. Packed and labeled ready for transport ARIS ships your product to your desired shipping address... worldwide!

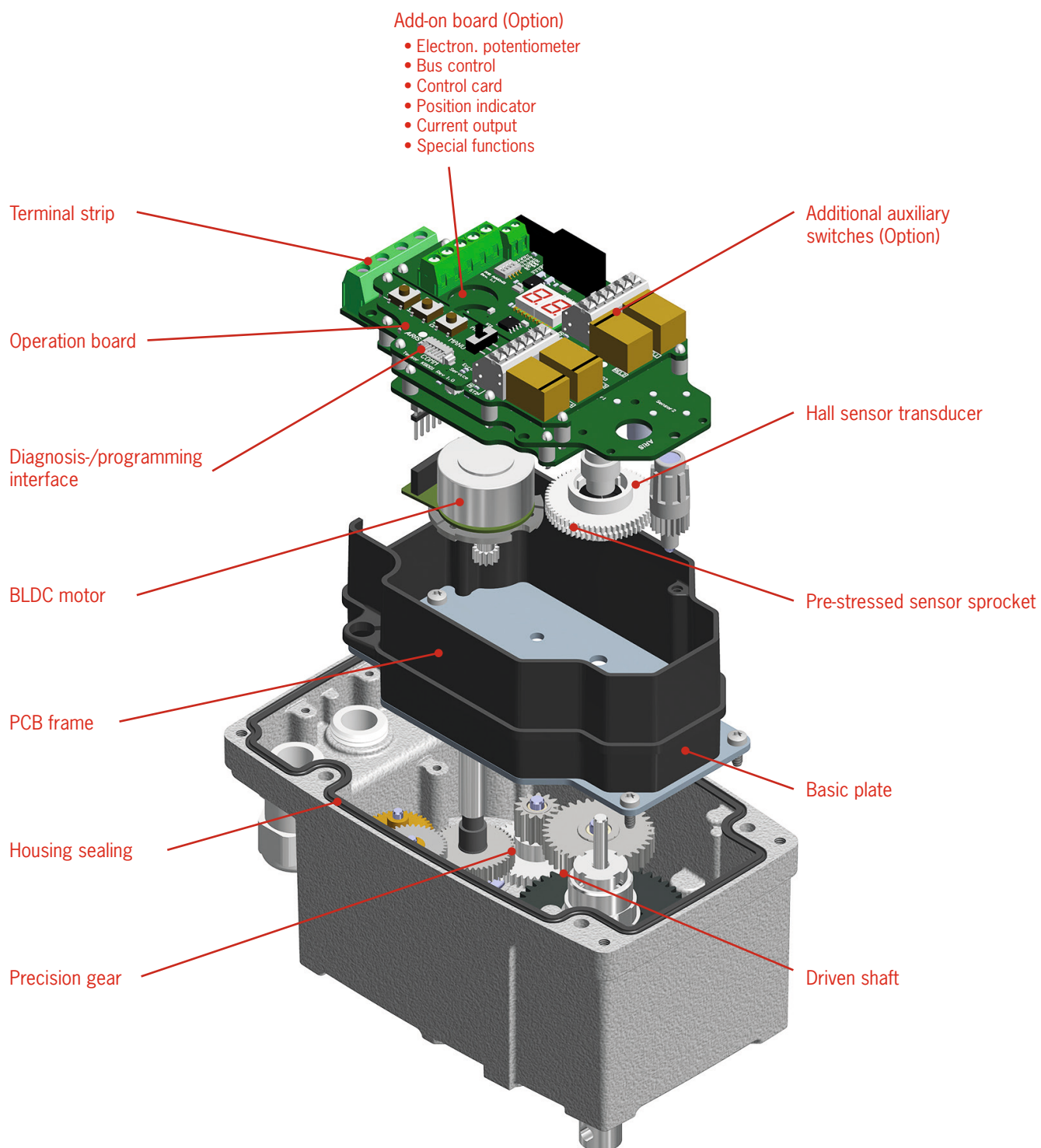


Tensor M

Tensor L



1	Electronic board	6	Sun gear shaft
2	Tensor basic drive	7	Planetary wheel
3	Extension module 40/60 Nm	8	Gear housing 120 Nm
4	Driven shaft	9	Driven shaft
5	Gear housing 40/60 Nm		



Tensor *The next generation actuator technology*



ARIS bridges gaps

You are faced with a problem in your system and are looking for an alternative or new solution?

40 years of experience and expertise in-house. Through newly created capacities our design department is located back at ARIS headquarters in Troisdorf/Germany in 2014. We develop and build high-quality electric actuators that are equipped with contemporary technology. Drives made by ARIS are created in close cooperation of engineers, technicians and the sales team with our clients. So we are able to develop marketable products from scratch and execute to the production stage under one roof. In addition to standard products, we can implement individual solutions for customer projects as well as special drives as OEM goods.

Come to ARIS – Your specialist for modern actuator technology „Made in Germany“.





Your specialist for up-to-date
drive and control technology
for more than 40 years

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