

# ***Tensor*** **2**

High-precision, multi-turn,  
electronic actuator



**New!**  
**TENSOR 2 /**  
**TENSOR 2 HIGHSPEED:**  
+ Wi-Fi Module  
+ CAN Bus Module  
+ OLED Display



***Tensor*** **2**

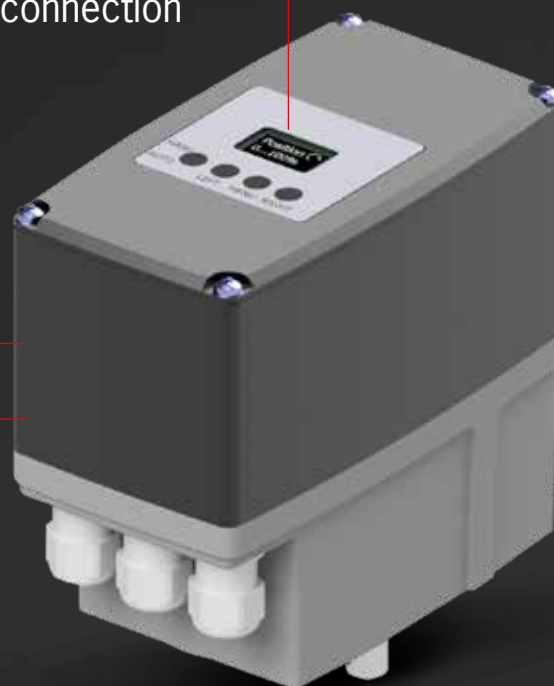
Product Catalogue

[kinetrol.uk](http://kinetrol.uk)

Precision gear  
with longer service life

+ OLED display

+ CAN bus connection



+ Wi-Fi module

Regulated electronics  
with wear-free, absolute  
position detection and  
regulated BLDC motor

#### NOTE

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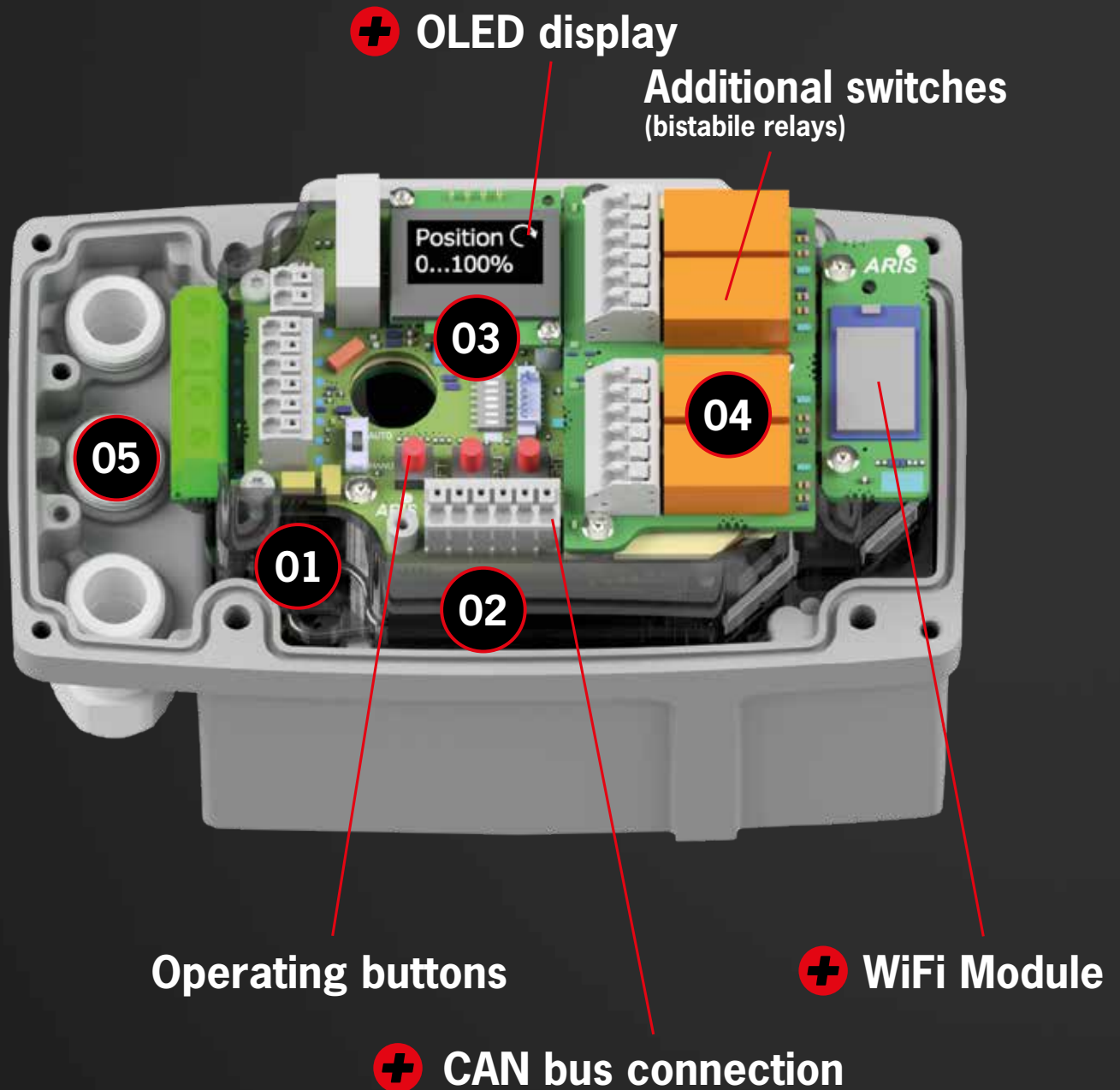


