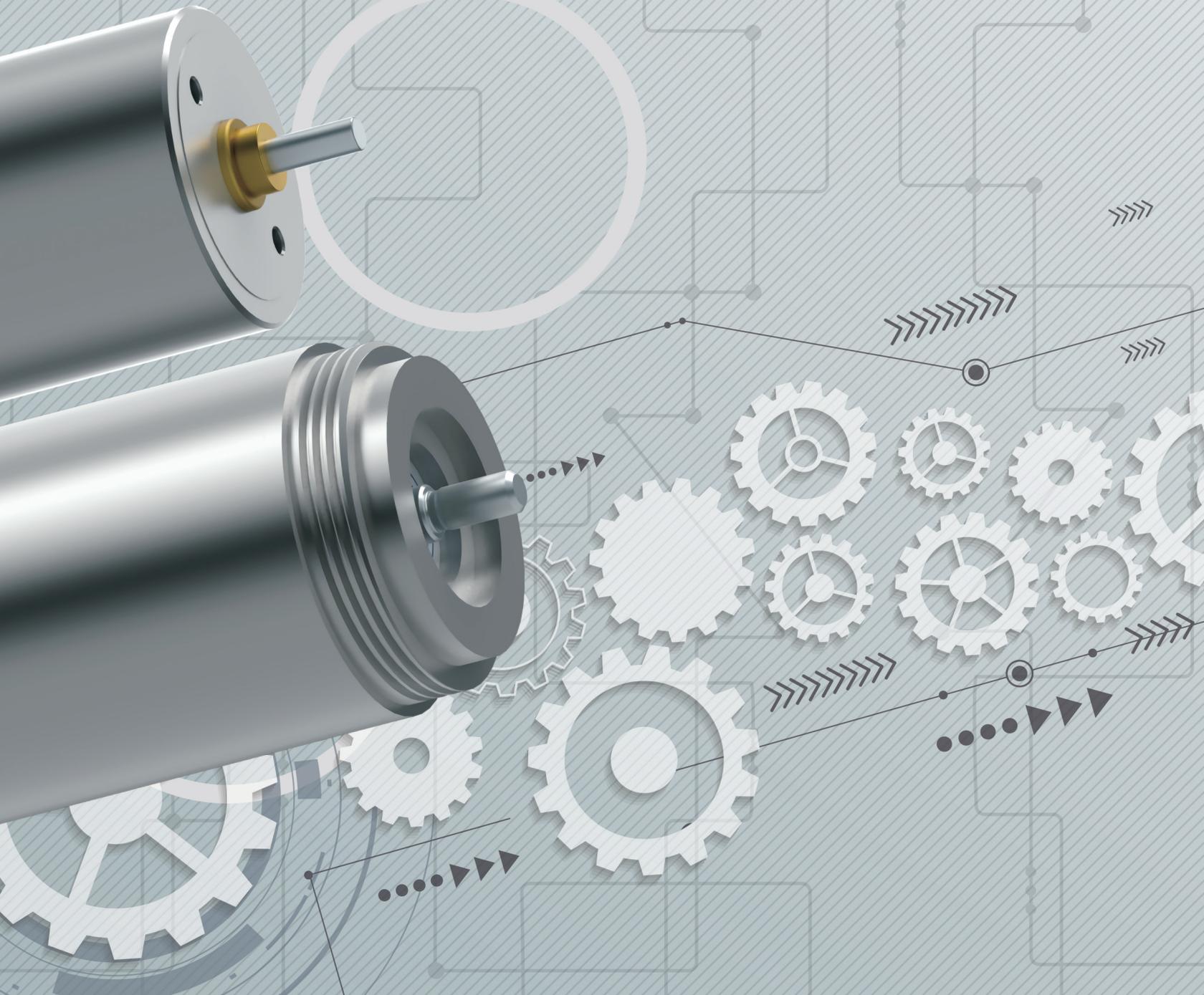


MOONS'

