Dynetics

DYNAMIC IN MECHATRONICS



BRUSHLESS DC MOTORS

1-2324



Introduction:
Dynetics- dynamic in mechatronics

Dynetics, founded in 1994, with offices in Germany and the Netherlands assists engineers across Europe in selecting the best suitable motor for their mechatronic assignment.
Dynetics 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:
Dynetics 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, connecor, etc.)
Dynetics 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.dynetics.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:

$$Pn\ [W] = Mn \cdot S = \frac{2\pi}{60} \cdot n_1 \cdot Mn$$

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.







Dynetics B.V. De Rijn 12 5684PJ Best, The Netherlands
Tel: +31-(0)499-371007 | Fax: +31-(0)499-372008

Dynetics GmbH Klostergasse 6 D-41334 Nettetal-Kaldenkirchen, Deutschland
Tel : +49-(0)2157-128990 | Fax: +49-(0)2157-128999

e-Mail: info@dynetics.eu
www.dynetics.eu

Options / Customizations

- Encoders
- shaft modifications

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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.
Dynetics 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

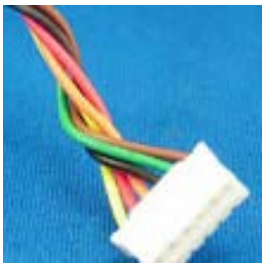

Worm Gear

Additional Modifications

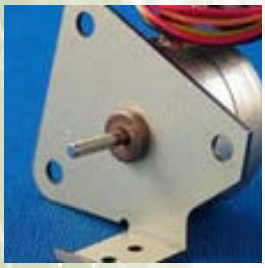

Longer or Shorter Lead Length


Connectors


Plastic Tubing
(regular or heat shrink)


Twisted Leads


Ball Bearings


Flange


Lead Wire Exit Location


Mesh Tubing


Stopper

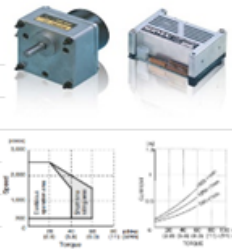
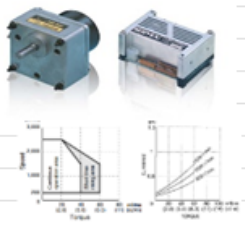
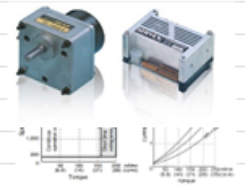
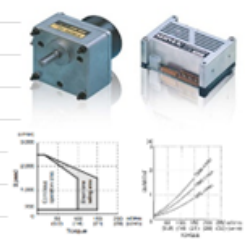
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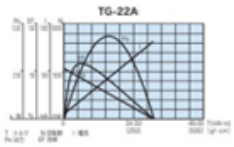
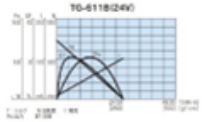
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OUTERROTOR-Models

	part nr.		speed	Voltage		sizes	shaft Ø	torque	direction	driver	gearbox
Brushless DC motor (outerrroter)			rpm	V	mA	mm	mm	mNm	rotation	contr	
											
	MRB25L03PNK00	NKW	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 (outerrroter)			rpm	V	mA	mm	mm	mNm	rotation	contr	
											