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## TENSOR 2

Compelling arguments for a future-proof technology



### NOTE

Images may include additional options.

## Product Features To Date

- > flexible travel  
from 10° to 100 revolutions
- > position detection accuracy up to 0.03°
- > multi current power supply 85 265V AC  
or 24V DC
- > regulated torques and actuating times
- > long service life (up to 259 x  
over DIN EN 15714-2:2010-02)
- > plug and play for options  
(including retrofit)
- > blocking system and overload protection,  
ramps, special characteristic curves, etc.

## New Features / Developments

### Broadening of functional scope

- > Wi-Fi module (option)
- > Intelligent Torque Control System i-TC  
with torque shut-off and  
confirmation
- > CAN bus module (option)
- > keypad in the cover –  
external operation (option)

## New Features / Developments

### Modernisation of the menu structure

- > optimised menu guidance
- > simplified navigation
- > plain text display
- > quicker start-up

### Modernisation of the display – modern, multi-line OLED display instead of 7-segment display

### Functionality can be expanded based on re- quirements (I-ACT controller, power output, potentiometer, CAN bus) using software validation codes

- > no replacement of hardware necessary
- > immediate availability – no delivery time
- > functional enhancements can be  
quickly and easily retrofitted at any time  
using software validation codes
- > torque and actuating time can be selected
- > the performance data from the actuator can  
be adjusted as required by the customer
- > different torque/actuating time combinations  
can be selected in the menu. The actuating  
times and torque values can be set separa-  
tely (and differently) for both rotation  
directions. This means that it is also possible  
to adjust the system to requirements on site

### 01

#### Precise and durable

Precision gear with high  
control accuracy and longer  
service life.  
> Highly reliable

### 02

#### Backlash-free and wear-free

Contactless, high resolution  
and absolute position detection.  
> Consistently high precision

### 03

#### Flexible and easy to use

Easy to configure using  
buttons and menu navigation.  
> Quick start-up

### 04

#### Easy to expand

Options are simply connected up  
and automatically recognised.  
> Future-proof  
> Functional enhancements  
can be enabled using a  
software validation code

### 05

#### High contact protection

All electrical components  
are 100% covered.  
> High degree of safety

# **TENSOR 2**

## Applications



**Boiler systems**



**Industrial furnaces**



**Paint lines**



**Roasting**



**Dispensing technology**



**Industrial combustion**



**Biogas plants**



**Industrial ventilation**



**Smokehouses**



**Environmental technology**



**Silo and bulk material technology**





**Industrial valves**



**Food technology**



**Malting technology**



**Gas control systems**



**Vehicle construction**



**Solar technology**



**Chemical plants**



**Extinguishing systems**



**Shipbuilding**

**TENSOR 2**

## Technische Daten

**Tensor 2****HIGHSPEED Tensor 2****Shared product features of Tensor 2 and Tensor 2 Highspeed**

- > Wi-Fi module (option)
- > Intelligent Torque Control System i-TC with torque shut-off and confirmation
- > CAN bus module (functional enhancement)
- > keypad in the cover – external operation (option)
- > optimised menu guidance
- > simplified navigation, plain text display
- > quicker start-up
- > OLED display
- > functionality can be expanded based on requirements (I-ACT controller, power output, potentiometer, CAN bus) using software validation codes
- > no replacement of hardware necessary
- > functional enhancements can be quickly and easily retrofitted at any time using software validation codes

Protection rating	IP 66 / IP 67 (Tensor 2 with metal cover IP 66)
Ambient temperature	-15°C...+60°C (optional -20°C...+80°C)
Housing	Die-cast aluminium (EN AC-44200) powder-coated / Highspeed: anodised
Gear	Metal
Cover	Polycarbonate (aluminium optional) / Highspeed aluminium: die-cast
Drive shaft	1.4021
Hand wheel	External (optional)
Position indicator	Electronic
Supply voltage	85–265V AC (24V DC low voltage power supply optional)
Additional switches	2 or 4 bistable relays (optional)
Potentiometer	Electronic (optional)
Travel	10°...100 revolutions
Duty cycle	100 %
Connection	3 cable entries M16x1.5 / Highspeed 3 x M20x1.5
Travel cut-off	Electronic (wear-free)
Maintenance	Lifetime lubrication (maintenance-free)
Control	3-point step (optional controller 12 bit, bus,...)