moving in better ways

Micro Motion Systems with ironless winding



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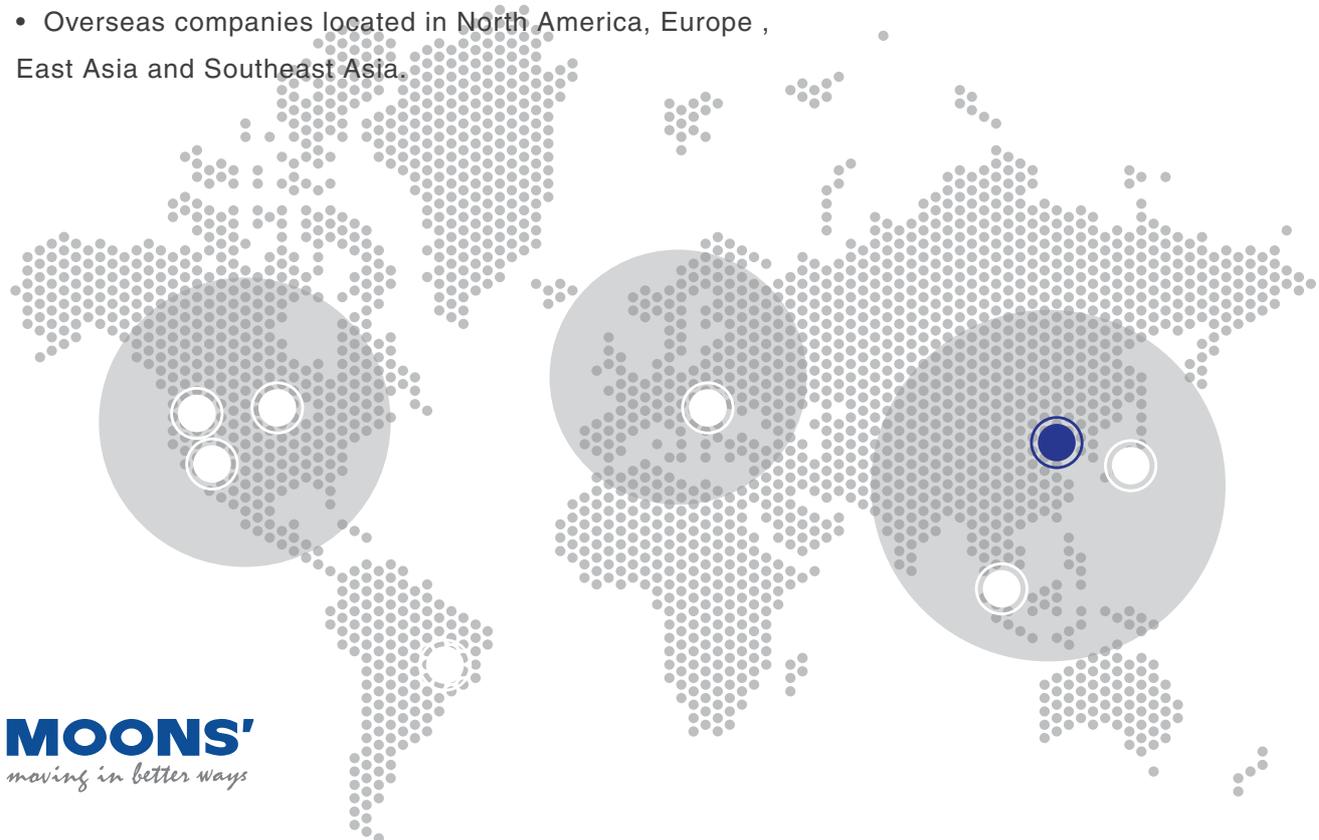
Company Profile

MOONS' is one of the largest integrated manufacturers of motion control products within China, using internationally proven scientific management tools along with the pursuit for professional applied technologies.

MOONS' continuously develops products that conserve energy, are more convenient and efficient in utilization and application, bringing assurance to the customers and creating values for them.

MOONS' products range from factory automation components to the intelligent LED drivers, from the intelligent management system of large industrial equipment to the control actuator in automotive and telecommunication devices.

- MOONS' was established in February 1994.
- Headquartered in Shanghai, China.
- Overseas companies located in North America, Europe , East Asia and Southeast Asia.