	20N	Nidec	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 (outerrroter)			rpm	V	mA	mm	mm	mNm	rotation	contr	
	FY6S6N-D3	Nidec	1500	24	700	61sq x 32,6	8	39	CW/CCW	ext	
	FY6S6NPD3 (+palmdriver)		1500	24	700	61sq x 64,6	8	39	CW/CCW	ext set	
	FY6S6NSD3 (+simpledriver)		1500	24	700	61sq x 64,6	8	39	CW/CCW	ext set	
	FY6S6-D3+ 6H5FBN-100		300	24	700	61sq x 64,6	8	160	CW/CCW	ext	spur
	FY6S6-D3+ 6H15FBN-100		100	24	700	61sq x 64,6	8	470	CW/CCW	ext	spur
	FY6S6-D3+ 6H25FBN-100		60	24	700	61	8	720	CW/CCW	ext	spur
	FY6S6-D3+ 6H30FBN-100		50	24	700	61	8	850	CW/CCW	ext	spur
	FY6S6-D3+ 6H50FBN-100		30	24	700	61	8	1400	CW/CCW	ext	spur
	part nr.		speed	Voltage		sizes	shaft Ø	torque	direction	driver	gearbox
Brushless DC motor (outerrroter)			rpm	V	mA	mm	mm	mNm	rotation	contr	
	FY8S15-D3	Nidec	1500	24	1400	80sq x 39	8	98	CW/CCW	ext	
	FYD815PD3 (+palmdriver)		1500	24	1400	80sq x 39	10	98	CW/CCW	ext set	
	FYD815SD3 (+simpledriver)		1500	24	1400	80sq x 39	10	98	CW/CCW	ext set	
	FY8S15-D3 + 8H5FBN-100		300	24	1400	80	10	390	CW/CCW	ext	spur
	FY8S15-D3 + 8H15FBN-100		100	24	1400	80	10	1200	CW/CCW	ext	spur
	FY8S15-D3 + 8H25FBN-100		60	24	1400	80	10	1800	CW/CCW	ext	spur
	FY8S15-D3 + 8H30FBN-100		50	24	1400	80	10	2100	CW/CCW	ext	spur
	FY8S15-D3 + 8H50FBN-100		30	24	1400	80	10	3100	CW/CCW	ext	spur
	part nr.		speed	Voltage		sizes	shaftØ	torque	direction	driver	gearbox
Brushless DC motor (outerrroter)			rpm	V	mA	mm	mm	mNm	rotation	contr	
	FYD825D3	Nidec	2300	24	2300	80sq x 45	8	157	CW/CCW	ext	
	FY8S25HD3 (+palmdriver)		2300	24	2300	80sq x 45	8	157	CW/CCW	ext set	
	FY8S25HD3 (+powerdriver)		2300	24	2300	80sq x 45	8	157	CW/CCW	ext set	
	FY8S25-D3+ 8H5FBN-100		300	24	2300	80sq x 45	10	640	CW/CCW	ext	spur
	FY8S25-D3+ 8H15FBN-100		100	24	2300	80sq x 45	10	1900	CW/CCW	ext	spur
	FY8S25-D3+ 8H25FBN-100		60	24	2300	80sq x 45	10	2800	CW/CCW	ext	spur
	FY8S25-D3+ 8H30FBN-100		50	24	2300	80sq x 45	10	3400	CW/CCW	ext	spur
	FY8S25-D3+ 8H50FBN-100		30	24	2300	80sq x 45	10	5100	CW/CCW	ext	spur
	part nr.		speed	Voltage		sizes	shaftØ	torque	direction	driver	gearbox
Brushless DC motor (outerrroter)			rpm	V	mA	mm	mm	mNm	rotation	contr	
	FY9S40-D3	Nidec	2000	24	3400	90 sq x 61,5	10	250	CW/CCW	ext	
	FYD940SD3 (+palmdriver)		2000	24	3400	90 sq x 61,5	10	250	CW/CCW	ext set	
	FYD940HD3 (+powerdriver)		2000	24	3400	90 sq x 61,5	10	250	CW/CCW	ext set	
	FY9S40-D3 + 9H5FBN-100		300	24	3400	90 sq x 61,5	12	1000	CW/CCW	ext	spur
	FY9S40-D3 + 9H15FBN-100		100	24	3400	90 sq x 61,5	12	3100	CW/CCW	ext	spur
	FY9S40-D3 + 9H25FBN-100		60	24	3400	90 sq x 61,5	12	4600	CW/CCW	ext	spur
	FY9S40-D3 + 9H30FBN-100		50	24	3400	90 sq x 61,5	12	5600	CW/CCW	ext	spur
	FY9S40-D3 + 9H50FBN-100		30	24	3400	90 sq x 61,5	12	8300	CW/CCW	ext	spur