**NOTE**

Images may include additional options.



# THE TENSOR 2 SERIES

## Size S (1 to 20 Nm)



TENSOR 2 S



TENSOR 2 S HIGH SPEED

## Size M (30 to 75 Nm)



TENSOR 2 M



TENSOR 2 M HIGH SPEED

## Size L (80 to 200 Nm)



TENSOR 2 L




TENSOR 2 L HIGH SPEED

# SIZE S

for torques up to 20 Nm



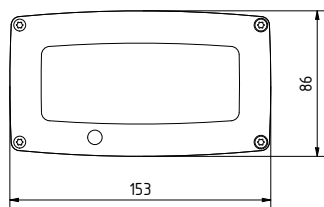
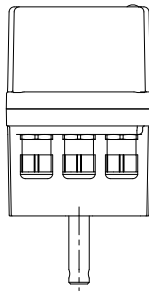
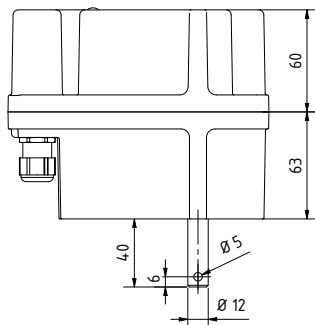
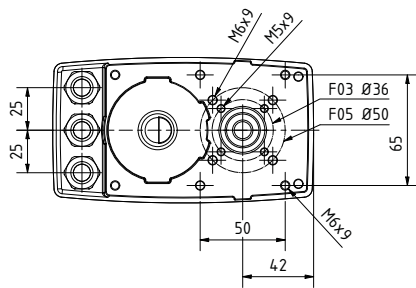
Also available as:  
 Tensor 2 Ex (Zone 1)  
Tensor 2 Ex (Zone 2/22)

SIZE S									
Torque (Nm)	Type	Actuating time (s/90°)							
5	Tensor 2 S HS	0,7	1	2	3	6	15	30	60
	Tensor 2 S			2	3	6	15	30	60
10	Tensor 2 S HS	0,8	1	2	3	6	15	30	60
	Tensor 2 S				3	6	15	30	60
15	Tensor 2 S HS			2	3	6	15	30	60
	Tensor 2 S				3	6	15	30	60
20	Tensor 2 S HS			2	3	6	15	30	60
	Tensor 2 S					6	15	30	60
Other actuating times on request		Preferred types							

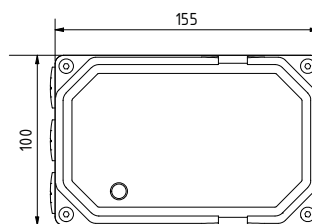
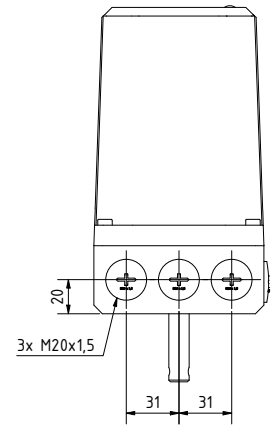
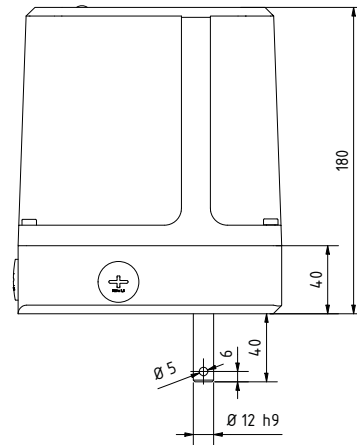
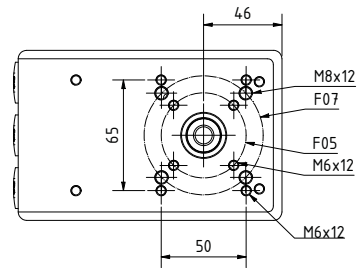
# DIMENSIONS