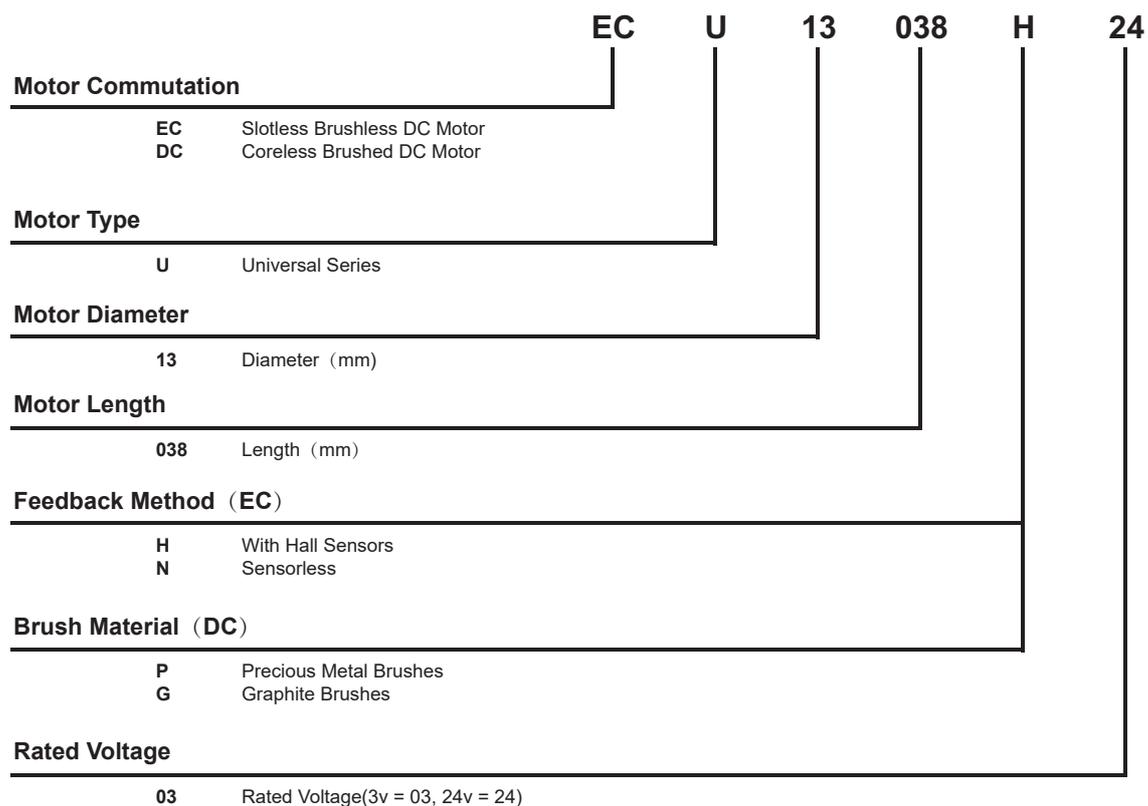
MOONS'
moving in better ways

Product Feature

MOONS' EC motor and DC motor use independent patented ironless winding. this special design can bring high speed, high torque and low noise. Because of no cogging and compact structure, we can get smoother running at high or low speed, more accurate control, higher efficiency and higher power density.

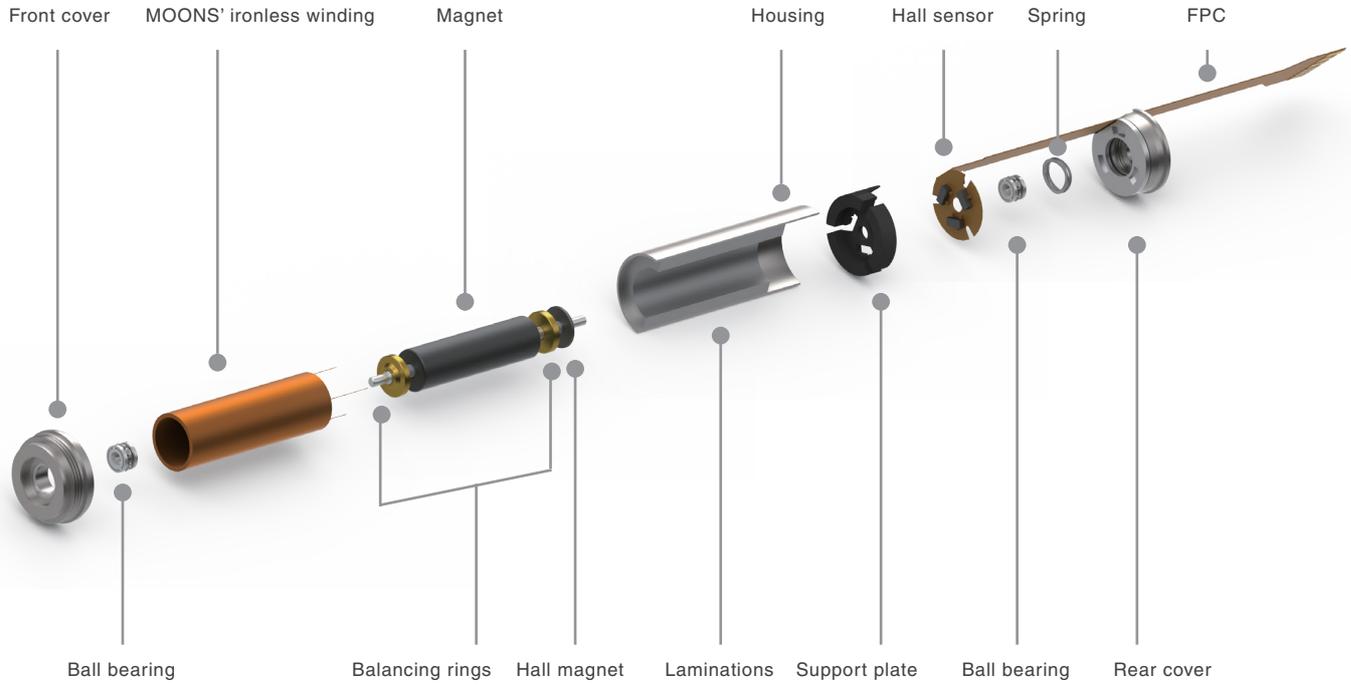
- Ironless Winding
- Small Size
- High Torque
- High Speed