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INNERROTOR-Models

BLDC 2,6W + compact planetary gear head			speed	Voltage	current	sizes	shaftØ	torque	direction	driver	gearbox
	part nr.		rpm	V	mA	mm	mm	mNm	rotation	contr	
	TG-22A	Tsukasa	4270	24	190	sq 22 x 40	6	5,88	CW/CCW	ext	
	TG-22D		4270	12	380	sq 22 x 40	6	5,88	CW/CCW	ext	
	TG-22A-FU-4		1026	24	190	22sq x 59,5	6	49	CW/CCW	ext	plan
	TG-22A-FU-16		257	24	190	22sq x 64,5	6	98	CW/CCW	ext	plan
	TG-22A-FU-64		67	24	190	22sq x 69,5	6	196	CW/CCW	ext	plan
	TG-22A-FU-256		18,5	24	190	22sq x 74,5	6	294	CW/CCW	ext	plan
	TG-22D-FU-4		1026	12	380	22sq x 59,5	6	49	CW/CCW	ext	plan
	TG-22D-FU-16		257	12	380	22sq x 64,5	6	98	CW/CCW	ext	plan
	TG-22D-FU-64		67	12	380	22sq x 69,5	6	196	CW/CCW	ext	plan
	TG-22D-FU-256		18,5	12	380	22sq x 74,5	6	294	CW/CCW	ext	plan
BLDC 3,5W + compact planetary gear head			**speed**	**Voltage**	**current**	**sizes**	**shaftØ**	**torque**	**direction**	**driver**	**gearbox**
	part nr.		**rpm**	**V**	**mA**	**mm**	mm	**mNm**	**rotation**	**contr**	
	TG611B	Tsukasa	5700	24	280	22sq x 28	6	5,88	CW/CCW	ext	
	TG-611B-FU-4		1380	24	280	22sq x 47,5	6	19,6	CW/CCW	ext	plan
	TG-611B-FU-16		345	24	280	22sq x 52,5	6	68,6	CW/CCW	ext	plan
	TG-611B-FU-64		90,8	24	280	22sq x 57,5	6	196	CW/CCW	ext	plan
	TG-611B-FU-256		25,5	24	280	22sq x 62,5	6	294	CW/CCW	ext	plan
Brushless DC motor (innerrroter)			**speed**	**Voltage**	**current**	**sizes**	**shaftØ**	**torque**	**direction**	**driver**	**gearbox**
	part nr.		**rpm**	**V**	**mA**	**mm**	**mm**	**mNm**	**rotation**	**contr**	
	13H-12, Type 1	Nidec	11000	12	570	Ø24,2 x 19,1	2	2,5	CW	ext	
	13H-12, Type 2		9300	12	600	Ø24,2 x 19,1	2	4,2	CW	ext	
	13H-12, Type 3		7700	12	520	Ø24,2 x 19,1	2	4,6	CW	ext	
	13H-12, Type 4		6200	12	440	Ø24,2 x 19,1	2	5,2	CW	ext	
	13H-12, Type 5		5000	12	370	Ø24,2 x 19,1	2	5,6	CW	ext	
	CMC_13H-12		13000	12	300	Ø24,2 x 19,1	2	3	CW	ext	
	13H-24, Type 1		17800	24		Ø24,2 x 19,1	2		CW	ext	
	13H-24, Type 2		14550	24	390	Ø24,2 x 19,1	2	2,2	CW	ext	
	13H-24, Type 3		12000	24	380	Ø24,2 x 19,1	2	3,4	CW	ext	
	13H-24, Type 4		8700	24	310	Ø24,2 x 19,1	2	4,5	CW	ext	
	CMC_13H-24		15300	24	240	Ø24,2 x 19,1	2	3	CW	ext	
Brushless DC motor (innerrroter)			**speed**	**Voltage**	**current**	**sizes**	**shaftØ**	**torque**	**direction**	**driver**	**gearbox**
	part nr.		**rpm**	**V**	**mA**	**mm**	**mm**	**mNm**	**rotation**	**contr**	
	22H-12, type 1	Nidec	6550	12	1360	Ø35,8 x 40	4	13	CW	ext	
	22H-12, type 2		5300	12	1640	Ø35,8 x 40	4	22	CW	ext	
	22H-12, type 3		4100	12	1470	Ø35,8 x 40	4	29	CW	ext	
	22H-12, type 4		2850	12	880	Ø35,8 x 40	4	33	CW	ext	
	22h-24, type 1		8650	24		Ø35,8 x 40	4		CW	ext	
	22h-24, type 2		7000	24	940	Ø35,8 x 40	4	14	CW	ext	
	22h-24, type 3		5000	24	910	Ø35,8 x 40	4	27	CW	ext	
	22h-24, type 4		3300	24	740	Ø35,8 x 40	4	36	CW	ext	
	22h-24, type 5		2150	24	530	Ø35,8 x 40	4	42	CW	ext	
3-phase, 12-pole; Low noise/vibration			**speed**	**Voltage**	**current**	**sizes**	**shaftØ**	**torque**	**direction**	**driver**	**gearbox**
	part nr.		**rpm**	**V**	**mA**	**mm**	**mm**	**mNm**	**rotation**	**contr**	
	27H-24, type 1	Nidec	6000	24	1100	Ø48,9 x 31,7	3,17	32	CW/CCW	ext	
	27H-24, type 2		5000	24	1170	Ø48,9 x 31,7	3,17	45	CW/CCW	ext	
	27H-24, type 3		4000	24	1130	Ø48,9 x 31,7	3,17	55	CW/CCW	ext	
	27H-24, type 4		3100	24	990	Ø48,9 x 31,7	3,17	63	CW/CCW	ext	
low noise, low vibration	integr driver		**speed**	**Voltage**	**current**	**sizes**	**shaftØ**	**torque**	**direction**	**driver**	**gearbox**
	part nr.		**rpm**	**V**	**mA**	**mm**	**mm**	**mNm**	**rotation**	**contr**	
		Nidec									
	CMC-24H 12V		3900	12	900	Ø42 x 34	4	25	CW/CCW	integr	
	CMC-24H 24V		4200	24	700	Ø42 x 34	4	25	CW/CCW	integr	

