



Dynetics

DYNAMIC IN MECHATRONICS



BRUSHLESS DC MOTORS

1-2324



Introduction:

Dynerics- dynamic in mechatronics

Dynerics, founded in 1994, with offices in Germany and the Netherlands assists engineers across Europe in selecting the best suitable motor for their mechatronic assignment.

Dynerics represents leading manufacturers for rotating or linear functions with various technologies:

Our motors are available in different technologies, related specs, and with many features and options such as a gearhead, encoder, but can also be modified to suit your needs

- Rotating: Brushed-; brushless, stepper-, Servo-, piezo, synchronous-, torque-motors
- Linear: high precision lead/ball screws; linear shaft motors, stages, motors with integrated high precision lead screw an/or intelligence (driver, sensors, etc) .

Many of our products can be "customized", like with double or modified shafts, encoders, altered windings, fitted with connectors per customer request. See also our electronic options (integrated or external) to drive the motor optimal at the most efficient way.

Equipment cooling:

Dynerics supports engineers in the selection of a suitable axial fans or radial blowers for your application. We represents a broad range of fans for an AC- or DC- power supply. The fans combine long life with high reliability. See for instance the L10 curves of selected fans showing 100.000 hrs at 20° C and 40.000 hrs at 60°C . Technologies can be combined with ball- or sleeve-bearing. Thanks to our close contacts with the engineering departments of the supplier we are involved with their continuous development of efficient and intelligent designs, suitable in a wide variety of applications.

Contact us also for customer specific solutions, like humidity protection, specific wirelength, connector, etc.) Dynerics helps economizing your design by offering solutions with optimum price-performance ratio.

logistics and services:

our logistic centre is located in The Netherlands:

“not only perfect for a European Distribution Center, but also as part of a global supply chain”

a logistic/warehouse solution in The Netherlands for various reasons:

- Central location within the European market / Gateway to Europe and worldwide.
- Excellent sea- and airport facilities, and distribution infrastructure with Main ports Schiphol Airport and Rotterdam port
- Efficient Cargo communication
- Close co-operation between carriers, customs, handling agents, forwarders and other parties involved
- Able to interface late cut-off times and short lead times
- International orientation
- Optimising the supply chain management,
- Maximizes fab utilizations
- Matches inventory levels with the customer’s demand
- Drives towards the best possible internal cycle time and schedule performance
- Multilingual capabilities

For more details, please visit our website:

www.dynerics.eu

Brushless DC motors:

A brushless motor, also known as electronically commutated motor (ECM or EC motor) and synchronous DC motors. This type of motor will generate as much power as brushed motors, but considered more compact and more energy efficient, have a higher speed range and lower electric noise than brushed motors (mostly due to the absence of friction of brushes). The enhanced efficiency is greatest in the no-load and low-load region of the motor's performance curve. The absence of brushes eliminates problems associated with overheating and breakdowns. The service life of the brushless motor is therefore related to the bearings. With a brushless DC motor, the rotational speed is a linear function of the torque. In the same way, the absorbed current is also a linear function of the torque. Speed and current change a lot against applied torque.

These brushless DC motors are available as inner or outer rotor and with a gearhead and/or with integrated electronics (see also our coreless brushless motors and electronics)

Comparing the inner runner vs outer runner :

The main differences can be found in the basic design of the brushless motors . All different motor technologies use magnets to move. The function of the stator in the motor is to provide a charge that will result in a repel or attraction of the magnets and make the motor move. The rotor of the motor contain magnet material and result the motor to move. Advantage of an outer runner is that it shortens the overall motor length and a reduction of weight In contrast to the inner rotor type, this type of motor has coils on the inside and magnets on the outside, and these magnets serve as a rotor. This is called the outer rotor type.

Compared with the inner runner type, the rotating shaft of the outer rotor type motor has a greater moment of inertia. However, due to the fact the magnet does not have to be downsized, the ease of coil winding becomes a structural advantage.

Outer runner type motors are adopted for hard disk drive motors, etc. Other structural varieties include a thin motor that has a flat rotor with the coil directly installed on the printed circuit board. This type is adopted for floppy disk drive motors, brushless fans, etc.

For the requested commutation, we offer different electronic solutions (ASIC's, Board level, boxes) see our options and peripherals or visit our dedicated website

The output power is calculated using the formula:

$$P_n [W] = M_n \cdot S = \frac{2\pi}{60} \cdot n_1 \cdot M_n$$

Since the supply voltage is constant, whereas the current increases in a linear manner as the torque increases, the absorbed power trend is a straight line going up. Efficiency is shown from the ratio between the output power and the absorbed power.

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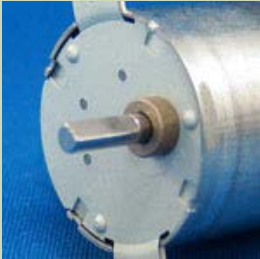


Options / Customizations

- Encoders
- shaft modifications

In addition to from ground up customer-specific designing of the motor, our manufacturers offer various modifications for their standard motors (see below).

All standard series Motors can be modified to best meet the needs of your application. Dynerics can advise you on the possibilities of product customization or fully customized Motor design.



Flat(s)



Knurling



V-Groove



Thru-Hole



Threading



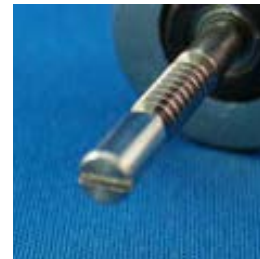
Pinion Gear
(press fit, set screw or spring pin)



Extended Shaft



Double Shaft



Slot



Worm Gear

Additional Modifications



Longer or Shorter
Lead Length



Connectors



Plastic Tubing
(regular or heat shrink)



Twisted Leads



Ball Bearings



Flange



Lead Wire Exit Location



Mesh Tubing





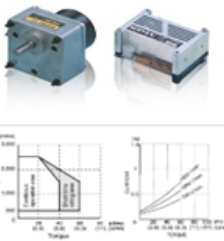
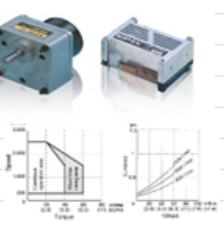
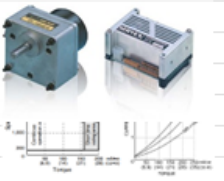
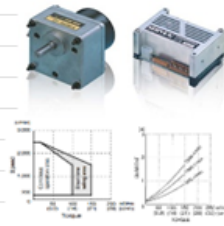
Stopper

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OUTERROTOR-Models


| part nr. | | speed | Voltage | | sizes | shaft Ø | torque | direction | driver | gearbox |
|---|------------------------------|-------|---------|------|--------------|---------|--------|-----------|--------|---------|
| Brushless DC motor (outrrotter) | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | MRB25L03PNK00 | 2200 | 3,3 | 20 | Ø17.5 x 10 | 3,5 | 0,167 | CW/CCW | ext | |
| | | | | | | | | | | |
| part nr. | | speed | Voltage | | sizes | shaft Ø | torque | direction | driver | gearbox |
| Brushless DC motor (outrrotter) | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | 20N | 1000 | 12 | 300 | Ø25 x 13 | 2 | 9,7 | CW/CCW | ext | |
| | | | | | | | | | | |
| part nr. | | speed | Voltage | | sizes | shaft Ø | torque | direction | driver | gearbox |
| Brushless DC motor (outrrotter) | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | FY6S6N-D3 | 1500 | 24 | 700 | 61sq x 32,6 | 8 | 39 | CW/CCW | ext | |
| | FY6S6NPD3 (+palmdriver) | | | | | | | | | |
| | FY6S6NSD3 (+simplifiedriver) | | | | | | | | | |
| | FY6S6-D3+ 6H5FBN-100 | | | | | | | | | |
| | FY6S6-D3+ 6H15FBN-100 | | | | | | | | | |
| | FY6S6-D3+ 6H25FBN-100 | | | | | | | | | |
| | FY6S6-D3+ 6H30FBN-100 | | | | | | | | | |
| | FY6S6-D3+ 6H50FBN-100 | | | | | | | | | |
| part nr. | | speed | Voltage | | sizes | shaft Ø | torque | direction | driver | gearbox |
| Brushless DC motor (outrrotter) | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | FY8S15-D3 | 1500 | 24 | 1400 | 80sq x 39 | 8 | 98 | CW/CCW | ext | |
| | FYD815PD3 (+palmdriver) | | | | | | | | | |
| | FYD815SD3 (+simplifiedriver) | | | | | | | | | |
| | FY8S15-D3 + 8H5FBN-100 | | | | | | | | | |
| | FY8S15-D3 + 8H15FBN-100 | | | | | | | | | |
| | FY8S15-D3 + 8H25FBN-100 | | | | | | | | | |
| | FY8S15-D3 + 8H30FBN-100 | | | | | | | | | |
| | FY8S15-D3 + 8H50FBN-100 | | | | | | | | | |
| part nr. | | speed | Voltage | | sizes | shaftØ | torque | direction | driver | gearbox |
| Brushless DC motor (outrrotter) | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | FYD825D3 | 2300 | 24 | 2300 | 80sq x 45 | 8 | 157 | CW/CCW | ext | |
| | FY8S25HD3 (+palmdriver) | | | | | | | | | |
| | FY8S25HD3 (+powerdriver) | | | | | | | | | |
| | FY8S25-D3+ 8H5FBN-100 | | | | | | | | | |
| | FY8S25-D3+ 8H15FBN-100 | | | | | | | | | |
| | FY8S25-D3+ 8H25FBN-100 | | | | | | | | | |
| | FY8S25-D3+ 8H30FBN-100 | | | | | | | | | |
| | FY8S25-D3+ 8H50FBN-100 | | | | | | | | | |
| part nr. | | speed | Voltage | | sizes | shaftØ | torque | direction | driver | gearbox |
| Brushless DC motor (outrrotter) | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | FY9S40-D3 | 2000 | 24 | 3400 | 90 sq x 61,5 | 10 | 250 | CW/CCW | ext | |
| | FYD940SD3 (+palmdriver) | | | | | | | | | |
| | FYD940HD3 (+powerdriver) | | | | | | | | | |
| | FY9S40-D3 + 9H5FBN-100 | | | | | | | | | |
| | FY9S40-D3 + 9H15FBN-100 | | | | | | | | | |
| | FY9S40-D3 + 9H25FBN-100 | | | | | | | | | |
| | FY9S40-D3 + 9H30FBN-100 | | | | | | | | | |
| | FY9S40-D3 + 9H50FBN-100 | | | | | | | | | |