Product Code

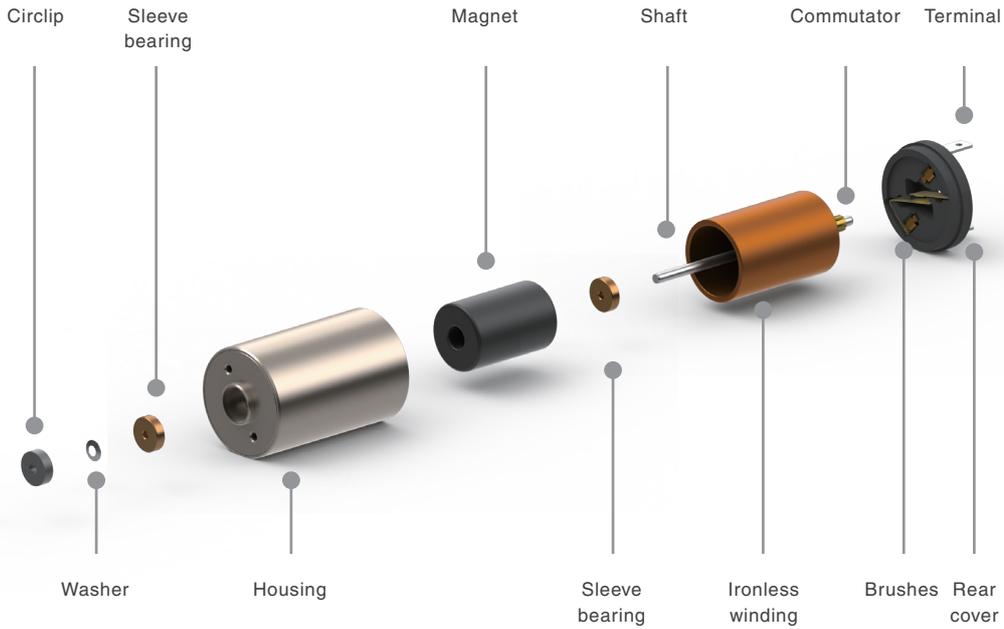


Structure

EC Series Motor Structure



DC Series Motor Structure



Slotless

BLDC Motor

ECU13026

ECU13038

ECU16036

ECU22048



ECU13026

Ø13mm 4.5/9W

Motor Data		Part Numbers				
		ECU13026H06	ECU13026H09	ECU13026H12	ECU13026H18	ECU13026H24
Nominal voltage	V	6	9	12	18	24
No load speed	rpm	29200	31000	28000	28400	27600
No load current	mA	165	120	77	56	42
Rated speed	rpm	19800	21500	19300	19300	19300
Rated torque	mNm	2.33	2.45	2.31	2.41	2.33
Rated current	A	1.35	1.01	0.64	0.44	0.32
Stall torque	mNm	7.88	10.37	8.45	8.55	7.83
Stall current	A	3.97	3.60	1.96	1.40	0.96
Max efficiency	%	64	67	65	64	64
Terminal Resistance	Ohm	1.51	2.65	6.11	13.4	25.1
Terminal Inductance	mH	0.021	0.044	0.095	0.209	0.377
Torque constant	mNm / A	1.95	2.88	4.15	6.11	8.19
Speed constant	rpm / V	4867	3444	2333	1578	1150
Speed/torque gradient	rpm / mNm	3706	2990	3314	3320	3524
Mechanical time constant	ms	7.89	6.85	7.11	7.45	7.62

Specification

Max speed	rpm	50000
Rotor inertia	gcm ²	0.194
Number of pole pairs		1
Ambient temperature	° C	-40~+100
Max winding temperature	° C	155
Thermal resistance		
Housing - Ambient	° C/ W	33.5
Winding - Housing	° C/ W	2.5
Thermal time constant		
Motor	s	190
Winding	s	0.75
Max axial load	N	1
Max radial load	N	4
Weight	g	19