## *TENSOR 2 S*

# TENSOR 2 S

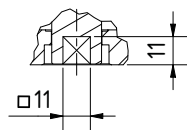


# TENSOR 2 S HIGHSPEED

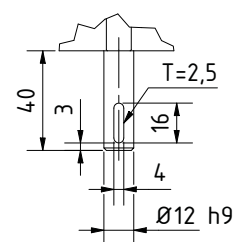


## TENSOR 2 S and TENSOR 2 S HIGHSPEED

ISO shaft  
inner 4-square




Round shaft  
with feather key



# SIZE M

for torques from 30 to 75 Nm



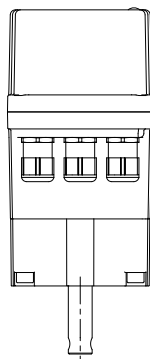
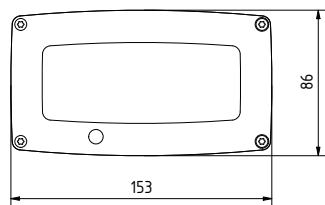
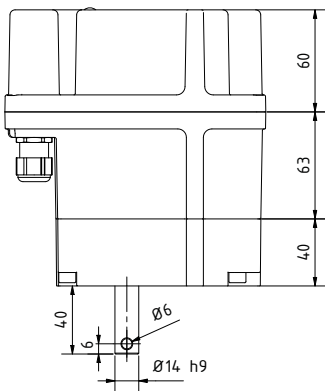
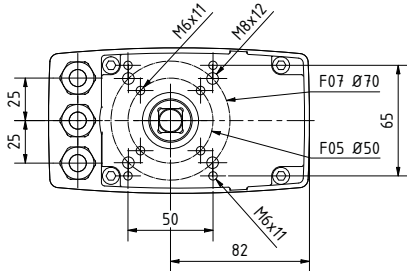
Also available as:  
 Tensor 2 Ex (Zone 1)  
Tensor 2 Ex (Zone 2/22)

SIZE M WITH SPUR WHEEL

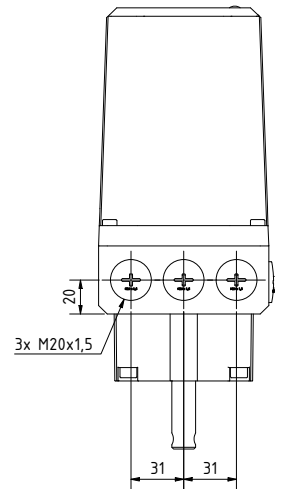
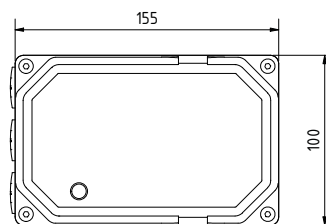
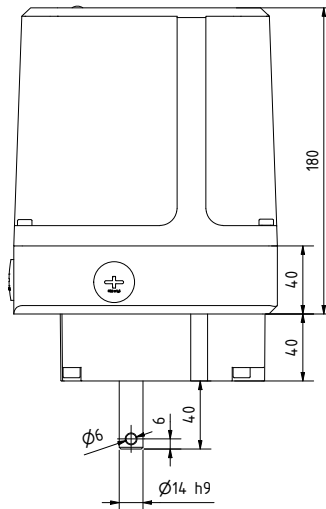
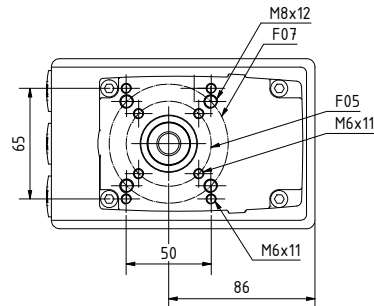
Torque (Nm)	Type	Actuating time (s/90°)							
30	Tensor 2 M HS	4	6	8	12	15	30	60	120
	Tensor 2 M			8	12	15	30	60	120
40	Tensor 2 M HS	4	6	8	12	15	30	60	120
	Tensor 2 M				12	15	30	60	120
50	Tensor 2 M HS		6	8	12	15	30	60	120
	Tensor 2 M					15	30	60	120
60	Tensor 2 M HS		6	8	12	15	30	60	120
	Tensor 2 M						30	60	120
75	Tensor 2 M HS			8	12	15	30	60	120
	Tensor 2 M							60	120
Other actuating times on request		Preferred types							

# DIMENSIONS

## TENSOR 2 M

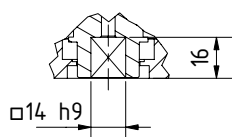


## TENSOR 2 M HIGH SPEED

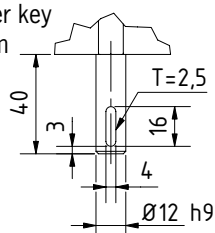


### TENSOR 2 M and TENSOR 2 M HIGH SPEED

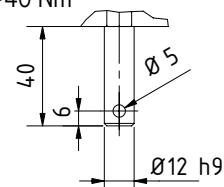
ISO shaft  
inner 4-square



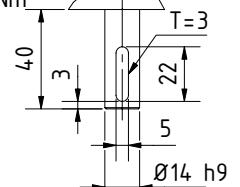
Round shaft Ø12  
with feather key  
30–40 Nm