| Ø22 mm x 34mm, Compact fully integrated electronics | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|---|--------------------|-------|---------|---------|----------|--------|--------|-----------|--------|---------|
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | DYTP-3641A-24 | 2390 | 24 | 311 | Ø36 x 41 | 2,5 | 19,6 | CW/CCW | ext | |
| | DYTP-3641B-24 | 3890 | 24 | 501 | Ø36 x 41 | 2,5 | 19,6 | CW/CCW | ext | |
| | DYTP-3641C-24 | 5090 | 24 | 712 | Ø36 x 41 | 2,5 | 23,52 | CW/CCW | ext | |
| | DYTP-3641D-12 | 2450 | 12 | 483 | Ø36 x 41 | 2,5 | 15,68 | CW/CCW | ext | |
| | DYTP-3641E-12 | 4150 | 12 | 848 | Ø36 x 41 | 2,5 | 15,68 | CW/CCW | ext | |
| Ø22 mm x 34mm, Compact fully integrated electronics | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | DYTP-3641 AA-24 2P | 2466 | 24 | 326 | Ø36 x 41 | 2,5 | 19,6 | CW/CCW | integr | |
| | DYTP-3641 BA-24 2P | 3800 | 24 | 483 | Ø36 x 41 | 2,5 | 19,6 | CW/CCW | integr | |
| | DYTP-3641 CA-24 2P | 5000 | 24 | 742 | Ø36 x 41 | 2,5 | 23,5 | CW/CCW | integr | |
| | DYTP-3641 DA-12 2P | 2363 | 12 | 521 | Ø36 x 41 | 2,5 | 15,7 | CW/CCW | integr | |
| | DYTP-3641 EA-12 2P | 4160 | 12 | 920 | Ø36 x 41 | 2,5 | 15,7 | CW/CCW | integr | |
| | DYTP-3641 AB-24 9P | 2463 | 24 | 324 | Ø36 x 41 | 2,5 | 19,6 | CW/CCW | integr | |
| | DYTP-3641 BB-24 9P | 3810 | 24 | 480 | Ø36 x 41 | 2,5 | 19,6 | CW/CCW | integr | |
| | DYTP-3641 CB-24 9P | 5032 | 24 | 745 | Ø36 x 41 | 2,5 | 23,5 | CW/CCW | integr | |
| | DYTP-3641 DB-12 9P | 2312 | 12 | 520 | Ø36 x 41 | 2,5 | 15,7 | CW/CCW | integr | |
| | DYTP-3641 EB-12 9P | 4104 | 12 | 920 | Ø36 x 41 | 2,5 | 15,7 | CW/CCW | integr | |
| Ø22 mm x 34mm, Compact fully integrated electronics | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | DYTP-2234A-24 | 5130 | 24 | 252 | Ø22 x 34 | 2 | 5,9 | CW/CCW | ext | |
| | | | | | | | | | | |
| BLDC 1,6 ~ 8,8W; 3-phase; planetary gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-609A | 2870 | 24 | 1425 | 42 | 8 | 78,4 | CW/CCW | no | spur |
| | TG-609B | 3270 | 24 | 1475 | 42 | 8 | 78,4 | CW/CCW | no | spur |
| | TG-609C | 3270 | 24 | 1475 | 42 | 8 | 78 | CW/CCW | no | spur |
| BLDC 1,6 ~ 8,8W; 3-phase; planetary gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-609C-BM-10 24V | 325 | 24 | 1475 | 42 | 8 | 588 | CW/CCW | no | spur |
| | TG-609C-BM-18 24V | 180 | 24 | 1475 | 42 | 8 | 980 | CW/CCW | no | spur |
| | TG-609C-BM-30 24V | 107 | 24 | 1475 | 42 | 8 | 1666 | CW/CCW | no | spur |
| | TG-609C-BM-50 24V | 66 | 24 | 1475 | 42 | 8 | 2450 | CW/CCW | no | spur |
| | TG-609C-BM-100 24V | 35,5 | 24 | 1475 | 42 | 8 | 2450 | CW/CCW | no | spur |
| | TG-609C-BM-180 24V | 22 | 24 | 1475 | 42 | 8 | 2450 | CW/CCW | no | spur |
| BLDC 1,6 ~ 8,8W; long-life, 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-609AA 24V | 2812 | 24 | 1450 | 42 x 80 | 8 | 78,4 | CW/CCW | integr | |
| | TG-609B | 3270 | 24 | 1475 | 42 x 80 | 8 | 78,4 | CW/CCW | integr | |
| | TG-609A | 2870 | 24 | 1425 | 42 x 80 | 8 | 78,4 | CW/CCW | integr | |
| | TG-609C | 3270 | 24 | 1475 | 42 x 80 | 8 | 78 | CW/CCW | integr | |
| BLDC 1,6 ~ 8,8W; long-life, 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-609C-BM-5 24V | 651 | 24 | 1450 | 60 | 8 | 294 | CW/CCW | integr | spur |
| | TG-609C-BM-10 24V | 325 | 24 | 1450 | 60 | 8 | 588 | CW/CCW | integr | spur |
| | TG-609C-BM-18 24V | 180 | 24 | 1450 | 60 | 8 | 980 | CW/CCW | integr | spur |
| | TG-609C-BM-30 24V | 107 | 24 | 1450 | 60 | 8 | 1666 | CW/CCW | integr | spur |
| | TG-609C-BM-50 24V | 66 | 24 | 1450 | 60 | 8 | 2450 | CW/CCW | integr | spur |
| | TG-609C-BM-100 24V | 35,5 | 24 | 1450 | 60 | 8 | 2450 | CW/CCW | integr | spur |
| | TG-609C-BM-180 24V | 22 | 24 | 1450 | 60 | 8 | 2450 | CW/CCW | integr | spur |


| BLDC 1,6 ~ 8,8W; long-life, 3-phase; motor only | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|---|-------------|-------|---------|---------|-------|--------|--------|-----------|--------|---------|
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | Tsukasa | 9400 | 24 | 350 | 30 | 3 | 3,92 | CW/CCW | integr | |
| | TG-631A 24V | | | | | | | | | |

TG-631 available gear heads



| BLDC 1,6 ~ 8,8W; 3-phase; planetary gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|---|--------------------|--------|---------|---------|-------|--------|--------|-----------|--------|---------|
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | Tsukasa | 2354,1 | 24 | 350 | Ø30 | 6 | 9,8 | CW/CCW | integr | plan |
| | TG-631A-FU-16 24V | 582 | 24 | 350 | Ø30 | 6 | 39,2 | CW/CCW | integr | plan |
| | TG-631A-FU-64 24V | 142,7 | 24 | 350 | Ø30 | 6 | 166,8 | CW/CCW | integr | plan |
| | TG-631A-FU-256 24V | 37,7 | 24 | 350 | Ø30 | 6 | 294,3 | CW/CCW | integr | plan |


| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|---|--------------------|-------|---------|---------|-------|--------|--------|-----------|--------|---------|
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | Tsukasa | 305,5 | 24 | 350 | Ø37 | 6 | 137,3 | CW/CCW | integr | spur |
| | TG-631A-SV-30 24V | 282,4 | 24 | 350 | Ø37 | 6 | 148,6 | CW/CCW | integr | spur |
| | TG-631A-SV-65 24V | 128,4 | 24 | 350 | Ø37 | 6 | 294,3 | CW/CCW | integr | spur |
| | TG-631A-SV-76 24V | 112,4 | 24 | 350 | Ø37 | 6 | 294,3 | CW/CCW | integr | spur |
| | TG-631A-SV-90 24V | 95,3 | 24 | 350 | Ø37 | 6 | 294,3 | CW/CCW | integr | spur |
| | TG-631A-SV-100 24V | 87,3 | 24 | 350 | Ø37 | 6 | 294,3 | CW/CCW | integr | spur |
| | TG-631A-SV-109 24V | 80,5 | 24 | 350 | Ø37 | 6 | 588 | CW/CCW | integr | spur |
| | TG-631A-SV-152 24V | 54,3 | 24 | 350 | Ø37 | 6 | 588 | CW/CCW | integr | spur |
| | TG-631A-SV-180 24V | 46,7 | 24 | 350 | Ø37 | 6 | 588 | CW/CCW | integr | spur |
| | TG-631A-SV-195 24V | 43,2 | 24 | 350 | Ø37 | 6 | 588 | CW/CCW | integr | spur |
| | TG-631A-SV-250 24V | 34,4 | 24 | 350 | Ø37 | 6 | 588 | CW/CCW | integr | spur |
| | TG-631A-SV-300 24V | 28,9 | 24 | 350 | Ø37 | 6 | 588 | CW/CCW | integr | spur |
| | TG-631A-SV-360 24V | 23,6 | 24 | 350 | Ø37 | 6 | 588 | CW/CCW | integr | spur |
| | TG-631A-SV-408 24V | 20,9 | 24 | 350 | Ø37 | 6 | 588 | CW/CCW | integr | spur |
| | TG-631A-SV-450 24V | 19 | 24 | 350 | Ø37 | 6 | 588 | CW/CCW | integr | spur |
| | TG-631A-SV-495 24V | 17,3 | 24 | 350 | Ø37 | 6 | 588 | CW/CCW | integr | spur |
| | TG-631A-SV-540 24V | 15,9 | 24 | 350 | Ø37 | 6 | 588 | CW/CCW | integr | spur |
| | TG-631A-SV-700 24V | 12,4 | 24 | 350 | Ø37 | 6 | 588 | CW/CCW | integr | spur |
| | TG-631A-SV-770 24V | 11,3 | 24 | 350 | Ø37 | 6 | 588 | CW/CCW | integr | spur |
| | TG-631A-SV-900 24V | 9,7 | 24 | 350 | Ø37 | 6 | 588 | CW/CCW | integr | spur |
| TG-631A-SV-1006 24V | 8,7 | 24 | 350 | Ø37 | 6 | 588 | CW/CCW | integr | spur | |









| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|---|---------------------|-------|---------|---------|-------|--------|--------|-----------|--------|---------|
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | Tsukasa | 613,1 | 24 | 350 | Ø37 | 6 | 39,2 | CW/CCW | integr | spur |
| | TG-631A-SM-18 24V | 508,6 | 24 | 350 | Ø37 | 6 | 49,1 | CW/CCW | integr | spur |
| | TG-631A-SM-25 24V | 365,9 | 24 | 350 | Ø37 | 6 | 68,7 | CW/CCW | integr | spur |
| | TG-631A-SM-30 24V | 306,5 | 24 | 350 | Ø37 | 6 | 78,5 | CW/CCW | integr | spur |
| | TG-631A-SM-36 24V | 254,3 | 24 | 350 | Ø37 | 6 | 88,3 | CW/CCW | integr | spur |
| | TG-631A-SM-50 24V | 182,3 | 24 | 350 | Ø37 | 6 | 127,5 | CW/CCW | integr | spur |
| | TG-631A-SM-60 24V | 152,6 | 24 | 350 | Ø37 | 6 | 147,2 | CW/CCW | integr | spur |
| | TG-631A-SM-75 24V | 121,9 | 24 | 350 | Ø37 | 6 | 186,4 | CW/CCW | integr | spur |
| | TG-631A-SM-100 24V | 91,6 | 24 | 350 | Ø37 | 6 | 245,3 | CW/CCW | integr | spur |
| | TG-631A-SM-120 24V | 76,9 | 24 | 350 | Ø37 | 6 | 245,3 | CW/CCW | integr | spur |
| | TG-631A-SM-150 24V | 60,8 | 24 | 350 | Ø37 | 6 | 343,4 | CW/CCW | integr | spur |
| | TG-631A-SM-200 24V | 45,8 | 24 | 350 | Ø37 | 6 | 441,5 | CW/CCW | integr | spur |
| | TG-631A-SM-250 24V | 36,7 | 24 | 350 | Ø37 | 6 | 539,6 | CW/CCW | integr | spur |
| | TG-631A-SM-300 24V | 30,9 | 24 | 350 | Ø37 | 6 | 588,6 | CW/CCW | integr | spur |
| | TG-631A-SM-500 24V | 19,1 | 24 | 350 | Ø37 | 6 | 588,6 | CW/CCW | integr | spur |
| | TG-631A-SM-750 24V | 13 | 24 | 350 | Ø37 | 6 | 588,6 | CW/CCW | integr | spur |
| | TG-631A-SM-1000 24V | 9,9 | 24 | 350 | Ø37 | 6 | 588,6 | CW/CCW | integr | spur |


| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|---|---------|--------|---------|---------|-------|--------|--------|-----------|--------|---------|
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| TG-631A-AGD-5 24V | Tsukasa | 1903,4 | 24 | 350 | Ø43 | 6 | 9,8 | CW/CCW | integr | spur |
| TG-631A-AGD-10 24V | | 918,4 | 24 | 350 | Ø43 | 6 | 29,4 | CW/CCW | integr | spur |
| TG-631A-AGD-15 24V | | 613,1 | 24 | 350 | Ø43 | 6 | 39,2 | CW/CCW | integr | spur |
| TG-631A-AGD-18 24V | | 508,6 | 24 | 350 | Ø43 | 6 | 49,1 | CW/CCW | integr | spur |
| TG-631A-AGD-25 24V | | 365,9 | 24 | 350 | Ø43 | 6 | 68,7 | CW/CCW | integr | spur |
| TG-631A-AGD-30 24V | | 306,5 | 24 | 350 | Ø43 | 6 | 78,5 | CW/CCW | integr | spur |
| TG-631A-AGD-36 24V | | 254,3 | 24 | 350 | Ø43 | 6 | 88,3 | CW/CCW | integr | spur |
| TG-631A-AGD-50 24V | | 182,3 | 24 | 350 | Ø43 | 6 | 127,5 | CW/CCW | integr | spur |
| TG-631A-AGD-60 24V | | 152,6 | 24 | 350 | Ø43 | 6 | 147,2 | CW/CCW | integr | spur |
| TG-631A-AGD-75 24V | | 121,9 | 24 | 350 | Ø43 | 6 | 186,4 | CW/CCW | integr | spur |
| TG-631A-AGD-100 24V | | 91,6 | 24 | 350 | Ø43 | 6 | 245,3 | CW/CCW | integr | spur |
| TG-631A-AGD-120 24V | | 76,9 | 24 | 350 | Ø43 | 6 | 245,3 | CW/CCW | integr | spur |
| TG-631A-AGD-150 24V | | 60,8 | 24 | 350 | Ø43 | 6 | 343,4 | CW/CCW | integr | spur |
| TG-631A-AGD-200 24V | | 45,8 | 24 | 350 | Ø43 | 6 | 441,5 | CW/CCW | integr | spur |
| TG-631A-AGD-250 24V | | 36,7 | 24 | 350 | Ø43 | 6 | 539,6 | CW/CCW | integr | spur |
| TG-631A-AGD-300 24V | | 30,9 | 24 | 350 | Ø43 | 6 | 588,6 | CW/CCW | integr | spur |
| TG-631A-AGD-500 24V | | 19,1 | 24 | 350 | Ø43 | 6 | 588,6 | CW/CCW | integr | spur |
| TG-631A-AGD-750 24V | | 13 | 24 | 350 | Ø43 | 6 | 588,6 | CW/CCW | integr | spur |
| TG-631A-AGD-1000 24V | | 9,9 | 24 | 350 | Ø43 | 6 | 588,6 | CW/CCW | integr | spur |
| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| TG-631A-AMD-5 24V | Tsukasa | 1903,4 | 24 | 350 | Ø43 | 6 | 9,8 | CW/CCW | integr | spur |
| TG-631A-AMD-10 24V | | 918,4 | 24 | 350 | Ø43 | 6 | 29,4 | CW/CCW | integr | spur |
| TG-631A-AMD-15 24V | | 613,1 | 24 | 350 | Ø43 | 6 | 39,2 | CW/CCW | integr | spur |
| TG-631A-AMD-18 24V | | 508,6 | 24 | 350 | Ø43 | 6 | 49,1 | CW/CCW | integr | spur |
| TG-631A-AMD-25 24V | | 365,9 | 24 | 350 | Ø43 | 6 | 68,7 | CW/CCW | integr | spur |
| TG-631A-AMD-30 24V | | 306,5 | 24 | 350 | Ø43 | 6 | 78,5 | CW/CCW | integr | spur |
| TG-631A-AMD-36 24V | | 254,3 | 24 | 350 | Ø43 | 6 | 88,3 | CW/CCW | integr | spur |
| TG-631A-AMD-50 24V | | 182,3 | 24 | 350 | Ø43 | 6 | 127,5 | CW/CCW | integr | spur |
| TG-631A-AMD-60 24V | | 152,6 | 24 | 350 | Ø43 | 6 | 147,2 | CW/CCW | integr | spur |
| TG-631A-AMD-75 24V | | 121,9 | 24 | 350 | Ø43 | 6 | 186,4 | CW/CCW | integr | spur |
| TG-631A-AMD-100 24V | | 91,6 | 24 | 350 | Ø43 | 6 | 245,3 | CW/CCW | integr | spur |
| TG-631A-AMD-120 24V | | 76,9 | 24 | 350 | Ø43 | 6 | 249,3 | CW/CCW | integr | spur |
| TG-631A-AMD-150 24V | | 61,5 | 24 | 350 | Ø43 | 6 | 343,4 | CW/CCW | integr | spur |
| TG-631A-AMD-200 24V | | 45,8 | 24 | 350 | Ø43 | 6 | 441,5 | CW/CCW | integr | spur |
| TG-631A-AMD-250 24V | | 36,7 | 24 | 350 | Ø43 | 6 | 539,6 | CW/CCW | integr | spur |
| TG-631A-AMD-300 24V | | 30,9 | 24 | 350 | Ø43 | 6 | 686,7 | CW/CCW | integr | spur |
| TG-631A-AMD-500 24V | | 19,1 | 24 | 350 | Ø43 | 6 | 686,7 | CW/CCW | integr | spur |





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| BLDC 1,6 ~ 8,8W; 3-phase; motor only | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|---|-------------|-------|---------|---------|-------|--------|--------|-----------|--------|---------|
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-55LA 24V | 2400 | 24 | 420 | 35,8 | 3 | 19,6 | CW/CCW | yes | |
| | | | | | | | | | | |











| BLDC 1,6 ~ 8,8W; 3-phase; planetary gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|---|---------------------|-------|---------|---------|-------|--------|--------|-----------|--------|---------|
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-55LA-SU-3,6 24V | 672 | 24 | 420 | 35,8 | 6 | 58,8 | CW/CCW | integr | plan |
| | TG-55LA-SU-4,8 24V | 479 | 24 | 420 | 35,8 | 6 | 88,2 | CW/CCW | integr | plan |
| | TG-55LA-SU-13,2 24V | 188 | 24 | 420 | 35,8 | 6 | 196 | CW/CCW | integr | plan |
| | TG-55LA-SU-17,6 24V | 135 | 24 | 420 | 35,8 | 6 | 294 | CW/CCW | integr | plan |
| | TG-55LA-SU-23,5 24V | 101 | 24 | 420 | 35,8 | 6 | 392 | CW/CCW | integr | plan |
| | TG-55LA-SU-47,9 24V | 49,1 | 24 | 420 | 35,8 | 6 | 686 | CW/CCW | integr | plan |
| | TG-55LA-SU-63,9 24V | 36,5 | 24 | 420 | 35,8 | 6 | 980 | CW/CCW | integr | plan |
| | TG-55LA-SU-85,3 24V | 31 | 24 | 420 | 35,8 | 6 | 980 | CW/CCW | integr | plan |
| | TG-55LA-SU-114 24V | 25,2 | 24 | 420 | 35,8 | 6 | 980 | CW/CCW | integr | plan |
| | TG-55LA-SU-174 24V | 17,2 | 24 | 420 | 35,8 | 6 | 980 | CW/CCW | integr | plan |
| | TG-55LA-SU-232 24V | 13,6 | 24 | 420 | 35,8 | 6 | 980 | CW/CCW | integr | plan |
| | TG-55LA-SU-310 24V | 10,5 | 24 | 420 | 35,8 | 6 | 980 | CW/CCW | integr | plan |
| | TG-55LA-SU-413 24V | 8 | 24 | 420 | 35,8 | 6 | 980 | CW/CCW | integr | plan |
| | TG-55LA-SU-552 24V | 6,1 | 24 | 420 | 35,8 | 6 | 980 | CW/CCW | integr | plan |

| BLDC 1,6 ~ 8,8W; 3-phase; planetary gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|---|--------------------|-------|---------|---------|-------|--------|--------|-----------|--------|---------|
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-55LA-KU-24 24V | 111 | 24 | 420 | 43,4 | 8 | 343 | CW/CCW | integr | plan |
| | TG-55LA-KU-75 24V | 34,8 | 24 | 420 | 43,4 | 8 | 980 | CW/CCW | integr | plan |
| | TG-55LA-KU-96 24V | 30 | 24 | 420 | 43,4 | 8 | 980 | CW/CCW | integr | plan |
| | TG-55LA-KU-144 24V | 22,2 | 24 | 420 | 43,4 | 8 | 980 | CW/CCW | integr | plan |
| | TG-55LA-KU-216 24V | 15,7 | 24 | 420 | 43,4 | 8 | 980 | CW/CCW | integr | plan |

| BLDC 1,6 ~ 8,8W; 3-phase; planetary gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|---|---------------------|-------|---------|---------|-------|--------|--------|-----------|--------|---------|
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-55LA-SV-10 24V | 283 | 24 | 420 | 43,4 | 6 | 98,1 | CW/CCW | integr | spur |
| | TG-55LA-SV-20 24V | 146 | 24 | 420 | 43,4 | 6 | 196 | CW/CCW | integr | spur |
| | TG-55LA-SV-30 24V | 105 | 24 | 420 | 43,4 | 6 | 196 | CW/CCW | integr | spur |
| | TG-55LA-SV-33 24V | 98 | 24 | 420 | 43,4 | 6 | 196 | CW/CCW | integr | spur |
| | TG-55LA-SV-50 24V | 64,3 | 24 | 420 | 43,4 | 6 | 294 | CW/CCW | integr | spur |
| | TG-55LA-SV-60 24V | 55 | 24 | 420 | 43,4 | 6 | 294 | CW/CCW | integr | spur |
| | TG-55LA-SV-76 24V | 44,6 | 24 | 420 | 43,4 | 6 | 294 | CW/CCW | integr | spur |
| | TG-55LA-SV-100 24V | 34,7 | 24 | 420 | 43,4 | 6 | 294 | CW/CCW | integr | spur |
| | TG-55LA-SV-124 24V | 26,8 | 24 | 420 | 43,4 | 6 | 589 | CW/CCW | integr | spur |
| | TG-55LA-SV-149 24V | 22,9 | 24 | 420 | 43,4 | 6 | 589 | CW/CCW | integr | spur |
| | TG-55LA-SV-180 24V | 19,3 | 24 | 420 | 43,4 | 6 | 589 | CW/CCW | integr | spur |
| | TG-55LA-SV-196 24V | 17,9 | 24 | 420 | 43,4 | 6 | 589 | CW/CCW | integr | spur |
| | TG-55LA-SV-250 24V | 14,3 | 24 | 420 | 43,4 | 6 | 589 | CW/CCW | integr | spur |
| | TG-55LA-SV-300 24V | 12 | 24 | 420 | 43,4 | 6 | 589 | CW/CCW | integr | spur |
| | TG-55LA-SV-360 24V | 10,1 | 24 | 420 | 43,4 | 6 | 589 | CW/CCW | integr | spur |
| | TG-55LA-SV-495 24V | 7,4 | 24 | 420 | 43,4 | 6 | 589 | CW/CCW | integr | spur |
| | TG-55LA-SV-750 24V | 5 | 24 | 420 | 43,4 | 6 | 589 | CW/CCW | integr | spur |
| | TG-55LA-SV-1006 24V | 3,7 | 24 | 420 | 43,4 | 6 | 589 | CW/CCW | integr | spur |

| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|---|--|--------------|----------------|----------------|----------------|---------------|---------------|------------------|------------------|----------------|
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-55LA-SM15 24V | 180 | 24 | 420 | 43,4 | 6 | 196 | CW/CCW | integr | spur |
| | TG-55LA-SM 18 24V | 160 | 24 | 420 | 43,4 | 6 | 196 | CW/CCW | integr | spur |
| | TG-55LA-SM 25 24V | 126 | 24 | 420 | 43,4 | 6 | 196 | CW/CCW | integr | spur |
| | TG-55LA-SM 30 24V | 109 | 24 | 420 | 43,4 | 6 | 196 | CW/CCW | integr | spur |
| | TG-55LA-SM 36 24V | 84,6 | 24 | 420 | 43,4 | 6 | 294 | CW/CCW | integr | spur |
| | TG-55LA-SM 50 24V | 65,2 | 24 | 420 | 43,4 | 6 | 294 | CW/CCW | integr | spur |
| | TG-55LA-SM 60 24V | 55,9 | 24 | 420 | 43,4 | 6 | 294 | CW/CCW | integr | spur |
| | TG-55LA-SM 75 24V | 46 | 24 | 420 | 43,4 | 6 | 294 | CW/CCW | integr | spur |
| | TG-55LA-SM 100 24V | 35,4 | 24 | 420 | 43,4 | 6 | 294 | CW/CCW | integr | spur |
| | TG-55LA-SM 120 24V | 27,5 | 24 | 420 | 43,4 | 6 | 588 | CW/CCW | integr | spur |
| | TG-55LA-SM 150 24V | 22,7 | 24 | 420 | 43,4 | 6 | 588 | CW/CCW | integr | spur |
| | TG-55LA-SM 200 24V | 17,6 | 24 | 420 | 43,4 | 6 | 588 | CW/CCW | integr | spur |
| | TG-55LA-SM 250 24V | 14,3 | 24 | 420 | 43,4 | 6 | 588 | CW/CCW | integr | spur |
| | TG-55LA-SM 300 24V | 12 | 24 | 420 | 43,4 | 6 | 588 | CW/CCW | integr | spur |
| | TG-55LA-SM 500 24V | 7,4 | 24 | 420 | 43,4 | 6 | 588 | CW/CCW | integr | spur |
| TG-55LA-SM 750 24V | 5 | 24 | 420 | 43,4 | 6 | 588 | CW/CCW | integr | spur | |
| TG-55LA-SM 1000 24V | 3,8 | 24 | 420 | 43,4 | 6 | 588 | CW/CCW | integr | spur | |
| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-55LA-AMD-18 24V | 148 | 24 | 420 | 43 | 6 | 245 | CW/CCW | integr | spur |
| | TG-55LA-AMD-25 24V | 106 | 24 | 420 | 43 | 6 | 343 | CW/CCW | integr | spur |
| | TG-55LA-AMD-30 24V | 90,1 | 24 | 420 | 43 | 6 | 392 | CW/CCW | integr | spur |
| | TG-55LA-AMD-36 24V | 80,2 | 24 | 420 | 43 | 6 | 392 | CW/CCW | integr | spur |
| | TG-55LA-AMD-50 24V | 57,8 | 24 | 420 | 43 | 6 | 490 | CW/CCW | integr | spur |
| | TG-55LA-AMD-60 24V | 50,7 | 24 | 420 | 43 | 6 | 490 | CW/CCW | integr | spur |
| | TG-55LA-AMD-75 24V | 42,7 | 24 | 420 | 43 | 6 | 490 | CW/CCW | integr | spur |
| | TG-55LA-AMD-100 24V | 31,7 | 24 | 420 | 43 | 6 | 686 | CW/CCW | integr | spur |
| | TG-55LA-AMD-120 24V | 27,3 | 24 | 420 | 43 | 6 | 686 | CW/CCW | integr | spur |
| | TG-55LA-AMD-150 24V | 22,6 | 24 | 420 | 43 | 6 | 686 | CW/CCW | integr | spur |
| | TG-55LA-AMD-200 24V | 17,3 | 24 | 420 | 43 | 6 | 686 | CW/CCW | integr | spur |
| | TG-55LA-AMD-250 24V | 14,1 | 24 | 420 | 43 | 6 | 686 | CW/CCW | integr | spur |
| | TG-55LA-AMD-300 24V | 11,9 | 24 | 420 | 43 | 6 | 686 | CW/CCW | integr | spur |
| | TG-55LA-AMD-500 24V | 7,4 | 24 | 420 | 43 | 6 | 686 | CW/CCW | integr | spur |
| | BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver |
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-55LA-AP-20 24V | 147 | 24 | 420 | 43 | 6 | 245 | CW/CCW | integr | spur |
| | TG-55LA-AP-27 24V | 107 | 24 | 420 | 43 | 6 | 343 | CW/CCW | integr | spur |
| | TG-55LA-AP-43 24V | 65,2 | 24 | 420 | 43 | 6 | 539 | CW/CCW | integr | spur |
| | TG-55LA-AP-67 24V | 42,3 | 24 | 420 | 43 | 6 | 833 | CW/CCW | integr | spur |
| | TG-55LA-AP-81 24V | 35,3 | 24 | 420 | 43 | 6 | 980 | CW/CCW | integr | spur |
| | TG-55LA-AP-89 24V | 33,1 | 24 | 420 | 43 | 6 | 980 | CW/CCW | integr | spur |
| | TG-55LA-AP-133 24V | 24,3 | 24 | 420 | 43 | 6 | 680 | CW/CCW | integr | spur |
| | BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver |
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-55LA-BE-12.5 24V | 209 | 24 | 420 | 60 | 6 | 196 | CW/CCW | integr | spur |
| | TG-55LA-BE-18 24V | 148 | 24 | 420 | 60 | 6 | 245 | CW/CCW | integr | spur |
| | TG-55LA-BE-25 24V | 115 | 24 | 420 | 60 | 6 | 294 | CW/CCW | integr | spur |
| | TG-55LA-BE-30 24V | 90,1 | 24 | 420 | 60 | 6 | 392 | CW/CCW | integr | spur |
| | TG-55LA-BE-75 24V | 35,2 | 24 | 420 | 60 | 6 | 931 | CW/CCW | integr | spur |
| | TG-55LA-BE-100 24V | 28,9 | 24 | 420 | 60 | 6 | 980 | CW/CCW | integr | spur |
| | TG-55LA-BE-150 24V | 21,3 | 24 | 420 | 60 | 6 | 980 | CW/CCW | integr | spur |
| | TG-55LA-BE-200 24V | 16,8 | 24 | 420 | 60 | 6 | 980 | CW/CCW | integr | spur |
| | TG-55LA-BE-300 24V | 11,5 | 24 | 420 | 60 | 6 | 980 | CW/CCW | integr | spur |
| | TG-55LA-BE-500 24V | 7,2 | 24 | 420 | 60 | 6 | 980 | CW/CCW | integr | spur |
| | TG-55LA-BE-750 24V | 4,9 | 24 | 420 | 60 | 6 | 980 | CW/CCW | integr | spur |
| | TG-55LA-BE-1000 24V | 3,7 | 24 | 420 | 60 | 6 | 980 | CW/CCW | integr | spur |
| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-55LA-BM-12,5 24V | 209 | 24 | 420 | 60 | 8 | 196 | CW/CCW | integr | spur |
| | TG-55LA-BM-18 24V | 148 | 24 | 420 | 60 | 8 | 245 | CW/CCW | integr | spur |
| | TG-55LA-BM-25 24V | 106 | 24 | 420 | 60 | 8 | 343 | CW/CCW | integr | spur |
| | TG-55LA-BM-30 24V | 90,1 | 24 | 420 | 60 | 8 | 392 | CW/CCW | integr | spur |
| | TG-55LA-BM-50 24V | 52,9 | 24 | 420 | 60 | 8 | 686 | CW/CCW | integr | spur |
| | TG-55LA-BM-75 24V | 35,2 | 24 | 420 | 60 | 8 | 931 | CW/CCW | integr | spur |
| | TG-55LA-BM-100 24V | 26,1 | 24 | 420 | 60 | 8 | 1274 | CW/CCW | integr | spur |
| | TG-55LA-BM-120 24V | 22,1 | 24 | 420 | 60 | 8 | 1470 | CW/CCW | integr | spur |
| | TG-55LA-BM-150 24V | 17,6 | 24 | 420 | 60 | 8 | 1862 | CW/CCW | integr | spur |
| | TG-55LA-BM-180 24V | 15,8 | 24 | 420 | 60 | 8 | 2058 | CW/CCW | integr | spur |





| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|---|--------------------|-------|---------|------------|--------------|--------|----------|-----------|--------|---------|
| part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-55N-SU-3,6 12V | 730 | 12 | 510 | Ø35,8 x 55,5 | 6 | 29,4 | CW/CCW | ext | plan |
| | TG-55N-SU-4,8 12V | 549 | 12 | 510 | Ø35,8 x 55,5 | 6 | 39,2 | CW/CCW | ext | plan |
| | TG-55N-SU-13,2 12V | 197 | 12 | 510 | Ø35,8 x 73,6 | 6 | 107,8 | CW/CCW | ext | plan |
| | TG-55N-SU-17,6 12V | 147 | 12 | 510 | Ø35,8 x 73,6 | 6 | 147 | CW/CCW | ext | plan |
| | TG-55N-SU-23,5 12V | 110 | 12 | 510 | Ø35,8 x 73,6 | 6 | 196 | CW/CCW | ext | plan |
| | TG-55N-SU-47,9 12V | 53,9 | 12 | 510 | Ø35,8 x 80,6 | 6 | 343 | CW/CCW | ext | plan |
| | TG-55N-SU-63,9 12V | 40,1 | 12 | 510 | Ø35,8 x 80,6 | 6 | 490 | CW/CCW | ext | plan |
| | TG-55N-SU-85,3 12V | 30,5 | 12 | 510 | Ø35,8 x 80,6 | 6 | 637 | CW/CCW | ext | plan |
| | TG-55N-SU-114 12V | 22,5 | 12 | 510 | Ø35,8 x 80,6 | 6 | 882 | CW/CCW | ext | plan |
| | TG-55N-SU-174 12V | 15,3 | 12 | 510 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55N-SU-232 12V | 12,6 | 12 | 510 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55N-SU-310 12V | 9,9 | 12 | 510 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55N-SU-413 12V | 7,7 | 12 | 510 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55N-SU-552 12V | 5,9 | 12 | 510 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan |
| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | | | | | | | | | |
| part nr. | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| rpm | | V | mA | mm | mm | mNm | rotation | contr | | |
|  | TG-55L-SM-5 24V | 522 | 24 | 420 | Ø35,8 x 65 | 6 | 78,4 | CW/CCW | ext | spur |
| | TG-55L-SM-10 24V | 307 | 24 | 420 | Ø35,8 x 65 | 6 | 98 | CW/CCW | ext | spur |
| | TG-55L-SM-15 24V | 180 | 24 | 420 | Ø35,8 x 67,5 | 6 | 196 | CW/CCW | ext | spur |
| | TG-55L-SM-18 24V | 160 | 24 | 420 | Ø35,8 x 67,5 | 6 | 196 | CW/CCW | ext | spur |
| | TG-55L-SM-25 24V | 126 | 24 | 420 | Ø35,8 x 67,5 | 6 | 196 | CW/CCW | ext | spur |
| | TG-55L-SM-30 24V | 109 | 24 | 420 | Ø35,8 x 67,5 | 6 | 196 | CW/CCW | ext | spur |
| | TG-55L-SM-36 24V | 84,6 | 24 | 420 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55L-SM-50 24V | 65,2 | 24 | 420 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55L-SM-60 24V | 55,9 | 24 | 420 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55L-SM-75 24V | 46 | 24 | 420 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55L-SM-100 24V | 35,4 | 24 | 420 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55L-SM-120 24V | 27,5 | 24 | 420 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55L-SM-150 24V | 22,7 | 24 | 420 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55L-SM-200 24V | 17,6 | 24 | 420 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55L-SM-250 24V | 14,3 | 24 | 420 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55L-SM-300 24V | 12 | 24 | 420 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55L-SM-500 24V | 7,4 | 24 | 420 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55L-SM-750 24V | 5 | 24 | 420 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur |
| TG-55L-SM-1000 24V | 3,8 | 24 | 420 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur | |
| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | | | | | | | | | |
| part nr. | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| rpm | | V | mA | mm | mm | mNm | rotation | contr | | |
|  | TG-55L-SM-5 12V | 140 | 12 | 420 | Ø35,8 x 65 | 6 | 78,4 | CW/CCW | ext | spur |
| | TG-55L-SM-10 12V | 111 | 12 | 420 | Ø35,8 x 65 | 6 | 98 | CW/CCW | ext | spur |
| | TG-55L-SM-15 12V | 52 | 12 | 420 | Ø35,8 x 67,5 | 6 | 196 | CW/CCW | ext | spur |
| | TG-55L-SM-18 12V | 52,7 | 12 | 420 | Ø35,8 x 67,5 | 6 | 196 | CW/CCW | ext | spur |
| | TG-55L-SM-25 12V | 47,4 | 12 | 420 | Ø35,8 x 67,5 | 6 | 196 | CW/CCW | ext | spur |
| | TG-55L-SM-30 12V | 42,9 | 12 | 420 | Ø35,8 x 67,5 | 6 | 196 | CW/CCW | ext | spur |
| | TG-55L-SM-36 12V | 30,3 | 12 | 420 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55L-SM-50 12V | 25,7 | 12 | 420 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55L-SM-60 12V | 22,9 | 12 | 420 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55L-SM-75 12V | 19,4 | 12 | 420 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55L-SM-100 12V | 15,4 | 12 | 420 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55L-SM-120 12V | 11 | 12 | 420 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55L-SM-150 12V | 9,5 | 12 | 420 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55L-SM-200 12V | 7,6 | 12 | 420 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55L-SM-250 12V | 6,3 | 12 | 420 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55L-SM-300 12V | 5,4 | 12 | 420 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55L-SM-500 12V | 3,3 | 12 | 420 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55L-SM-750 12V | 2,3 | 12 | 420 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur |
| TG-55L-SM-1000 12V | 1,7 | 12 | 420 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur | |






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| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|--|-------------------|-------|---------|------------|--------------|--------|--------|-----------|--------|---------|
| | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| | TG-55M-SM-5 24V | 1071 | 24 | 570 | Ø35,8 x 65 | 6 | 58,8 | CW/CCW | ext | spur |
| | TG-55M-SM-10 24V | 556 | 24 | 570 | Ø35,8 x 65 | 6 | 98 | CW/CCW | ext | spur |
| | TG-55M-SM-15 24V | 358 | 24 | 570 | Ø35,8 x 67,5 | 6 | 156,8 | CW/CCW | ext | spur |
| | TG-55M-SM-18 24V | 299 | 24 | 570 | Ø35,8 x 67,5 | 6 | 186,2 | CW/CCW | ext | spur |
| | TG-55M-SM-25 24V | 227 | 24 | 570 | Ø35,8 x 67,5 | 6 | 196 | CW/CCW | ext | spur |
| | TG-55M-SM-30 24V | 194 | 24 | 570 | Ø35,8 x 67,5 | 6 | 196 | CW/CCW | ext | spur |
| | TG-55M-SM-36 24V | 154 | 24 | 570 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55M-SM-50 24V | 116 | 24 | 570 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55M-SM-60 24V | 99,1 | 24 | 570 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55M-SM-75 24V | 80,9 | 24 | 570 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55M-SM-100 24V | 61,9 | 24 | 570 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55M-SM-120 24V | 49 | 24 | 570 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55M-SM-150 24V | 40,1 | 24 | 570 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55M-SM-200 24V | 30,8 | 24 | 570 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55M-SM-250 24V | 24,9 | 24 | 570 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55M-SM-300 24V | 21 | 24 | 570 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| TG-55M-SM-500 24V | 12,8 | 24 | 570 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur | |
| TG-55M-SM-750 24V | 8,6 | 24 | 570 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur | |
| TG-55M-SM-1000 24V | 6,5 | 24 | 570 | Ø35,8 x 75 | 6 | 58,8 | CW/CCW | ext | spur | |
| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | | | | | | | | | |
| | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| | TG-55M-SM-5 12V | 424 | 12 | 560 | Ø35,8 x 65 | 6 | 98 | CW/CCW | ext | spur |
| | TG-55M-SM-10 12V | 230 | 12 | 560 | Ø35,8 x 65 | 6 | 156,8 | CW/CCW | ext | spur |
| | TG-55M-SM-15 12V | 142 | 12 | 560 | Ø35,8 x 67,5 | 6 | 186,2 | CW/CCW | ext | spur |
| | TG-55M-SM-18 12V | 119 | 12 | 560 | Ø35,8 x 67,5 | 6 | 196 | CW/CCW | ext | spur |
| | TG-55M-SM-25 12V | 95,7 | 12 | 560 | Ø35,8 x 67,5 | 6 | 196 | CW/CCW | ext | spur |
| | TG-55M-SM-30 12V | 84,1 | 12 | 560 | Ø35,8 x 67,5 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55M-SM-36 12V | 63,1 | 12 | 560 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55M-SM-50 12V | 50,5 | 12 | 560 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55M-SM-60 12V | 43,9 | 12 | 560 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55M-SM-75 12V | 36,5 | 12 | 560 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55M-SM-100 12V | 28,5 | 12 | 560 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55M-SM-120 12V | 21,4 | 12 | 560 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55M-SM-150 12V | 18 | 12 | 560 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55M-SM-200 12V | 14,1 | 12 | 560 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55M-SM-250 12V | 11,5 | 12 | 560 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55M-SM-300 12V | 9,8 | 12 | 560 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| TG-55M-SM-500 12V | 6 | 12 | 560 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur | |
| TG-55M-SM-750 12V | 4,1 | 12 | 560 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur | |
| TG-55M-SM-1000 12V | 3,1 | 12 | 560 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur | |
| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | | | | | | | | | |
| | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| | TG-55N-SM-10 24V | 722 | 24 | 540 | Ø35,8 x 65 | 6 | 78,4 | CW/CCW | ext | spur |
| | TG-55N-SM-15 24V | 486 | 24 | 540 | Ø35,8 x 67,5 | 6 | 98 | CW/CCW | ext | spur |
| | TG-55N-SM-18 24V | 401 | 24 | 540 | Ø35,8 x 67,5 | 6 | 127,4 | CW/CCW | ext | spur |
| | TG-55N-SM-25 24V | 289 | 24 | 540 | Ø35,8 x 67,5 | 6 | 176,4 | CW/CCW | ext | spur |
| | TG-55N-SM-30 24V | 243 | 24 | 540 | Ø35,8 x 67,5 | 6 | 196 | CW/CCW | ext | spur |
| | TG-55N-SM-36 24V | 204 | 24 | 540 | Ø35,8 x 70 | 6 | 196 | CW/CCW | ext | spur |
| | TG-55N-SM-50 24V | 146 | 24 | 540 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55N-SM-60 24V | 124 | 24 | 540 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55N-SM-75 24V | 101 | 24 | 540 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55N-SM-100 24V | 77,6 | 24 | 540 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur |
| | TG-55N-SM-120 24V | 61,3 | 24 | 540 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55N-SM-150 24V | 50,2 | 24 | 540 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55N-SM-200 24V | 38,5 | 24 | 540 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55N-SM-250 24V | 31,3 | 24 | 540 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55N-SM-300 24V | 26,3 | 24 | 540 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur |
| | TG-55N-SM-500 24V | 16 | 24 | 540 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur |
| TG-55N-SM-750 24V | 10,8 | 24 | 540 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur | |
| TG-55N-SM-1000 24V | 8,1 | 24 | 540 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur | |

| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox | |
|---|--|----------|---------|------------|--------------|--------|--------|-----------|-----------|---------|---------|
| | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | | |
|  | TG-55N-SM-5 12V | 614 | 12 | 510 | Ø35,8 x 65 | 6 | 39,2 | CW/CCW | ext | spur | |
| | TG-55N-SM-10 12V | 307 | 12 | 510 | Ø35,8 x 65 | 6 | 78,4 | CW/CCW | ext | spur | |
| | TG-55N-SM-15 12V | 209 | 12 | 510 | Ø35,8 x 67,5 | 6 | 98 | CW/CCW | ext | spur | |
| | TG-55N-SM-18 12V | 170 | 12 | 510 | Ø35,8 x 67,5 | 6 | 127,4 | CW/CCW | ext | spur | |
| | TG-55N-SM-25 12V | 123 | 12 | 510 | Ø35,8 x 67,5 | 6 | 176,4 | CW/CCW | ext | spur | |
| | TG-55N-SM-30 12V | 105 | 12 | 510 | Ø35,8 x 67,5 | 6 | 196 | CW/CCW | ext | spur | |
| | TG-55N-SM-36 12V | 89 | 12 | 510 | Ø35,8 x 70 | 6 | 196 | CW/CCW | ext | spur | |
| | TG-55N-SM-50 12V | 62,8 | 12 | 510 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur | |
| | TG-55N-SM-60 12V | 54,7 | 12 | 510 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur | |
| | TG-55N-SM-75 12V | 45,7 | 12 | 510 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur | |
| | TG-55N-SM-100 12V | 35,7 | 12 | 510 | Ø35,8 x 70 | 6 | 294 | CW/CCW | ext | spur | |
| | TG-55N-SM-120 12V | 26,7 | 12 | 510 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur | |
| | TG-55N-SM-150 12V | 22,4 | 12 | 510 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur | |
| | TG-55N-SM-200 12V | 17,6 | 12 | 510 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur | |
| | TG-55N-SM-250 12V | 14,5 | 12 | 510 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur | |
| | TG-55N-SM-300 12V | 12,3 | 12 | 510 | Ø35,8 x 72,5 | 6 | 588 | CW/CCW | ext | spur | |
| TG-55N-SM-500 12V | 7,6 | 12 | 510 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur | | |
| TG-55N-SM-750 12V | 5,2 | 12 | 510 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur | | |
| TG-55N-SM-1000 12V | 3,9 | 12 | 510 | Ø35,8 x 75 | 6 | 588 | CW/CCW | ext | spur | | |
| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | | | | | | | | | | |
| | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | gearbox | |
|  | TG-55L-AP-8 24V | 361 | 24 | 420 | 43sq x 72 | 6 | 98 | CW/CCW | no | spur | |
| | TG-55L-AP-13 24V | 207 | 24 | 420 | 43sq x 72 | 6 | 196 | CW/CCW | no | spur | |
| | TG-55L-AP-16 24V | 183 | 24 | 420 | 43sq x 72 | 6 | 196 | CW/CCW | no | spur | |
| | TG-55L-AP-20 24V | 147 | 24 | 420 | 43sq x 72 | 6 | 245 | CW/CCW | no | spur | |
| | TG-55L-AP-27 24V | 107 | 24 | 420 | 43sq x 72 | 6 | 343 | CW/CCW | no | spur | |
| | TG-55L-AP-32 24V | 86,5 | 24 | 420 | 43sq x 72 | 6 | 441 | CW/CCW | no | spur | |
| | TG-55L-AP-43 24V | 65,2 | 24 | 420 | 43sq x 72 | 6 | 539 | CW/CCW | no | spur | |
| | TG-55L-AP-53 24V | 54,3 | 24 | 420 | 43sq x 72 | 6 | 637 | CW/CCW | no | spur | |
| | TG-55L-AP-67 24V | 42,3 | 24 | 420 | 43sq x 72 | 6 | 833 | CW/CCW | no | spur | |
| | TG-55L-AP-81 24V | 35,3 | 24 | 420 | 43sq x 72 | 6 | 980 | CW/CCW | no | spur | |
| | TG-55L-AP-89 24V | 33,1 | 24 | 420 | 43sq x 72 | 6 | 980 | CW/CCW | no | spur | |
| | TG-55L-AP-108 24V | 28,7 | 24 | 420 | 43sq x 72 | 6 | 980 | CW/CCW | no | spur | |
| | TG-55L-AP-133 24V | 24,3 | 24 | 420 | 43sq x 72 | 6 | 980 | CW/CCW | no | spur | |
| | TG-55L-AP-6 12V | 124 | 12 | 420 | 43sq x 72 | 6 | 98 | CW/CCW | no | spur | |
| | BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | | | | | | | | | |
| | | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | gearbox |
|  | TG-55L-AP-8 12V | 125 | 12 | 420 | 43 | 6 | 98 | CW/CCW | no | spur | |
| | TG-55L-AP-13 12V | 59 | 12 | 420 | 43 | 6 | 196 | CW/CCW | no | spur | |
| | TG-55L-AP-16 12V | 60,1 | 12 | 420 | 43 | 6 | 196 | CW/CCW | no | spur | |
| | TG-55L-AP-20 12V | 48,1 | 12 | 420 | 43 | 6 | 245 | CW/CCW | no | spur | |
| | TG-55L-AP-27 12V | 34,4 | 12 | 420 | 43 | 6 | 343 | CW/CCW | no | spur | |
| | TG-55L-AP-32 12V | 26,7 | 12 | 420 | 43 | 6 | 441 | CW/CCW | no | spur | |
| | TG-55L-AP-43 12V | 20,6 | 12 | 420 | 43 | 6 | 539 | CW/CCW | no | spur | |
| | TG-55L-AP-53 12V | 17,4 | 12 | 420 | 43 | 6 | 637 | CW/CCW | no | spur | |
| | TG-55L-AP-67 12V | 13,3 | 12 | 420 | 43 | 6 | 833 | CW/CCW | no | spur | |
| | TG-55L-AP-81 12V | 11,3 | 12 | 420 | 43 | 6 | 980 | CW/CCW | no | spur | |
| | TG-55L-AP-89 12V | 11,2 | 12 | 420 | 43 | 6 | 980 | CW/CCW | no | spur | |
| | TG-55L-AP-108 12V | 10,5 | 12 | 420 | 43 | 6 | 980 | CW/CCW | no | spur | |
| | TG-55L-AP-133 12V | 9,5 | 12 | 420 | 43 | 6 | 980 | CW/CCW | no | spur | |
| | BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | | | | | | | | | |
| | | part nr. | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| | | | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-55M-AP-8 24V | 660 | 24 | 570 | 43 | 6 | 98 | CW/CCW | no | spur | |
| | TG-55M-AP-13 24V | 412 | 24 | 570 | 43 | 6 | 156,8 | CW/CCW | no | spur | |
| | TG-55M-AP-16 24V | 342 | 24 | 570 | 43 | 6 | 186,2 | CW/CCW | no | spur | |
| | TG-55M-AP-20 24V | 285 | 24 | 570 | 43 | 6 | 196 | CW/CCW | no | spur | |
| | TG-55M-AP-27 24V | 205 | 24 | 570 | 43 | 6 | 294 | CW/CCW | no | spur | |
| | TG-55M-AP-32 24V | 166 | 24 | 570 | 43 | 6 | 392 | CW/CCW | no | spur | |
| | TG-55M-AP-43 24V | 124 | 24 | 570 | 43 | 6 | 490 | CW/CCW | no | spur | |
| | TG-55M-AP-53 24V | 102 | 24 | 570 | 43 | 6 | 588 | CW/CCW | no | spur | |
| | TG-55M-AP-67 24V | 80,8 | 24 | 570 | 43 | 6 | 735 | CW/CCW | no | spur | |
| | TG-55M-AP-81 24V | 66,9 | 24 | 570 | 43 | 6 | 882 | CW/CCW | no | spur | |
| | TG-55M-AP-89 24V | 60,6 | 24 | 570 | 43 | 6 | 980 | CW/CCW | no | spur | |
| | TG-55M-AP-108 24V | 52 | 24 | 570 | 43 | 6 | 980 | CW/CCW | no | spur | |
| | TG-55M-AP-133 24V | 43,4 | 24 | 570 | 43 | 6 | 980 | CW/CCW | no | spur | |








| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|---|-------------------|-------|---------|---------|-------|--------|--------|-----------|--------|---------|
| | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-55M-AP-6 12V | 372 | 12 | 560 | 43 | 6 | 68,6 | CW/CCW | no | spur |
| | TG-55M-AP-8 12V | 266 | 12 | 560 | 43 | 6 | 98 | CW/CCW | no | spur |
| | TG-55M-AP-13 12V | 163 | 12 | 560 | 43 | 6 | 156,8 | CW/CCW | no | spur |
| | TG-55M-AP-16 12V | 136 | 12 | 560 | 43 | 6 | 186,2 | CW/CCW | no | spur |
| | TG-55M-AP-20 12V | 118 | 12 | 560 | 43 | 6 | 196 | CW/CCW | no | spur |
| | TG-55M-AP-27 12V | 82,9 | 12 | 560 | 43 | 6 | 294 | CW/CCW | no | spur |
| | TG-55M-AP-32 12V | 65,4 | 12 | 560 | 43 | 6 | 392 | CW/CCW | no | spur |
| | TG-55M-AP-43 12V | 49 | 12 | 560 | 43 | 6 | 490 | CW/CCW | no | spur |
| | TG-55M-AP-53 12V | 40,6 | 12 | 560 | 43 | 6 | 588 | CW/CCW | no | spur |
| | TG-55M-AP-67 12V | 32,2 | 12 | 560 | 43 | 6 | 735 | CW/CCW | no | spur |
| | TG-55M-AP-81 12V | 26,7 | 12 | 560 | 43 | 6 | 882 | CW/CCW | no | spur |
| | TG-55M-AP-89 12V | 24,2 | 12 | 560 | 43 | 6 | 980 | CW/CCW | no | spur |
| | TG-55M-AP-108 12V | 21,6 | 12 | 560 | 43 | 6 | 980 | CW/CCW | no | spur |
| TG-55M-AP-133 12V | 18,7 | 12 | 560 | 43 | 6 | 980 | CW/CCW | no | spur | |
| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-55N-AP-8 24V | 878 | 24 | 540 | 43 | 6 | 68,6 | CW/CCW | no | spur |
| | TG-55N-AP-13 24V | 560 | 24 | 540 | 43 | 6 | 98 | CW/CCW | no | spur |
| | TG-55N-AP-16 24V | 458 | 24 | 540 | 43 | 6 | 127,4 | CW/CCW | no | spur |
| | TG-55N-AP-20 24V | 370 | 24 | 540 | 43 | 6 | 127,4 | CW/CCW | no | spur |
| | TG-55N-AP-27 24V | 274 | 24 | 540 | 43 | 6 | 196 | CW/CCW | no | spur |
| | TG-55N-AP-32 24V | 225 | 24 | 540 | 43 | 6 | 245 | CW/CCW | no | spur |
| | TG-55N-AP-43 24V | 169 | 24 | 540 | 43 | 6 | 294 | CW/CCW | no | spur |
| | TG-55N-AP-53 24V | 138 | 24 | 540 | 43 | 6 | 392 | CW/CCW | no | spur |
| | TG-55N-AP-67 24V | 109 | 24 | 540 | 43 | 6 | 490 | CW/CCW | no | spur |
| | TG-55N-AP-81 24V | 89,8 | 24 | 540 | 43 | 6 | 588 | CW/CCW | no | spur |
| | TG-55N-AP-89 24V | 81,8 | 24 | 540 | 43 | 6 | 637 | CW/CCW | no | spur |
| | TG-55N-AP-108 24V | 67,4 | 24 | 540 | 43 | 6 | 784 | CW/CCW | no | spur |
| | TG-55N-AP-133 24V | 54,3 | 24 | 540 | 43 | 6 | 980 | CW/CCW | no | spur |
| BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
|  | TG-55N-AP-6 12V | 518 | 12 | 510 | 43 | 6 | 49 | CW/CCW | no | spur |
| | TG-55N-AP-8 12V | 375 | 12 | 510 | 43 | 6 | 68,6 | CW/CCW | no | spur |
| | TG-55N-AP-13 12V | 241 | 12 | 510 | 43 | 6 | 98 | CW/CCW | no | spur |
| | TG-55N-AP-16 12V | 194 | 12 | 510 | 43 | 6 | 127,4 | CW/CCW | no | spur |
| | TG-55N-AP-20 12V | 157 | 12 | 510 | 43 | 6 | 156,8 | CW/CCW | no | spur |
| | TG-55N-AP-27 12V | 118 | 12 | 510 | 43 | 6 | 196 | CW/CCW | no | spur |
| | TG-55N-AP-32 12V | 96,6 | 12 | 510 | 43 | 6 | 245 | CW/CCW | no | spur |
| | TG-55N-AP-43 12V | 73,1 | 12 | 510 | 43 | 6 | 294 | CW/CCW | no | spur |
| | TG-55N-AP-53 12V | 58,7 | 12 | 510 | 43 | 6 | 392 | CW/CCW | no | spur |
| | TG-55N-AP-67 12V | 46,4 | 12 | 510 | 43 | 6 | 490 | CW/CCW | no | spur |
| | TG-55N-AP-81 12V | 38,4 | 12 | 510 | 43 | 6 | 588 | CW/CCW | no | spur |
| | TG-55N-AP-89 12V | 35,1 | 12 | 510 | 43 | 6 | 637 | CW/CCW | no | spur |
| | TG-55N-AP-108 12V | 28,8 | 12 | 510 | 43 | 6 | 784 | CW/CCW | no | spur |
| TG-55N-AP-133 12V | 23,2 | 12 | 510 | 43 | 6 | 980 | CW/CCW | no | spur | |

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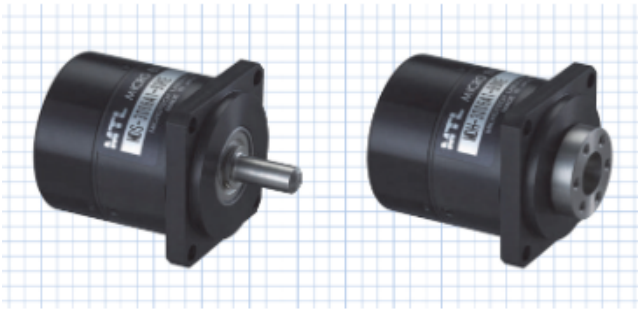
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 www.dynerics.eu

| BLDC 1,6 ~ 8,8W; 3-phase; planetary gearhead | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|---|---------------------|-------|---------|--------------|--------------|--------|----------|-----------|--------|---------|
| part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | | |
|  | TG-55L-SU-13,2, 12V | 44,7 | 12 | 420 | Ø35,8 x 73,6 | 6 | 196 | CW/CCW | ext | plan |
| | TG-55L-SU-17,6, 12V | 28,1 | 12 | 420 | Ø35,8 x 73,6 | 6 | 294 | CW/CCW | ext | plan |
| | TG-55L-SU-23,5 12V | 21,1 | 12 | 420 | Ø35,8 x 73,6 | 6 | 392 | CW/CCW | ext | plan |
| | TG-55L-SU-47,9, 12V | 10 | 12 | 420 | Ø35,8 x 80,6 | 6 | 686 | CW/CCW | ext | plan |
| | TG-55L-SU-63,9, 12V | 7,2 | 12 | 420 | Ø35,8 x 80,6 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55L-SU-85,3, 12V | 8,7 | 12 | 420 | Ø35,8 x 80,6 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55L-SU-114, 12V | 8,3 | 12 | 420 | Ø35,8 x 80,6 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55L-SU-174 12V | 6,1 | 12 | 420 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55L-SU-232 12V | 5,2 | 12 | 420 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55L-SU-310 12V | 4,2 | 12 | 420 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55L-SU-413 12V | 3,3 | 12 | 420 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan |
| TG-55L-SU-552 12V | 2,5 | 12 | 420 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan | |
| BLDC 1,6 ~ 8,8W; 3-phase; planetary gearhead | | | | | | | | | | |
| part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | | |
|  | TG-55M-SU-3,6 24V | 1357 | 24 | 570 | Ø35,8 x 55,5 | 6 | 49 | CW/CCW | ext | plan |
| | TG-55M-SU-4,8 24V | 1045 | 24 | 570 | Ø35,8 x 55,5 | 6 | 58,8 | CW/CCW | ext | plan |
| | TG-55M-SU-13,2 24V | 375 | 24 | 570 | Ø35,8 x 73,6 | 6 | 166,6 | CW/CCW | ext | plan |
| | TG-55M-SU-17,6 24V | 290 | 24 | 570 | Ø35,8 x 73,6 | 6 | 196 | CW/CCW | ext | plan |
| | TG-55M-SU-23,5 24V | 212 | 24 | 570 | Ø35,8 x 73,6 | 6 | 294 | CW/CCW | ext | plan |
| | TG-55M-SU-47,9 24V | 105 | 24 | 570 | Ø35,8 x 80,6 | 6 | 490 | CW/CCW | ext | plan |
| | TG-55M-SU-63,9 24V | 77,3 | 24 | 570 | Ø35,8 x 80,6 | 6 | 735 | CW/CCW | ext | plan |
| | TG-55M-SU-85,3 24V | 58,1 | 24 | 570 | Ø35,8 x 80,6 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55M-SU-114 24V | 46,2 | 24 | 570 | Ø35,8 x 80,6 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55M-SU-174 24V | 31,2 | 24 | 570 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55M-SU-232 24V | 24,4 | 24 | 570 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan |
| TG-55M-SU-310 24V | 18,7 | 24 | 570 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan | |
| TG-55M-SU-413 24V | 14,2 | 24 | 570 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan | |
| TG-55M-SU-552 24V | 10,8 | 24 | 570 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan | |
| BLDC 1,6 ~ 8,8W; 3-phase; planetary gearhead | | | | | | | | | | |
| part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | | |
|  | TG-55M-SU-3,6 12V | 485 | 12 | 560 | Ø35,8 x 55,5 | 6 | 49 | CW/CCW | ext | plan |
| | TG-55M-SU-4,8 12V | 387 | 12 | 560 | Ø35,8 x 55,5 | 6 | 58,8 | CW/CCW | ext | plan |
| | TG-55M-SU-13,2 12V | 134 | 12 | 560 | Ø35,8 x 73,6 | 6 | 166,6 | CW/CCW | ext | plan |
| | TG-55M-SU-17,6 12V | 109 | 12 | 560 | Ø35,8 x 73,6 | 6 | 196 | CW/CCW | ext | plan |
| | TG-55M-SU-23,5 12V | 76,8 | 12 | 560 | Ø35,8 x 73,6 | 6 | 294 | CW/CCW | ext | plan |
| | TG-55M-SU-47,9 12V | 38,4 | 12 | 560 | Ø35,8 x 80,6 | 6 | 490 | CW/CCW | ext | plan |
| | TG-55M-SU-63,9 12V | 27,7 | 12 | 560 | Ø35,8 x 80,6 | 6 | 735 | CW/CCW | ext | plan |
| | TG-55M-SU-85,3 12V | 20,9 | 12 | 560 | Ø35,8 x 80,6 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55M-SU-114 12V | 17,9 | 12 | 560 | Ø35,8 x 80,6 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55M-SU-174 12V | 12,6 | 12 | 560 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55M-SU-232 12V | 10,3 | 12 | 560 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan |
| TG-55M-SU-310 12V | 8,1 | 12 | 560 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan | |
| TG-55M-SU-413 12V | 6,2 | 12 | 560 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan | |
| TG-55M-SU-552 12V | 4,8 | 12 | 560 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan | |
| BLDC 1,6 ~ 8,8W; 3-phase; planetary gearhead | | | | | | | | | | |
| part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | | |
|  | TG-55N-SU-3,6 24V | 1862 | 24 | 540 | Ø35,8 x 55,5 | 6 | 29,4 | CW/CCW | ext | plan |
| | TG-55N-SU-4,8 24V | 1397 | 24 | 540 | Ø35,8 x 55,5 | 6 | 39,2 | CW/CCW | ext | plan |
| | TG-55N-SU-13,2 24V | 508 | 24 | 540 | Ø35,8 x 73,6 | 6 | 107,8 | CW/CCW | ext | plan |
| | TG-55N-SU-17,6 24V | 381 | 24 | 540 | Ø35,8 x 73,6 | 6 | 147 | CW/CCW | ext | plan |
| | TG-55N-SU-23,5 24V | 285 | 24 | 540 | Ø35,8 x 73,6 | 6 | 196 | CW/CCW | ext | plan |
| | TG-55N-SU-47,9 24V | 140 | 24 | 540 | Ø35,8 x 80,6 | 6 | 343 | CW/CCW | ext | plan |
| | TG-55N-SU-63,9 24V | 104 | 24 | 540 | Ø35,8 x 80,6 | 6 | 490 | CW/CCW | ext | plan |
| | TG-55N-SU-85,3 24V | 78,6 | 24 | 540 | Ø35,8 x 80,6 | 6 | 637 | CW/CCW | ext | plan |
| | TG-55N-SU-114 24V | 58,6 | 24 | 540 | Ø35,8 x 80,6 | 6 | 882 | CW/CCW | ext | plan |
| | TG-55N-SU-174 24V | 39 | 24 | 540 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan |
| | TG-55N-SU-232 24V | 30,5 | 24 | 540 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan |
| TG-55N-SU-310 24V | 23,3 | 24 | 540 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan | |
| TG-55N-SU-413 24V | 17,7 | 24 | 540 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan | |
| TG-55N-SU-552 24V | 13,5 | 24 | 540 | Ø35,8 x 87,7 | 6 | 980 | CW/CCW | ext | plan | |