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Φ22 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	Tsukasa	2390	24	311	Φ36 x 41	2,5	19,6	CW/CCW	ext	
	DYTP-3641B-24		3890	24	501	Φ36 x 41	2,5	19,6	CW/CCW	ext	
	DYTP-3641C-24		5090	24	712	Φ36 x 41	2,5	23,52	CW/CCW	ext	
	DYTP-3641D-12		2450	12	483	Φ36 x 41	2,5	15,68	CW/CCW	ext	
	DYTP-3641E-12		4150	12	848	Φ36 x 41	2,5	15,68	CW/CCW	ext	

Φ22 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	Tsukasa	2466	24	326	Φ36 x 41	2,5	19,6	CW/CCW	integr	
	DYTP-3641 BA-24 2P		3800	24	483	Φ36 x 41	2,5	19,6	CW/CCW	integr	
	DYTP-3641 CA-24 2P		5000	24	742	Φ36 x 41	2,5	23,5	CW/CCW	integr	
	DYTP-3641 DA-12 2P		2363	12	521	Φ36 x 41	2,5	15,7	CW/CCW	integr	
	DYTP-3641 EA-12 2P		4160	12	920	Φ36 x 41	2,5	15,7	CW/CCW	integr	
	DYTP-3641 AB-24 9P		2463	24	324	Φ36 x 41	2,5	19,6	CW/CCW	integr	
	DYTP-3641 BB-24 9P		3810	24	480	Φ36 x 41	2,5	19,6	CW/CCW	integr	
	DYTP-3641 CB-24 9P		5032	24	745	Φ36 x 41	2,5	23,5	CW/CCW	integr	
	DYTP-3641 DB-12 9P		2312	12	520	Φ36 x 41	2,5	15,7	CW/CCW	integr	
	DYTP-3641 EB-12 9P		4104	12	920	Φ36 x 41	2,5	15,7	CW/CCW	integr	