Round shaft Ø12  
with cross hole  
30–40 Nm



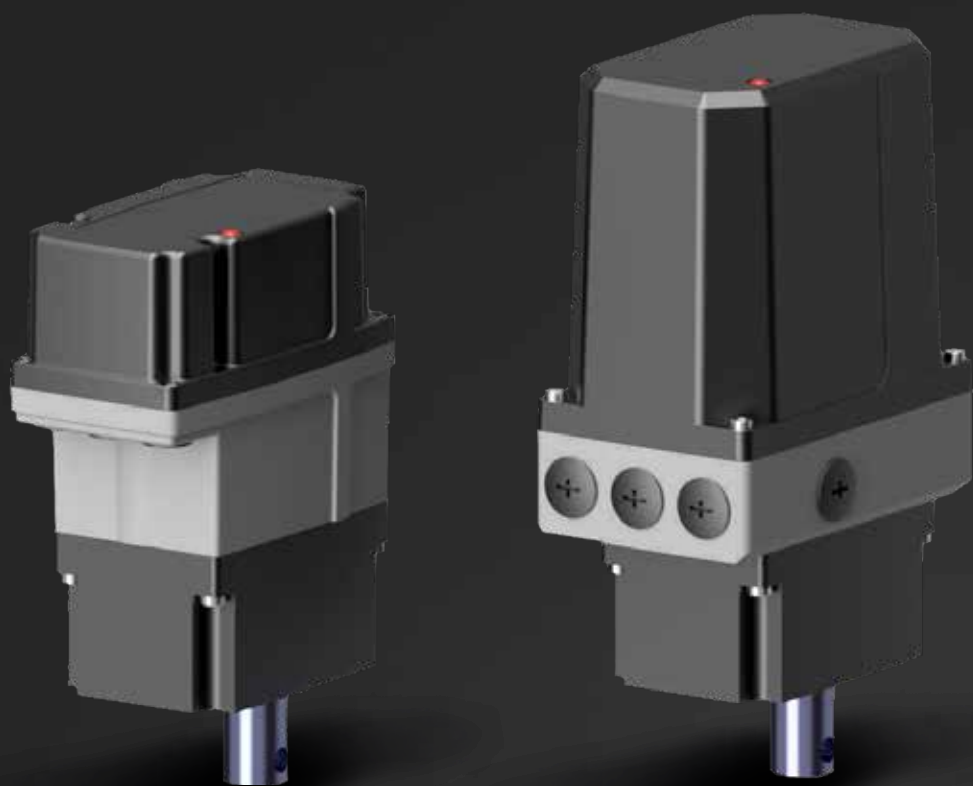
Round shaft Ø14  
with feather key  
50–60 Nm






# SIZE L

for torques from 80 to 200 Nm



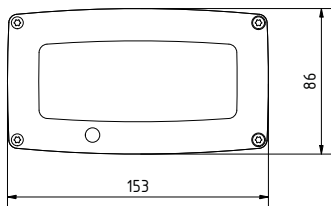
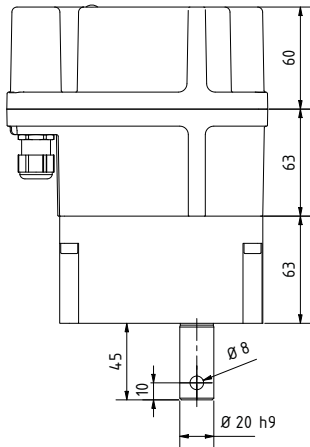
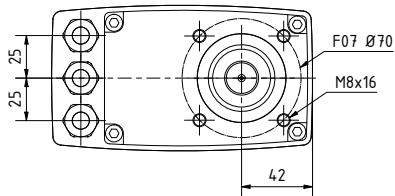
Also available as:  
 Tensor 2 Ex (Zone 1)  
Tensor 2 Ex (Zone 2/22)

SIZE L WITH PLANETARY WHEEL

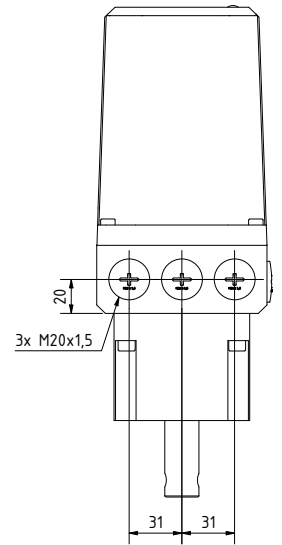
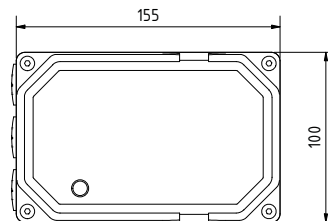
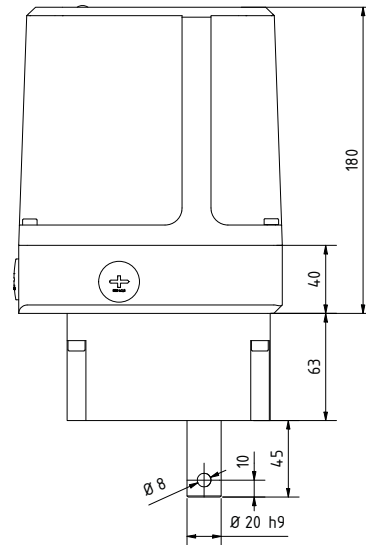
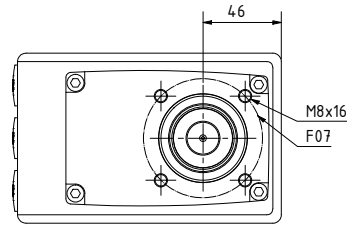
Torque (Nm)	Type	Actuating time (s/90°)								
		12	15	20	30	45	60	120	210	
80	Tensor 2 L HS				30	45	60	120	210	
	Tensor 2 L									
100	Tensor 2 L HS	12	15	20	30	45	60	120	210	
	Tensor 2 L				30	45	60	120	210	
120	Tensor 2 L HS	12	15	20	30	45	60	120	210	
	Tensor 2 L					45	60	120	210	
150	Tensor 2 L HS		15	20	30	45	60	120	210	
	Tensor 2 L						60	120	210	
180	Tensor 2 L HS			20	30	45	60	120	210	
	Tensor 2 L							120	210	
200	Tensor 2 L HS				30	45	60	120	210	
Other actuating times on request		Preferred types								