| BLDC set 20W+ SPEED CONTROL DRIVERS | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|---|-----------------------|-------|---------|---------|----------------|--------|--------|-----------|--------|---------|
|  | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| | FHD6P20S-D3 +driver | 2000 | 24 | 1800 | 61sq x 96 | 8 | 98 | CW/CCW | ext | |
| BLDC set 20W+ SPEED CONTROL DRIVERS + gear head | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|  | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| | FHD6P20S-D3 + 6H5EBN | 500 | 24 | 1800 | 61sq x 96 | 8 | 390 | CW/CCW | ext | spur |
| | FHD6P20S-D3 + 6H10EBN | 250 | 24 | 1800 | 61sq x 96 | 8 | 780 | CW/CCW | ext | spur |
| | FHD6P20S-D3 + 6H25EBN | 100 | 24 | 1800 | 61sq x 96 | 8 | 1800 | CW/CCW | ext | spur |
| | FHD6P20S-D3 + 6H50EBN | 50 | 24 | 1800 | 61sq x 96 | 8 | 3500 | CW/CCW | ext | spur |
| BLDC set set 40W+ SPEED CONTROL DRIVERS | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|  | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| | FHD6P40S-D3 +driver | 2000 | 24 | 3100 | 61sq x 96 | 8 | 200 | CW/CCW | ext | |
| BLDC set 40W+ SPEED CONTROL DRIVERS + gear head | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|  | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| | FHD6P40S-D3 + 6H5EBN | 500 | 24 | 3100 | 61sq x 96 | 8 | 780 | CW/CCW | ext | spur |
| | FHD6P40S-D3 + 6H10EBN | 250 | 24 | 3100 | 61sq x 96 | 8 | 1600 | CW/CCW | ext | spur |
| | FHD6P40S-D3 + 6H25EBN | 100 | 24 | 3100 | 61sq x 96 | 8 | 3600 | CW/CCW | ext | spur |
| | FHD6P40S-D3 + 6H50EBN | 50 | 24 | 3100 | 61sq x 96 | 8 | 7100 | CW/CCW | ext | spur |
| BLDC 14,32W Compact fully integrated electronics | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|  | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| | DCB2106 | 2346 | 24 | 190 | Ø36 x 40 | 3,17 | 35,7 | CW/CCW | integr | |
| BLDC ≤ 8Nm fully integrated electronics + gear head | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|  | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| | UBBD-T6 24V 400 | 400 | 24 | 190 | 63,5 x 92x 75 | 7,94 | 1300 | CW/CCW | integr | spur |
| | ? | | | | | | | | | |
| | UBBD-T6 24V 20 | 20 | 24 | 190 | 63,5 x 92x 75 | 7,94 | 8000 | CW/CCW | integr | spur |
| BLDC ≤ 35Nm fully integrated electronics + gear head | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|  | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| | FBB-T3 24V 50 | 50 | 24 | 190 | 123 x 70 x 108 | 8,5 | 17000 | CW/CCW | integr | spur |
| | ? | | | | | | | | | |
| | FBB-T3 24V 0,4 | 0,4 | 24 | 190 | 123 x 70 x 108 | 8,5 | 35000 | CW/CCW | integr | spur |

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Powerful miniature servo motors



Nippon Pulse Motor (NPM, represented by Dynerics GmbH) presents a new compact series of direct drive servo motors.

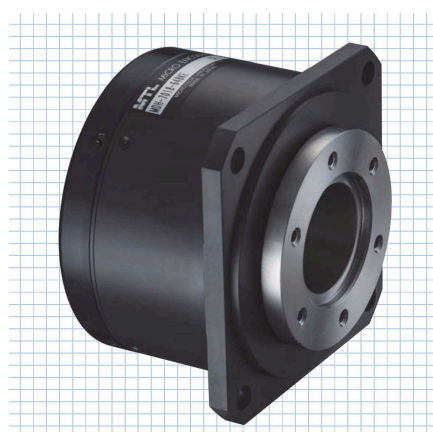
The brushless motors of the MDD family (micro-direct drive) are available in dimensions from 13 mm to 70 mm and with 3 lengths. Due to the special windings, the use of strong ball bearings and extra strong magnets, this motor in a compact housing makes it a robust motor with a very high torque (up to 1000 mNm, with peak values up to 3100 mNm)










The overwhelming high stiffness, high speed and high accuracy of the MDD motors is achieved thanks to the design of the motor, whereby the shaft is directly connected to the gearbox.

For the realization of a precise positioning, the motors have an integrated encoder (absolute or incremental) with high resolution.

On request, the MDD series can be supplied with a hollow axis, and customer-specific adjustments (like a special sealing) are possible.







These robust and space-saving motors are extremely precise and are used in a variety of direct drive applications, with precise positioning, combined with force required examples include not only high-precision devices in cleanrooms such as Scara, pharmaceutical robots and small gantry, but also in industrial robotic scars such as for cobots, articulated arm robots for production plants with complex assembly operations in harsh conditions, and precision machines such as SMA



| | | | | | | | | | | | |
|---|--------------|-----|-------|----------|---------|------------|---------------------|--------|-----------|------------|---------|
| 16P Direct Drive Brushless Servo | | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| | part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr/enc. | |
| Incremental: 2,592,000 (multiplied by 4) | | | | | | | through hole | | | | |
|  | MDH(12)-4006 | NPM | 450 | 48 | 292 | Ø40 x 31,5 | 12 | 120 | CW/CCW | encoder | |
| | MDH(12)-4012 | | 450 | 48 | 560 | Ø40 x 37,5 | 12 | 200 | CW/CCW | encoder | |
| | MDH(12)-4018 | | 450 | 48 | 833 | Ø40 x 43,5 | 12 | 280 | CW/CCW | encoder | |
| 16P Direct Drive Brushless Servo | | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| | part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr/enc. | |
| encoder: Increm: 2,592,000 (multiplied by 4) / Absolute: 1,048,576 (20 bit) | | | | | | | through hole | | | | |
|  | MDH(6)-4006 | NPM | 450 | 48 (24*) | 292 | Ø40 x 31,5 | 6 | 100 | CW/CCW | encoder | |
| | MDH(6)-4012 | | 450 | 48 (24*) | 560 | Ø40 x 37,5 | 6 | 200 | CW/CCW | encoder | |
| | MDH(6)-4018 | | 450 | 48 (24*) | 833 | Ø40 x 43,5 | 6 | 280 | CW/CCW | encoder | |
| 16P Direct Drive Brushless Servo | | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| | part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr/enc. | |
| encoder: Incremental: 288,000 (multiplied by 4) / Absolute: 262,144 (18 bit) | | | | | | | through hole | | | | |
|  | MDH-2006 | NPM | 1500 | 24 | 208 | Ø20 x 31,5 | 6 | 14 | CW/CCW | encoder | |
| | MDH-2012 | | 1500 | 24 | 417 | Ø20 x 37,5 | 6 | 30 | CW/CCW | encoder | |
| | MDH-2018 | | 1500 | 24 | 708 | Ø20 x 43,5 | 6 | 40 | CW/CCW | encoder | |
| 16P Direct Drive Brushless Servo | | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| | part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr/enc. | |
| encoder: Incremental: 432,000 (Multiplication by 4) / Absolute: 524,288 (19 bit) | | | | | | | through hole | | | | |
|  | MDH-3006 | NPM | 1000 | 48 | 313 | Ø30 x 31,5 | 4 | 60 | CW/CCW | encoder | |
| | MDH-3012 | | 1000 | 48 | 417 | Ø30 x 37,5 | 4 | 95 | CW/CCW | encoder | |
| | MDH-3018 | | 1000 | 48 | 625 | Ø30 x 43,5 | 4 | 130 | CW/CCW | encoder | |
| 16P Direct Drive Brushless Servo | | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| | part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr/enc. | |
| encoder: Incremental: 2,560,000 (multiplied by 4) / Absolute: 1,048,576 (20 bit) | | | | | | | through hole | | | | |
|  | MDH-6006 | NPM | 300 | 48 | 521 | Ø60 x 31,5 | 20 | 290 | CW/CCW | encoder | |
| | MDH-6012 | | 300 | 48 | 1062 | Ø60 x 37,5 | 20 | 580 | CW/CCW | encoder | |
| | MDH-6018 | | 300 | 48 | 1604 | Ø60 x 43,5 | 20 | 770 | CW/CCW | encoder | |
| 16P Direct Drive Brushless Servo | | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| | part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr/enc. | |
| encoder: Incremental: 2,592,000 (multiplied by 4) / Absolute: 2,097,152 (21 bit) | | | | | | | through hole | | | | |
|  | MDH-7006 | NPM | 200 | 48 | 625 | Ø40 x 31,5 | 25 | 360 | CW/CCW | encoder | |
| | MDH-7012 | | 200 | 48 | 1250 | Ø40 x 37,5 | 25 | 660 | CW/CCW | encoder | |
| | MDH-7018 | | 200 | 48 | 1875 | Ø40 x 43,5 | 25 | 1000 | CW/CCW | encoder | |
| 16P Direct Drive Brushless Servo | | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| | part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr/enc. | |
| encoder: Absolute: 2,048 (11 bit) | | | | | | | | | | | |
|  | MDS-1306 | NPM | 3000 | 24 | 83 | Ø13 x 25,4 | 3 | 3 | CW/CCW | encoder | |
| | MDS-1312 | | 3000 | 24 | 167 | Ø13 x 31,4 | 3 | 5,5 | CW/CCW | encoder | |
| | MDS-1318 | | 3000 | 24 | 333 | Ø13 x 37,4 | 3 | 8 | CW/CCW | encoder | |
| 16P Direct Drive Brushless Servo | | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| | part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr/enc. | |
| encoder: Incremental: 288,000 (multiplied by 4) / Absolute: 262,144 (18 bit) | | | | | | | through hole | | | | |
|  | MDS-2006 | NPM | 1500 | 24 | 208 | Ø20 x 31,5 | 4 | 14 | CW/CCW | encoder | |
| | MDS-2012 | | 1500 | 24 | 417 | Ø20 x 37,5 | 4 | 30 | CW/CCW | encoder | |
| | MDS-2018 | | 1500 | 24 | 708 | Ø20 x 43,5 | 4 | 40 | CW/CCW | encoder | |
| 16P Direct Drive Brushless Servo | | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| | part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr/enc. | |
| encoder: Incremental: 432,000 (multiplied by 4) / Absolute: 524,288 (19 bit) | | | | | | | through hole | | | | |
|  | MDS-3006 | NPM | 1000 | 48 | 313 | Ø30 x 31,5 | 5 | 60 | CW/CCW | encoder | |
| | MDS-3012 | | 1000 | 48 | 417 | Ø30 x 37,5 | 5 | 95 | CW/CCW | encoder | |
| | MDS-3018 | | 1000 | 48 | 625 | Ø30 x 43,5 | 5 | 130 | CW/CCW | encoder | |
| 16P Direct Drive Brushless Servo | | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
| | part nr. | | rpm | V | mA | mm | mm | mNm | rotation | contr/enc. | |
| encoder: Incremental: 2,592,000 (multiplied by 4) / Absolute: 1,048,576 (20 bit) | | | | | | | through hole | | | | |
|  | MDS-4006 | NPM | 450 | 48 | 292 | Ø40 x 31,5 | 6 | 120 | CW/CCW | encoder | |
| | MDS-4012 | | 450 | 48 | 562 | Ø40 x 37,5 | 6 | 200 | CW/CCW | encoder | |
| | MDS-3018 | | 450 | 48 | 833 | Ø40 x 43,5 | 6 | 230 | CW/CCW | encoder | |