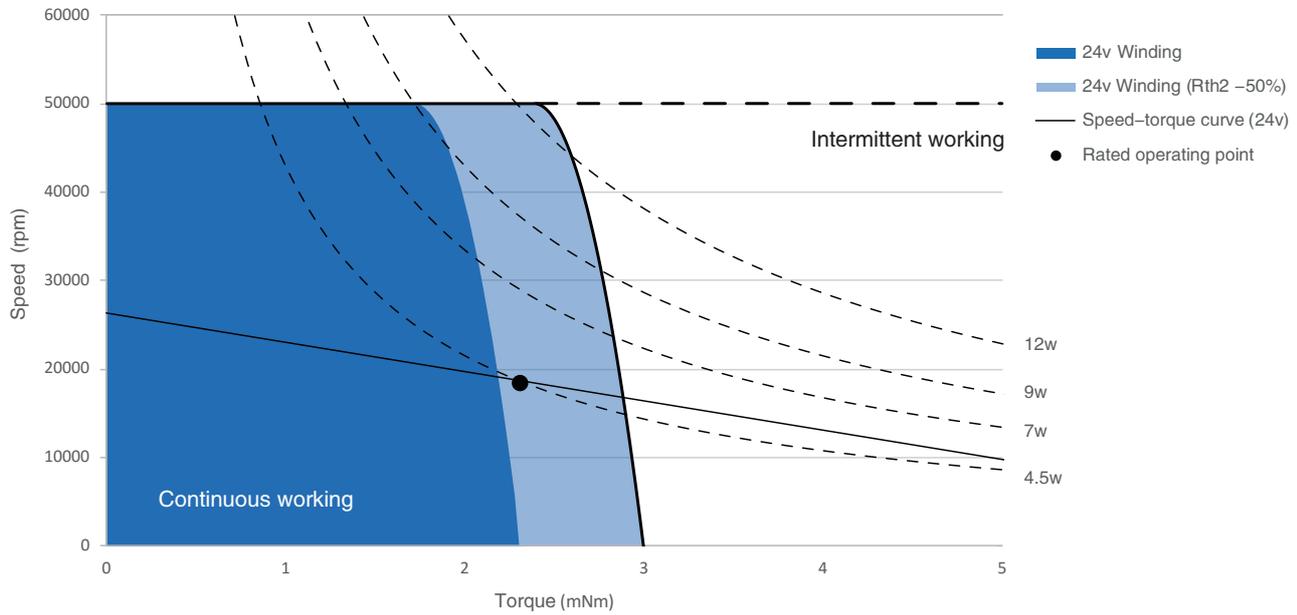
Combination

Gearbox

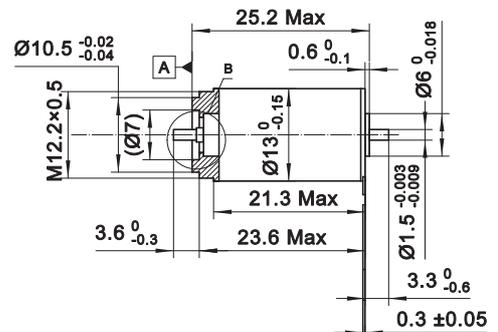
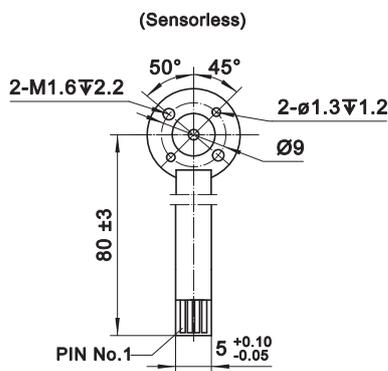
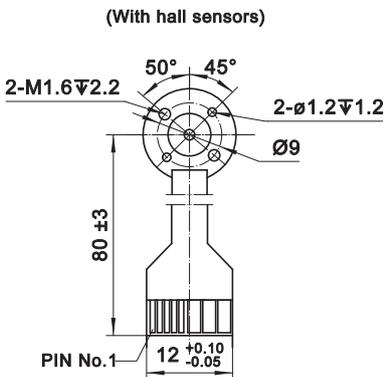
Encoder

Please contact local sales.

Operating Range



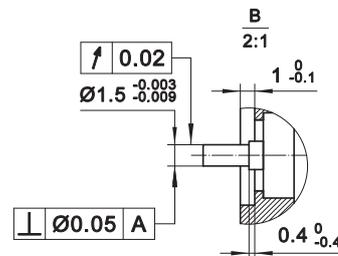
Dimension



	With hall sensors	Sensorless
PIN No.	Signal	Signal
1	4.5-24VDC	Winding 1
2	Hall 3	Winding 2
3	Hall 1	Winding 3
4	Hall 2	N.C.
5	GND	
6	Winding 3	
7	Winding 2	
8	Winding 1	

	With hall sensors	Sensorless
Connection	Part number	Part number
Tyco	1-84959-3	84959-4
Molex	52207-1133	52207-0433
Molex	52089-1119	52089-0419

FPC, 11-pol, Pitch 1.0mm, top contact style.