# DIMENSIONS

## TENSOR 2 L

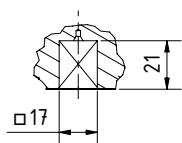


## TENSOR 2 L HIGH SPEED

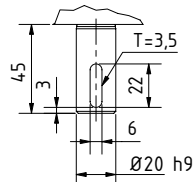


### TENSOR 2 L and TENSOR 2 L HIGH SPEED From 180 Nm

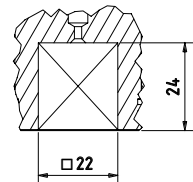
ISO shaft  
inner 4-square



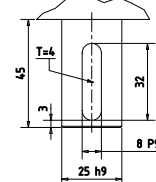
Round shaft  
with feather



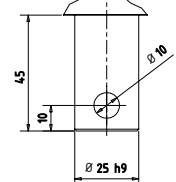
ISO shaft inner  
4-square SW22



Round shaft with  
feather key Ø25h9



Round shaft with  
cross hole Ø25h9



# TENSOR 2

## Options (mechanical)

Option	Tensor 2	Tensor 2 Highspeed
Keypad in the cover	<ul style="list-style-type: none"> <li>&gt; programming, parameterization and operation from outside</li> <li>&gt; programming menu display and position display</li> </ul>  	
Metal cover	<ul style="list-style-type: none"> <li>&gt; robust and impact-resistant industrial design</li> <li>&gt; made from aluminium</li> <li>&gt; powder-coated</li> <li>&gt; IP66 protection rating</li> </ul> 	<ul style="list-style-type: none"> <li>&gt; metal cover as standard</li> <li>&gt; die-cast aluminium</li> <li>&gt; powder-coated</li> <li>&gt; robust industrial design</li> </ul> 
Hand wheel	<ul style="list-style-type: none"> <li>&gt; in the cover</li> <li>&gt; not rotating with shaft</li> <li>&gt; automatic disengaging</li> </ul> 	<p><b>Operator-friendly design</b></p> <ul style="list-style-type: none"> <li>&gt; larger diameter</li> <li>&gt; with hand knob</li> <li>&gt; not rotating with shaft</li> <li>&gt; automatic disengaging</li> </ul>  <p><b>Compact design</b></p> <ul style="list-style-type: none"> <li>&gt; hand wheel on the side</li> <li>&gt; not rotating with shaft</li> <li>&gt; automatic disengaging</li> </ul> 
Gauge glass/ position indicator	  <ul style="list-style-type: none"> <li>&gt; OLED display visible from outside</li> </ul>	  <ul style="list-style-type: none"> <li>&gt; OLED display visible from outside</li> </ul>
M20 cable entry	  <ul style="list-style-type: none"> <li>&gt; adapter for M20 cable gland</li> <li>&gt; cable entry 3 x M20x1.5 with blind plug</li> <li>&gt; M20 cable glands optional</li> </ul>	  <ul style="list-style-type: none"> <li>&gt; series: cable entry 3 x M20x1.5, blind plug</li> <li>&gt; M20 cable glands optional</li> </ul>

## TENSOR 2

# Options / Functional enhancements (electronic)

The new ARIS Tensor 2 software allows the flexible use of additional electronic functions, which can be freely selected by the customer depending on the model ordered.

### I-ACT positioner

- > integrated in the internal system bus
- > electronic positioner
- > 12-bit system resolution
- > setpoint inputs:
  - 0(2) bis 10V DC
  - 0(4) bis 20mA
- > potentiometer 10 kOhm
- > actual value output:
  - 0(2) bis 10V DC
  - 0(4) bis 20mA
- > fault message output as switch contact
- > special functions that can be configured:
  - wire break detection; hysteresis; block protection
- > includes 'power output', 'potentiometer' and '3-point step' control modes

### Potentiometer

- > integrated in the internal system bus
- > electronic potentiometer (voltage divider)
- > 1 kOhm impedance
- > auto-adjustment
- > fault message output as switch contact
- > electronic position indicator



### Additional switches

- > add-on board
- > integrated in the internal system bus
- > additional auxiliary switches with freely programmable switch-on and switch-off points
- > bistable switch state even with deenergised Tensor 2
- > 2-way or 4-way version

On the highest configuration level on I-ACT, the control modes 'power output', 'potentiometer' and '3-point step' are always enabled and can be selected in the menu.

