nano+

Electrical actuator for industrial applications

Available in
The Allrounder – Compact and robust

Classic actuator technology

With the Nano+ series ARIS offers a new generation of robust actuators in the smallest possible space. Powder-coated housing and hoods ensure safe and reliable operation even in harsh industrial environments. The practical and optimized design of the Nano+ manages a comfortable setting and a fast electrical connection.

The classic actuator technology with synchronous or DC motor ensures easy replacement of actuators in existing circuits and plants. From the outset the design has been considered all market standard options, so that easy commissioning is ensured even when the actuator is fully equipped. All options have their distinct position and are designed so that all electrically conductive parts are securely covered. Thus provides the Nano+ maximum security in a compact space.

Several mounting holes and a changeable shaft system ensure simple mounting on all common valves. Of course, all shaft types and mounting hole circles of earlier series have been taken into account, so that it is possible to replace older drives without changing the existing system.

The shafts of the base drive and the additional gear run on ball bearings. This achieves the Nano+ precision and durability that are higher than other drive concepts. An always up and down guided construction of the limit switches and a hollow shaft potentiometer directly built on the shaft provide the basis for a precise cut-off and position detection, which form the basis for a high efficiency of your investment.
For our specific requirements for torque and small spaces the Nano+ is perfectly suitable.

Minimal base area – Compact design up to 120 Nm.

In our systems Ex and standard drives are used together. The uniform size facilitates planning.

ATEX zone 2/22 with similar dimensions as the standard type – Ultra compact and cost efficient, since there is no pressurized encapsulation required.

Increase efficiency of plants by high precision potentiometer position feedback, thanks to the hollow shaft potentiometer directly mounted on the drive shaft.

With our gas control systems, we attach great importance to a precise flow control. The Nano+ meets these requirements perfectly.
### Type list

<table>
<thead>
<tr>
<th>Type</th>
<th>AC Torque (Nm)</th>
<th>Actuating time [s/90°]</th>
<th>Type</th>
<th>DC Torque (Nm)</th>
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Values in ( ) = 60 Hz

Other values upon request

### Specifications

- **Motor**: Synchronous motor, short-circuit proof
- **Protection class**: IP 65 (optional IP 66)
- **Ambient temperature**: –15 °C...+60 °C (optional –40 °C...+80 °C (with PMR: 0 °C...+60 °C)
- **Housing**: Die cast aluminum (EN AC-44200) powder-coated
- **Gear**: Metal
- **Cover**: Aluminum EN AW-6060 T6 / powder-coated
- **Shaft**: 1.4021
- **Position indicator**: optional
- **Power supply**: 230 V AC (optional 115 V AC/24 V AC) 24 V DC ±20%
- **Additional switches**: 2 or 4 Stück (optional)
- **Potentiometer**: optional
- **Travel**: 10°...330° (optional Multi-Turn)
- **Duty cycle**: 100%
- **Connection**: 3 cable glands M16x1,5
- **Travel cutoff**: Switching cams/Micro switches
- **Maintenance**: Lifetime lubrication (maintenance-free)
- **Control**: 3-point-step 2-wire-technology
Dimensions
Nano+ S

Cable glands optional
(Standard=Blind plugs)

Position indicator optional

H = 74mm / 105mm / 145mm
depending on type

Round shaft with
cross hole
(Standard)

Round shaft with
feather key
(Option)

ISO shaft
inner 4-square
(Option)

Position indicator
optional

D-Shaft
(Option)
ARIS Stellantriebe GmbH

Specifications

Motor
- Synchronous motor, short-circuit proof
- Direct current brush motor

Protection class
- IP 65 (optional IP 66)

Ambient temperature
- –15 °C...+60 °C (optional –40 °C...+80 °C with PMR: 0 °C...+60 °C)

Housing
- Die cast aluminum (EN AC-44200) powder-coated

Gear
- Metal

Cover
- Aluminum EN AW-6060 T6 / powder-coated

Shaft
- 1.4021

Position indicator
- Optional

Power supply
- 230 V AC (optional 115 V AC/24 V AC) 24 V DC ±20%

Additional switches
- 2 or 4 Stück (optional)

Potentiometer
- Optional

Travel
- 30 bis 40 Nm: 10°...150° / 50 bis 60 Nm: 10°...100° (optional Multi-Turn)

Duty cycle
- 100%

Connection
- 3 cable glands M16x1,5

Travel cutoff
- Switching cams/Micro switches

Maintenance
- Lifetime lubrication (maintenance-free)

Control
- 3-point-step

**Type list**

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<tr>
<th>Type</th>
<th>AC Torque [Nm]</th>
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Values in ( ) = 60 Hz

Other values upon request
Dimensions
Nano+ M

H = 74mm / 105mm / 145mm depending on type

Cable glands optional (Standard = Blind plugs)

Position indicator optional

ISO shaft inner 4-square (Option)

Round shaft with cross hole (Standard)

Round shaft with feather key (Option)

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

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### Specifications

**Motor**
- Synchronous motor, short-circuit proof
- Direct current brush motor

**Protection class**
- IP 65 (optional IP 66)

**Ambient temperature**
- –15 °C...+60 °C (optional –40 °C...+80 °C (with PMR: 0 °C...+60 °C)

**Housing**
- Die cast aluminum (EN AC-44200) powder-coated

**Gear**
- Metal

**Cover**
- Aluminum EN AW-6060 T6 / powder-coated

**Shaft**
- 1.4021

**Position indicator**
- optional

**Power supply**
- 230 V AC (optional 115 V AC/24 V AC)
- 24 V DC ±20%

**Additional switches**
- 2 or 4 Stück (optional)

**Potentiometer**
- optional

**Travel**
- 10°...330° (optional Multi-Turn)

**Duty cycle**
- 100%

**Connection**
- 3 cable glands M16x1,5

**Travel cutoff**
- Switching cams/Micro switches

**Maintenance**
- Lifetime lubrication (maintenance-free)

**Control**
- 3-point-step 2-wire-technology

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Dimensions
Nano+ L

H= 74mm/ 105mm/ 145mm depending on type

Cable glands optional (Standard=Blind plugs)
Position indicator optional

Round shaft with cross hole (Standard)