ECU13038 Ø13mm 10/20W

Motor Data		Part Numbers					
		ECU13038H06	ECU13038H09	ECU13038H12	ECU13038H18	ECU13038H24	ECU13038H36
Nominal voltage	V	6	9	12	18	24	36
No load speed	rpm	24600	24600	24700	25400	24700	27000
No load current	mA	200	135	97	71	52	41
Rated speed	rpm	18000	19000	19000	19000	19900	22000
Rated torque	mNm	5.13	5.55	5.18	5.50	5.13	5.40
Rated current	A	2.23	1.70	1.12	0.81	0.55	0.45
Stall torque	mNm	21.23	25.87	23.71	28.70	24.63	28.57
Stall current	A	9.23	7.63	5.11	4.19	2.64	2.28
Max efficiency	%	74	76	75	76	74	77
Terminal Resistance	Ohm	0.65	1.18	2.35	4.30	9.09	15.8
Terminal Inductance	mH	0.010	0.024	0.041	0.085	0.159	0.299
Torque constant	mNm / A	2.30	3.39	4.64	6.85	9.33	12.53
Speed constant	rpm / V	4100	2733	2058	1411	1029	750
Speed/torque gradient	rpm / mNm	1159	951	1042	885	1003	945
Mechanical time constant ms		3.95	3.15	3.60	3.00	3.45	3.10

Specification

Max speed	rpm	50000
Rotor inertia	gcm ²	0.325
Number of pole pairs		1
Ambient temperature	° C	-40~+100
Max winding temperature	° C	155