Φ22 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	
		Tsukasa									
	DYTP-2234A-24		5130	24	252	Φ22 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	Tsukasa	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	Tsukasa	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	Tsukasa	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	Tsukasa	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

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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									
	TG-631A 24V		9400	24	350	30	3	3,92	CW/CCW	integr	

TG-631 available gear heads


FU


SV


SM


AGD/AMD

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-631A-FU-4 24V	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	
	TG-631A-SV-28 24V	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	
	TG-631A-SM-15 24V	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

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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-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

Dynetics B.V. De Rijn 12 5684PJ Best, The Netherlands
Tel: +31-(0)499-371007 | Fax: +31-(0)499-372008

Dynetics GmbH Klostergasse 6 D-41334 Nettetal-Kaldenkirchen, Deutschland
Tel : +49-(0)2157-128990 | Fax: +49-(0)2157-128999

e-Mail: info@dynetics.eu
www.dynetics.eu

Dynetics

WWW.DYNETICS.EU

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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	


KU


KUP


SU


SV


SM


AMD


BE


AP

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	Tsukasa	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	Tsukasa	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	Tsukasa	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	Tsukasa	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	Tsukasa	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	gearbox
	part nr.		rpm	V	mA	mm	mm	mNm	rotation	contr	
	TG-55LA-AP-20 24V	Tsukasa	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	gearbox
	part nr.		rpm	V	mA	mm	mm	mNm	rotation	contr	
	TG-55LA-BE-12.5 24V	Tsukasa	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	Tsukasa	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

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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-55N-SU-3,6 12V	Tsukasa	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			speed	Voltage	current	sizes	shaftØ	torque	direction	driver	gearbox
	part nr.		rpm	V	mA	mm	mm	mNm	rotation	contr	
	TG-55L-SM-5 24V	Tsukasa	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			speed	Voltage	current	sizes	shaftØ	torque	direction	driver	gearbox
	part nr.		rpm	V	mA	mm	mm	mNm	rotation	contr	
	TG-55L-SM-5 12V	Tsukasa	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	Tsukasa	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			speed	Voltage	current	sizes	shaftØ	torque	direction	driver	gearbox
	part nr.		rpm	V	mA	mm	mm	mNm	rotation	contr	
	TG-55M-SM-5 12V	Tsukasa	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			speed	Voltage	current	sizes	shaftØ	torque	tion of rot	driver	gearbox
	part nr.		rpm	V	mA	mm	mm	mNm	rotation	contr	
	TG-55N-SM-10 24V	Tsukasa	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	Tsukasa	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			speed	Voltage	current	sizes	shaftØ	torque	direction	driver	gearbox
	part nr.		rpm	V	mA	mm	mm	mNm	rotation	contr	
	TG-55L-AP-8 24V	Tsukasa	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			speed	Voltage	current	sizes	shaftØ	torque	direction	driver	gearbox
	part nr.		rpm	V	mA	mm	mm	mNm	rotation	contr	
	TG-55L-AP-8 12V	Tsukasa	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
	part nr.		speed	Voltage	current	sizes	shaftØ	torque	direction	driver	gearbox
BLDC 1,6 ~ 8,8W; 3-phase; spur gearhead			rpm	V	mA	mm	mm	mNm	rotation	contr	
	TG-55M-AP-8 24V	Tsukasa	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

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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-AP-6 12V	Tsukasa	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	Tsukasa	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	Tsukasa	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

Dynetics
WWW.DYNETICS.EU

Dynetics B.V. De Rijn 12 5684PJ Best, The Netherlands
Tel: +31-(0)499-371007 | Fax: +31-(0)499-372008

Dynetics GmbH Klostergasse 6 D-41334 Nettetal-Kaldenkirchen, Deutschland
Tel : +49-(0)2157-128990 | Fax: +49-(0)2157-128999