ELRA INDIVIDUAL DRIVE TECHNOLOGY

As a leading supplier in Austria, ELRA develops superior drive solutions and motors that are in daily use worldwide. From prototype production, individual special solutions to complete assemblies, ELRA realises the best possible drive in each case. With innovative spirit and technical perfection, ELRA works hand in hand with customers from a wide range of industries to constantly optimise products and technologies. The ELRA quality guarantee ensures durability, profitability and clear time and cost advantages.

| 14p-BLDC high-torque; IP65 | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|---|----------------------|-------|---------|---------|------------|--------|--------|-----------|--------|---------|
|  | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| | BL80TS | 650 | 48 | 4900 | 70sq x 115 | 13,5 | 2200 | CW/CCW | ext | |
| | BL80TM | 800 | 48 | 7400 | 70sq x 135 | 13,5 | 2800 | CW/CCW | ext | |
| | BL80TL | 850 | 48 | 8700 | 70sq x 155 | 13,5 | 3500 | CW/CCW | ext | |
| 14p-BLDC high-torque; IP65 | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|  | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| | BL100TS | 700 | 48 | 7000 | 94sq x 135 | 19 | 3500 | CW/CCW | ext | |
| | BL100TM | 800 | 48 | 9000 | 94sq x 155 | 19 | 4000 | CW/CCW | ext | |
| | BL100TL | 800 | 48 | 12800 | 94sq x 175 | 19 | 5500 | CW/CCW | ext | |
| 8p-BLDC high-torque; | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|  | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| | BL70S | 3000 | 24 | 8800 | 70sq x 90 | 14 | 500 | CW/CCW | ext | |
| | BL70M | 3000 | 24 | 18000 | 70sq x 120 | 14 | 1000 | CW/CCW | ext | |
| | BL70L-1500 | 1500 | 48 | 6500 | 70sq x 150 | 14 | 1500 | CW/CCW | ext | |
| | BL70L | 3000 | 48 | 13000 | 70sq x 150 | 14 | 1500 | CW/CCW | ext | |
| 8p-BLDC high-torque; hollow shaft | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|  | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| | BL70S-48V+ SG152-7.5 | 400 | 48 | 8000 | 152 x 134 | 17 | 6000 | CW/CCW | ext | helical |
| | BL70S-48V+ SG152-10 | 300 | 48 | 8000 | 152 x 134 | 17 | 8000 | CW/CCW | ext | helical |
| | BL70M-48V+ SG152-7.5 | 400 | 48 | 14000 | 176 x 134 | 17 | 11000 | CW/CCW | ext | helical |
| | BL70M-48V+ SG152-10 | 300 | 48 | 14000 | 176 x 134 | 17 | 15000 | CW/CCW | ext | helical |
| Brushless Bevel Gear Drive | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|  | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| | BL57AL-24V + SKG85- | 300 | 48 | 11000 | 85 x 254 | 14 | 5000 | CW/CCW | ext | |
| | BL57AL-48V + SKG85- | 300 | 48 | 5500 | 85 x 254 | 14 | 5000 | CW/CCW | ext | |
| Traction Drives for AGV's | | speed | Voltage | current | sizes | shaftØ | torque | direction | driver | gearbox |
|  | part nr. | rpm | V | mA | mm | mm | mNm | rotation | contr | |
| | FABL60M-IF30-48V-22 | 130 | 48 | 10600 | 116 x 238 | | 20000 | CW/CCW | ext | |
| | FABL60L-IF30-48V-22 | 130 | 48 | 16000 | 116 x 218 | | 30000 | CW/CCW | ext | |

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Electronics: Drivers and controllers

The basic task of the driver is to generate an appropriate signal from the input data to move the motor axis. Different motors require different ways of controlling. Motor drives are becoming more efficient as power electronic devices such as Drivers and controllers are being incorporated. By entering the parameters we help you to find the most suitable driver or controller within our wide range of controls we offer different electronic solutions (ASIC's, Board level, boxes), but also different type of motors with integrated intelligence, including ultra-small OEM servo drivers and controllers.

Examples

SOMANET Node Series:



The SOMANET Node series is a family of ultra-compact, super-efficient and powerful servo drives that support all PMSM/Synchronous AC/BLDC motors up to 60V and 100 A / 66 Arms and feature an EtherCAT interface with CiA DS 402 protocol.

SOMANET Circulo:



Motion control for modern robotics in circular shape. SOMANET Circulo is the world's first integrated motion device: a complete servo-drive solution with outstanding features such as integrated high-resolution absolute encoders, integrated motor brake, numerous sensor interfaces, optimal mechanical integration, suitable for common actuator designs, and a high-speed EtherCAT interface (DS402, up to 4kHz).

OBLAC Drive Tools:

Very user-friendly commissioning and tuning software for fast and easy commissioning.

MOTORCORTEX:

Fully featured high performance motion control software suite for any multi-axis kinematics.

PMX-series:



PMX box controllers utilize PCL60xx series advanced motion controller chips for 4-axis and 2-axis motion. The PMX series also features linear coordinated motion capabilities (as well as circular coordinated motion capabilities for fouraxis models). More available functions include encoder feedback support, multi-task standalone programming, and analog joystick control, to name just a few. These box controllers are available with USB, RS-485 and Ethernet communication options, and are easy to set up and run. The 2-axis model also includes two microstep drivers.

TITAN-NXS-series including TRUE EDGE REAL-TIME ANALYTICS



- Available in two versions: TITAN-NXS-SCX and TITAN-NXS-SPX
- is a Closed Loop Servo Driver and Standalone Controller that is able to handle most of the commonly used motors in the industry: Stepper, Brushless Servo, Linear, Shaft, DC and Voice Coil Motors
- Supports USB and RS485 communication *Comes with many advanced motion control features: Auto Parameter Detection, Auto Tuning, Force/Torque control, and Multi-thread Motion Programming
- Uses the intuitive and easy-to-use TITAN Software that enables anyone to startup the servo motion system within minutes

CMD (COMMANDER):



Advanced OEM 4-Axis Hybrid IC Motion Controller for Custom Solutions

Commander is a powerful, four-axis hybrid IC motion controller that bridges the gap between off-the-shelf and design-from-scratch controllers. Reduce development time and get your design to market faster, with Commander's advanced multi-axis functionality.

Commander fits a large range of applications and is easily scalable from prototype to production with no software changes required

Simple to use and Cost-effective

Based on Nippon Pulse's PCL6045BL motion control LSI, and an ARM Core processor

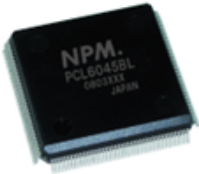
TITAN-CRX-8 (driver)



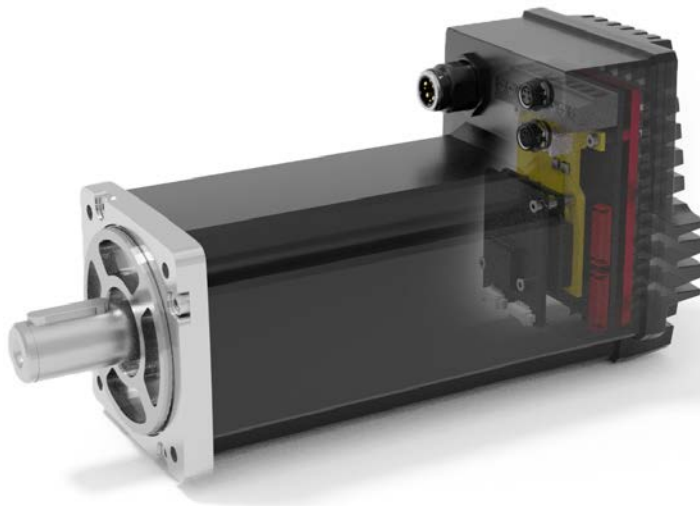
Intelligent. Simple. Powerful. Intuitive.

- is a single-axis servo core module that is part of the Titan Servo family and is ideal for customized, cost-sensitive, and high-volume OEM applications.
- Comes with a fan control port for easily attaching an external fan for continuous high-power motor control
- Comes with many advanced motion control features: Auto Parameter Detection, Auto Tuning, Force/Torque control, and Multi-thread Motion Programming
- Uses the intuitive and easy-to-use TITAN Software that enables anyone to startup the servo motion system within minutes
- TITAN has many advanced servo control feature and sets the foundation for the Servo 5.0 standard.

ASIC's:



Designed to provide the oscillating, high-speed pulses needed to drive stepper motors and servomotors (pulse string input types) using various commands. It can offer various types of control over the pulse strings and therefore the motor performance. These include continuous feeding, positioning, and origin return, etc. at a constant speed, linear acceleration/deceleration, and S-curve acceleration/deceleration. We offer the functionality of a driver and a controller next to a box version, also as board for OEM applications or in a compact hybrid/core modules that bridges the gap between off-the-shelf and design-from-scratch controllers.



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stepper motors

Hybrid, PM, tin-can low vibration, low noise
Compact design up to 50 Nm, linearstep, 2 & 3-phase versions
0.6 ° -3.75 ° step angle, integrated driver electronics
Manufacturers: Nidec Servo, Shinano Kenshi, NPM, KSS

NPM

Stepper and BLDC motor controller / driver boards and modules

Single & Multi axes 2,3,4 & 5 phases unipolar, bipolar
Up to 4 axes, microstep, up to 8A. Various communication
Fieldbus (CANopen, MODBUS) Ethernet, RS485, USB
Manufacturers: Nidec Servo, SHS, NPM, Panasonic, Synapticon



Brushed motors and geared motors

Torque up to 35Nm
Manufacturers: Nidec Servo, Tsukasa, 3P

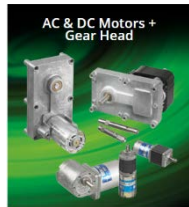
Brushless Motors and gears

Outside, or inside runners; Optionally with integrated driver electronics
Manufacturers: Nidec, Tsukasa, 3P, Mellor



Motors with ironless rotor and gearbox

Brushed, or brushless 0.4-46W torque to 20Nm planetary gear
Manufacturers: E-DriveSystem



Piëzomotoren

10 to 150 mm, up to 3Nm, noiseless, short response time integrated speed / position torque sensors
Manufacturers: Tekceleo



Linear servo motors / Electric cylinders and stages

Ultra-precise, Dynamic, Stable.
Height reproducibility, compact direct drive. Maintenance and cogging free shaft diameter from 4mm to 100mm stroke from 20mm to 4600mm captive / non-captive. Top thrust force up to 10kN;
Manufacturer: NPM, KSS



AC geared motors

Shaded pole & EC motors
Motors up to 90W torque up to 30Nm
Manufacturer: Nidec Servo, Mellor, DKM



Fans and blowers

Reliable, Ball bearing / sleeve bearing
Lifetime up to 100,000 hours. Tested to VDE / UL / CSA IP54-65 versions
Manufacturer: Nidec Servo, Nidec, Dynetics



Embedded IC's

One-chip stepper motor driver ICs, programmable pulse generators, integrated homing, anti-feedback, S-curve. Reduces engine noise Linear spiral, helical / circular interpolation
Manufacturer: Nippon Pulse



Linear Lead & Ball Screw; Linear bearings & Guides

High accuracy, minimal friction, integr. Ball feedback, high rigidity, smooth running
Manufacturer: KSS

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