ISO shaft inner 4-square (Option)

Round shaft with feather key (Option)

F07 Ø 70
M8x16

25 25

4.5

21.6

4kt 5W17

Ø20

4.5

22

6

3

Ø20

63

86

153

25

22
**Options**

**Cams**
- 330° / 180°
- With threaded pin for safe fixing

**Hand wheel**
- Automatic disengaging
- Not rotating with shaft

**Mechanical position indicator**
- Freely adjustable

**Multi-Turn**
- Optional special resolution for potentiometer and shutoff system
- For applications with more than 1 revolutions

**PMR-Nano (AC)**
- Power supply: 230 V ±10%, 50/60 Hz
- Special voltages/frequencies available
- Set value input: 0 (4) to 20 mA (DC), optional 0 (2) to 10 V
- Burden 250 Ω, overload protection 25 mA
- Reverse voltage protection up to −25 mA
- Resolution 10 bit
- Actual value output: Fixed limits: 0 or 4-20 mA
  (Option 0 or 2-10 V)
  Current drain, burden max. 500 Ω
  Resolution 10 bit

**Two or four additional auxiliary switches**
- Setup via tool-free adjustable switching cams
- Different cam shapes offer different functionalities of auxiliary switches
- High switching safety by spacer between circuit board and cam shaft

**Service switch** (Standard at DC)
- Manual/Automatic operation (switch)
- CW/CCW run (button)
- Integrated inside actuator
Options

Current output (add-on board)
- Position feedback 4–20 mA

Potentiometer

Standard
- 1 kΩ/10 kΩ
- Resolution: Nano S+L 90°/180°/320°, Nano M 30...40 Nm 10°...150°,
  Nano M 50...60 Nm 10°...100° (optional Multi-Turn)

Potentiometer refeed acc. to DIN EN 12067-2
- Regulation of fuel, air and exhaust streams in combination with electronic
  compound regulating system
- Certified actuator and potentiometer
- Continuous form closure from the actuator shaft to the potentiometer shaft
- Vibration tested acc. to EN 60068-2-6
- Electrical testing of actuator acc. to DIN EN 60730

Parallel relays/Single wire operation (AC)
- AC relay
- Completely wired
- Operation voltage=Motor voltage
- Parallel connection of several actuators

Heating
- For heating of the actuator’s interior against water condensation

Fail-safe
- Energy storage
- Run to a pre-defined position on power cutoff
- Charging time <3 minutes
- Integrated inside actuator
- Run with standard or high speed
- 24 V DC

Cable entry adapter
- For cable glands 3xM20 (instead of 3xM16)
- Cable entry from the front
- Anodized aluminum
More possible applications

**Linearis N+**

- 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©

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actuating force</td>
<td>max. 5000 N (higher forces available)</td>
</tr>
<tr>
<td>Actuating time</td>
<td>1.3 mm...13 mm/s (load independent at AC)</td>
</tr>
<tr>
<td>Travel</td>
<td>150/300 mm stroke (more stroke length available)</td>
</tr>
<tr>
<td>Voltage</td>
<td>230 V, 115 V, 24 V AC/24 V DC</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>–15 °C...+60 °C (optional –40 °C...+80 °C)</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP 65 (optional up to IP 67)</td>
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<tr>
<td>Duty cycle</td>
<td>100%</td>
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</tbody>
</table>

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

More details on separate data sheet.
More possible applications

Nano+ 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

<table>
<thead>
<tr>
<th>Flange connection</th>
<th>ISO F05 and ARIS 65x50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>230 V, 115 V, 24 V AC/24 V DC</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>–20 °C...+60 °C</td>
</tr>
<tr>
<td>Cable entry</td>
<td>1x M20x1.5 or 1x M20x1.5 + 1x M16x1.5</td>
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<tr>
<td>Housing</td>
<td>Aluminum (painted), steel (base)</td>
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<tr>
<td>Ex protection</td>
<td>Ex II 2G Ex d IIC T6 Gb</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP65</td>
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</tbody>
</table>

Nano+ 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

More details on separate data sheet.
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!
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th></th>
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<tbody>
<tr>
<td>1</td>
<td>Position indicator (optional)</td>
<td>9</td>
<td>Shaft sealing</td>
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<tr>
<td>2</td>
<td>Hollow shaft potentiometer</td>
<td>10</td>
<td>Drive shaft (also at Nano S)</td>
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<tr>
<td>3</td>
<td>Motor capacitor</td>
<td>11</td>
<td>Cable entry (optional)</td>
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<tr>
<td>4</td>
<td>End position switches</td>
<td>12</td>
<td>Die cast aluminum housing</td>
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<tr>
<td>5</td>
<td>Synchronous motor/DC motor</td>
<td>13</td>
<td>Gear addition</td>
</tr>
<tr>
<td>6</td>
<td>Aluminum switching cams</td>
<td>14</td>
<td>Gear addition housing 40/60 Nm (S+M)</td>
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<tr>
<td>7</td>
<td>Sandwich-Getriebe</td>
<td>15</td>
<td>Gear addition housing 120 Nm (L)</td>
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<tr>
<td>8</td>
<td>Ball bearing</td>
<td></td>
<td></td>
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</tbody>
</table>

www.stellantriebe.de
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“.