### Power output

- > integrated in the internal system bus
- > position feedback
- > 12-bit system resolution
- > actual value output:
  - 0(2) bis 10V DC
  - 0(4) bis 20mA
- > fault message output as switch contact

### CAN-Bus

- > Control via CAN bus
- > Different baud rates can be selected
- > CAN bus position feedback, alternatively analogue outputs

# TENSOR 2

## Variants

### Linearis TE 2 and TE 2 HS

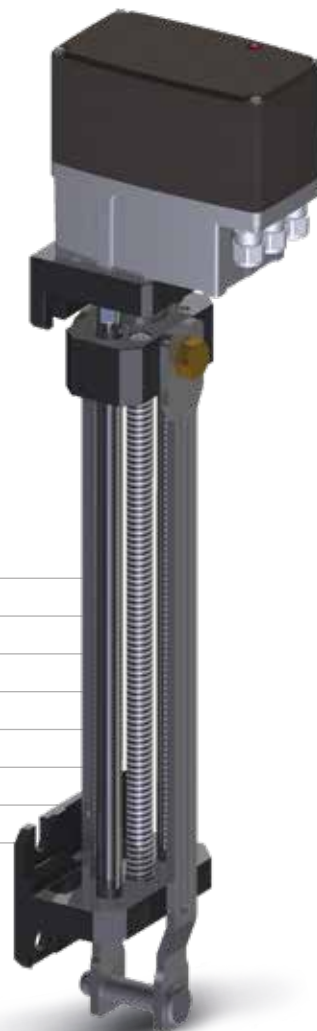
- > 40mm lead with optimised efficiency
  - fewer revolutions per stroke length
  - longer motor life
  - slow and quiet motor movement
  - low noise and minimal vibration
- > holding torque via drive lock
- > drive head can be replaced separately
- > high-strength, anodized milled aluminium parts, corrosion-resistant
- > long mounting slots facilitate quicker and easier installation
- > maintenance-free due to dry run, no lubrication required, no dirt deposit on grease (longer service life)
- > (dry) lubricants stored in ball screw nut
- > easily interchangeable with earlier ARIS damper actuators
- > high-quality 'dryspin® technology', spindle and nut by igus®

### PROPERTIES

#### LINEARIS TE 2

<b>Actuating force</b>	max. 5000 N (higher forces on request)
<b>Actuating time</b>	0,5 mm...16 mm/s (independent of load)
<b>Travel</b>	150/300 mm stroke (other strokes on request)
<b>Voltage</b>	85–265V AC (24V DC low voltage power supply optional)
<b>Ambient temp.</b>	-15°C...+60°C (optionally -40°C...+80°C)
<b>Protection rating</b>	IP 66 (IP 66/67) depending on type of drive
<b>Duty cycle</b>	100 %

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







## Varianten

### Ventaris TE 2 und TE 2 HS

- > stainless steel trapezoidal threaded spindle Ø18
- > spindle pitch 4mm/rev
  - precise positioning
  - actuator travel quiet and with minimal vibration
- > self-locking of actuator via trapezoidal threaded spindle
- > drive head can be replaced separately
- > easy replacement of older ARIS valve units
- > high strength, anodised milled aluminium parts combined with corrosion-resistant stainless-steel components
- > flexible mounting options (direct, flange)
- > maintenance-free due to dry run, no lubrication required, no dirt deposit on grease (longer service life)
- > (dry) lubricants stored in ball screw nut
- > high-quality 'dryspin® technology', spindle and nut by igus®

### PROPERTIES

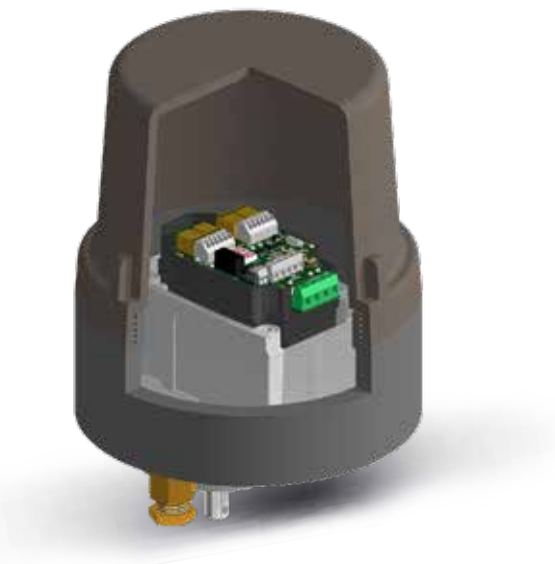
#### VENTARIS TE 2 AND TE 2 HS

<b>Actuating force</b>	max. 6000 N (higher forces on request)
<b>Actuating time</b>	0,1...1,6 mm/s
<b>Travel</b>	50 mm stroke (other strokes on request)
<b>Voltage</b>	85–265V AC (24V DC low voltage power supply optional)
<b>Ambient temp.</b>	-15°C...+60°C (optionally -40°C...+80°C)
<b>Protection rating</b>	IP 66 (IP 66/67) depending on type of drive
<b>Duty cycle</b>	100 %