Thermal resistance

Housing - Ambient	° C/ W	25.2
Winding - Housing	° C/ W	1.27

Thermal time constant

Motor	s	254
Winding	s	0.64

Max axial load	N	0.8
Max radial load	N	4
Weight	g	29

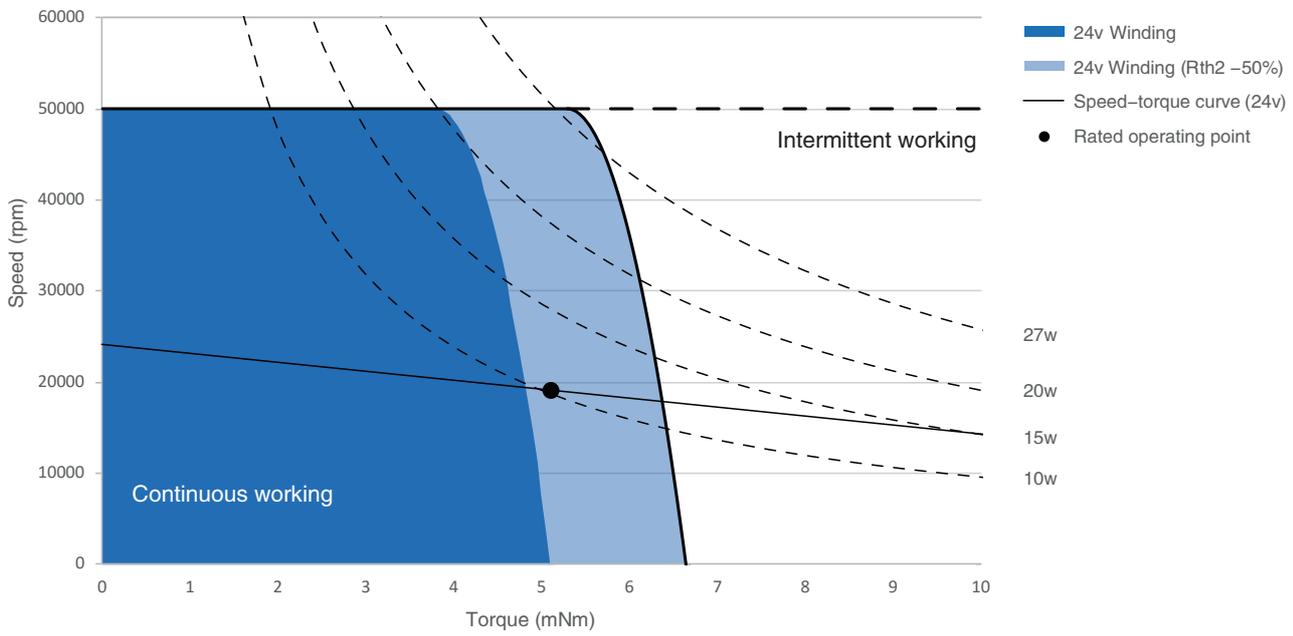
Combination

Gearbox

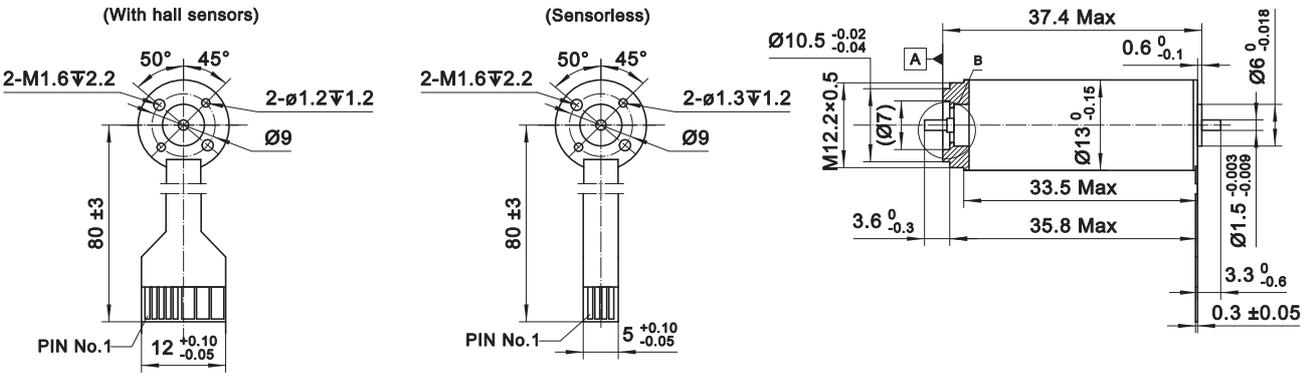
Encoder

Please contact local sales.

Operating Range



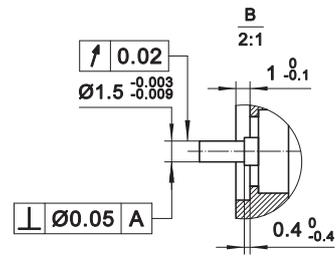
Dimension



	With hall sensors	Sensorless
PIN No.	Signal	Signal
1	4,5-24VDC	Winding 1
2	Hall 3	Winding 2
3	Hall 1	Winding 3
4	Hall 2	N.C.
5	GND	
6	Winding 3	
7	Winding 2	
8	Winding 1	

	With hall sensors	Sensorless
Connection	Part number	Part number
Tyco	1-84959-3	84959-4
Molex	52207-1133	52207-0433
Molex	52089-1119	52089-0419

FPC, 11-pot, Pitch 1.0mm, top contact style.



ECU16036 Ø16mm 12/25W

Motor Data		Part Numbers				
		ECU16036H09	ECU16036H12	ECU16036H18	ECU16036H24	ECU16036H36
Nominal voltage	V	9	12	18	24	36
No load speed	rpm	17200	16000	17200	16200	17200
No load current	mA	173	113	96	64	50
Rated speed	rpm	12900	11800	13100	12000	13100
Rated torque	mNm	8.03	8.29	8.30	8.18	8.41
Rated current	A	1.88	1.28	0.97	0.62	0.49
Stall torque	mNm	29.0	27.4	31.6	26.5	29.0
Stall current	A	7.20	4.50	3.82	2.09	1.74
Max efficiency	%	79	80	80	80	80
Terminal Resistance	Ohm	1.25	2.70	4.70	11.50	18.40
Terminal Inductance	mH	0.032	0.079	0.130	0.310	0.550
Torque constant	mNm / A	4.70	7.10	9.50	14.70	19.10
Speed constant	rpm / V	2030	1340	1000	650	500
Speed/torque gradient	rpm / mNm	540	511	497	508	482
Mechanical time constant	ms	5.75	5.51	5.18	5.36	4.95

Specification

Max speed	rpm	40000
Rotor inertia	gcm ²	0.700
Number of pole pairs		1
Ambient temperature	° C	-40~+100
Max winding temperature	° C	155
Thermal resistance		
Housing - Ambient	° C/ W	18
Winding - Housing	° C/ W	1.5
Thermal time constant		
Motor	s	430
Winding	s	1
Max axial load	N	1
Max radial load	N	6
Weight	g	52