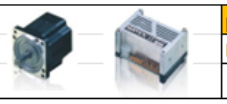
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BLDC 1,6 ~ 8,8W; 3-phase; planetary gearhead			speed	Voltage	current	sizes	shaftØ	torque	direction	driver	gearbox
	part nr.		rpm	V	mA	mm	mm	mNm	rotation	contr	
	TG-55L-SU-13,2, 12V	Tsukasa	44,7	12	420	Ø35,8 x 73,6	6	196	CW/CCW	ext	plan
	TG-55L-SU-17,6, 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			speed	Voltage	current	sizes	shaftØ	torque	direction	driver	gearbox
	part nr.		rpm	V	mA	mm	mm	mNm	rotation	contr	
	TG-55M-SU-3,6 24V	Tsukasa	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			speed	Voltage	current	sizes	shaftØ	torque	direction	driver	gearbox
	part nr.		rpm	V	mA	mm	mm	mNm	rotation	contr	
	TG-55M-SU-3,6 12V	Tsukasa	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			speed	Voltage	current	sizes	shaftØ	torque	direction	driver	gearbox
	part nr.		rpm	V	mA	mm	mm	mNm	rotation	contr	
	TG-55N-SU-3,6 24V	Tsukasa	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

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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	Nidec	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	Nidec	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	
		Mellor									
	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	Mellor	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	Mellor	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

Dynetics B.V. De Rijn 12 5684PJ Best, The Netherlands
Tel: +31-(0)499-371007 | Fax: +31-(0)499-372008

Dynetics GmbH Klostergasse 6 D-41334 Nettetal-Kaldenkirchen, Deutschland
Tel : +49-(0)2157-128990 | Fax: +49-(0)2157-128999

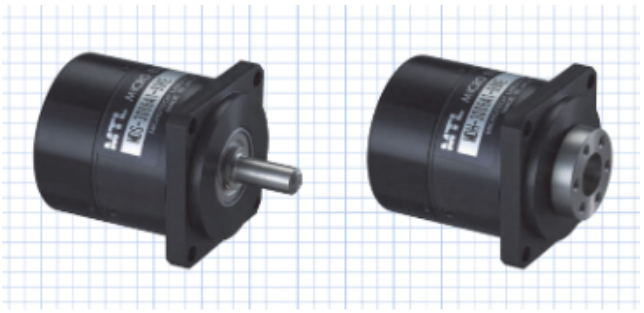
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Powerful miniature servo motors



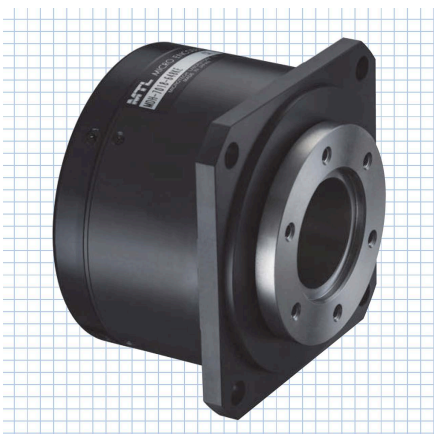
Nippon Pulse Motor (NPM, represented by Dynetics GmbH) presents a new compact series of direct drive servo motors.

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)											
	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)											
	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)											
	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	ELRA	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	ELRA	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	ELRA	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	ELRA	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		400	48	14000	176 x 134	17	11000	CW/CCW	ext	helical
	BL70M-48V+ SG152-1		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-	ELRA	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-2	ELRA	130	48	10600	116 x 238		20000	CW/CCW	ext	
	FABL60L-IF30-48V-22		130	48	16000	116 x 218		30000	CW/CCW	ext	

Dynetics B.V. De Rijn 12 5684PJ Best, The Netherlands
Tel: +31-(0)499-371007 | Fax: +31-(0)499-372008

Dynetics GmbH Klostergasse 6 D-41334 Nettetal-Kaldenkirchen, Deutschland
Tel : +49-(0)2157-128990 | Fax: +49-(0)2157-128999

e-Mail: info@dynetics.eu
www.dynetics.eu

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)

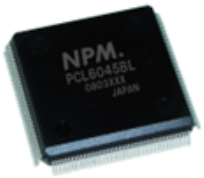


Intelligent. Simple. Powerful. Intuïtieve.