# TENSOR 2

## Variants



### Tensor 2 Ex (Zone 1)

**Ex II 2G Ex d IIC T6 Gb**

- > for use in Zone 1, 2 and 22
- > device categories 2G and 3G
- > flameproof enclosure „d“
- > suitable for gases with higher flammability „C“
- > maximum temperature class T6
- > for gases with ignition temperature > 85 °C

## PROPERTIES

### TENSOR 2 EX (ZONE 1)

Flange connection	ISO F05 and ARIS 65x50
Voltage	85–265V AC (24V DC optional)
Umgebungstemp.	–20°C...+60°C
Kabeleinführung	1x M20x1,5 bzw. 1x M20x1,5 + 1x M16x1,5
Housing	aluminium (painted), ground plate steel
Ex protection	Ex II 2G Ex d IIC T6 Gb
Protection rating	IP 65

# TENSOR 2

## Variants



### Tensor 2 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:  $-15^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$**

- > compact design (identical to standard actuator)
- > marginally higher price point than standard actuator, considerably less expensive than with flameproof enclosure
- > suitable for Zone 2 or 22
- > dimensions and technical specifications same as the standard actuator
- > individually factory-tested to ensure high safety standard
- > also available with hand wheel and gauge glass

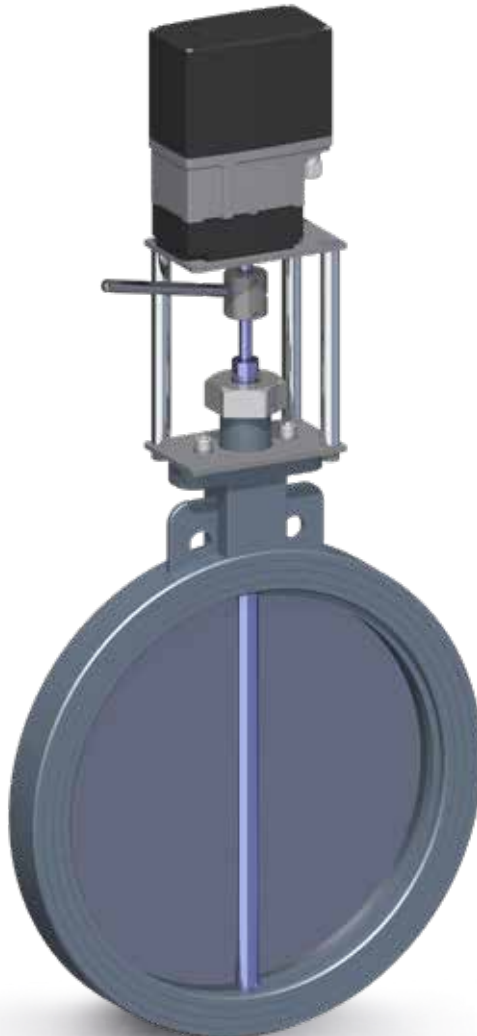
## PROPERTIES

### TENSOR 2 EX (ZONE 2/22)

Flange connection	see Tensor 2
Voltage	85–265V AC (24V DC optional)
Ambient temp.	-15°C...+50°C
Cable entry	3x M16x1,5
Housing	die-cast aluminium (EN AC-44200), powder-coated
Ex protection class	II 3G Ex ec IIC T4 Gc X (Zone 2); II 3D Ex tc IIIC T80°C Dc X (Zone 22) Ambient temperature: $-15^{\circ}\text{C} \leq T_a \leq 50^{\circ}\text{C}$
Protection rating	IP 65

**Tensor 2**

## Complete Units



**In addition to high-quality actuators, ARIS also supplies robust industrial valves. On request, our engineers will configure a complete unit consisting of valve, connecting parts and actuator to your specifications.**

The pre-assembled unit will be set to the required parameters and tested for optimal functionality. We will then ship the complete unit, securely packed together with all the relevant documentation, to your requested address ... to any location worldwide.

**ARIS – Your specialist for modern actuator and valve technology ‘made in Germany’.**

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Berthold-Beitz-Boulevard 492  
45141 Essen

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Powerite Division of Kinetrol  
Steelpark Trading Estate  
Wolverhampton, WV11 3BF

[kinetrol.uk](http://kinetrol.uk)

T. 01902 780700  
[sales@kinetrol.uk](mailto:sales@kinetrol.uk)

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