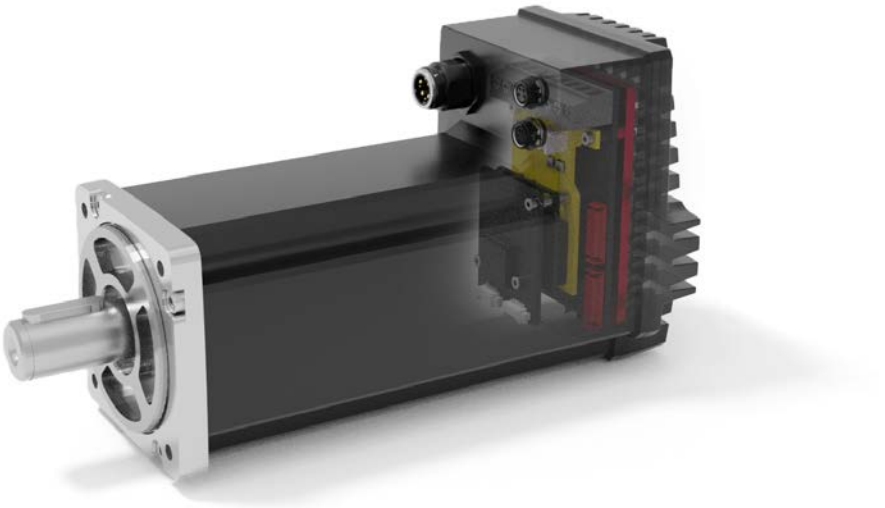
- is a single-axis servo core module that is part of the Titan Servo family and is ideal for customized, cost-sensitive, and high-volume OEM applications.
- Comes with a fan control port for easily attaching an external fan for continuous high-power motor control
- Comes with many advanced motion control 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.

Dynetics
DYNAMIC IN MECHATRONICS

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.



Dynetics
WWW.DYNETICS.EU

Dynetics B.V. De Rijn 12 5684PJ Best, The Netherlands
Tel: +31-(0)499-371007 | Fax: +31-(0)499-372008

Dynetics GmbH Klostergasse 6 D-41334 Nettetal-Kaldenkirchen, Deutschland
Tel : +49-(0)2157-128990 | Fax: +49-(0)2157-128999

e-Mail: info@dynetics.eu
www.dynetics.eu

Compact drive technology, ventilation and cooling

Dynetics
DYNAMIC IN MECHATRONICS



Nidec
All for dreams

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

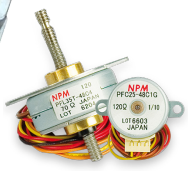




KSS

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



DKM

Motors with ironless rotor and gearbox

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





TEKCELEO
We Accelerate Innovation

Piëzomotoren

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



System E-Drive

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

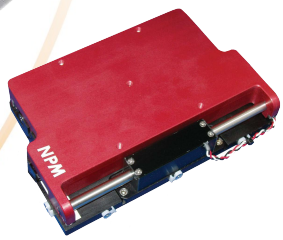




synapticon
INTEGRATED MOTION

AC geared motors

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



TSUKASA

Fans and blowers

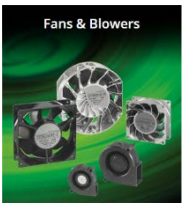
Reliable, Ball bearing / sleeve bearing
Lifetime up to 100,000 hours. Tested to VDE / UL / CSA IP54-65 versions
Manufacturer: Nidec Servo, Nidec, Dynetics



Mellor
MOTORS & GEARED MOTORS

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





SHINANO KENSHI CORPORATION

Linear Lead & Ball Screw Linear bearings & Guides

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

DYNETICS B.V.

De Rijn 12
5684 PJ Best, Netherlands
Phone: +31 499 371007
Fax: +31 499 372008
e-mail: info@dynetics.eu

DYNETICS GmbH

Klostergasse 6
D-41334 Nettetal-Kaldenkirchen, Deutschland
Phone: +49 2157 128990
Fax: +49 2157 128999
e-mail: info@dynetics.eu