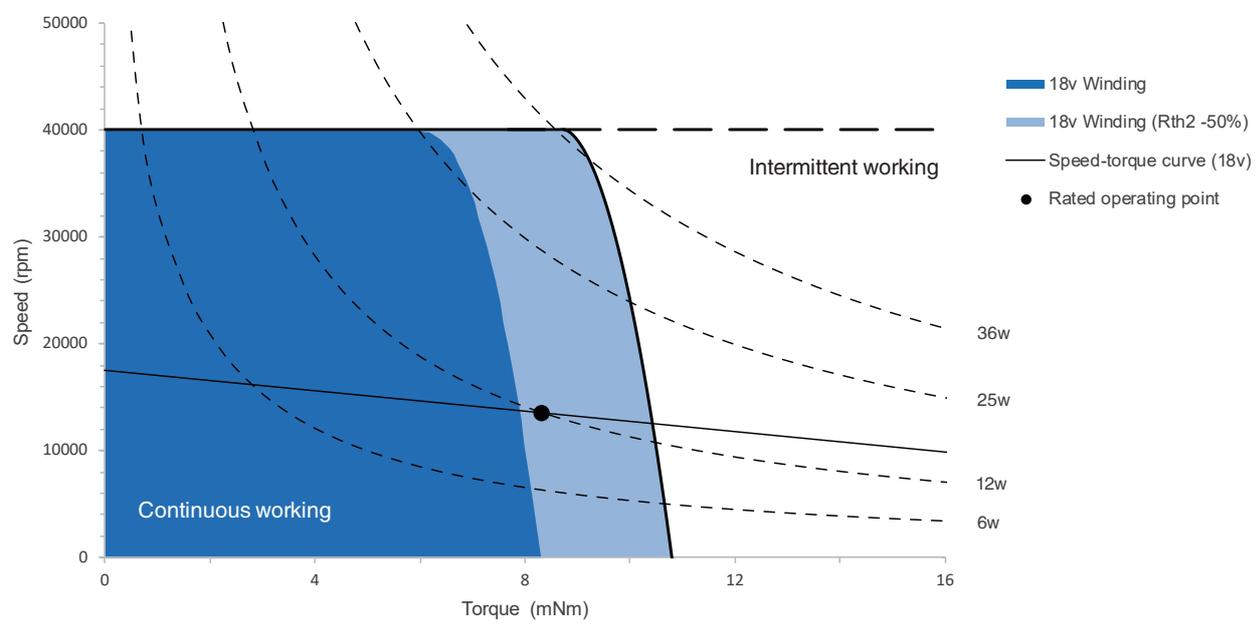
Combination

Gearbox

Encoder

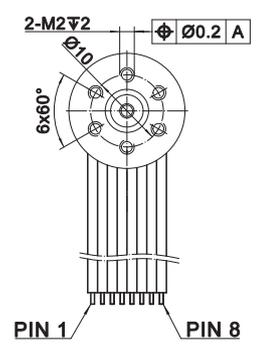
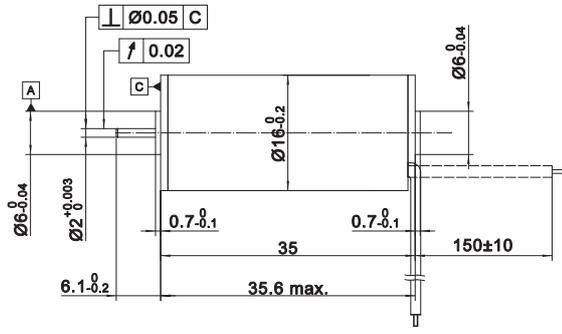
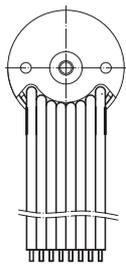
Please contact local sales.

Operating Range



Dimension

(With hall sensors)



Connection(Cable AWG 24)

brown	Motor winding 1	Pin 1
red	Motor winding 2	Pin 2
orange	Motor winding 3	Pin 3
yellow	V _{Hall} 3...24 VDC	Pin 4
green	GND	Pin 5
blue	Hall sensor 1	Pin 6
violet	Hall sensor 2	Pin 7
grey	Hall sensor 3	Pin 8

ECU22048 Ø22mm 35/70W

Motor Data

		ECU22048H18	ECU22048H24	ECU22048H36	ECU22048H48
Nominal voltage	V	18	24	36	48
No load speed	rpm	18000	18000	19500	18000
No load current	mA	290	250	230	174
Rated speed	rpm	15900	15100	15500	15600
Rated torque	mNm	21.50	23.00	23.00	23.00
Rated current	A	2.25	1.81	1.23	0.90
Stall torque	mNm	180.1	141.5	212.8	170.6
Stall current	A	18.8	11.1	11.8	6.7
Max efficiency	%	82	80	82	80
Terminal Resistance	Ohm	0.96	2.16	3.05	7.17
Terminal Inductance	mH	0.063	0.094	0.250	0.444
Torque constant	mNm / A	9.55	12.74	18.03	25.48
Speed constant	rpm / V	1000	750	530	375
Speed/torque gradient	rpm / mNm	100	127	92	106
Mechanical time constant	ms	4.04	5.14	3.62	4.26

Specification

Max speed	rpm	40000
Rotor inertia	gcm ²	3.860
Number of pole pairs		1
Ambient temperature	° C	-40~+100
Max winding temperature	° C	155
Thermal resistance		
Housing - Ambient	° C/ W	10.2
Winding - Housing	° C/ W	1
Thermal time constant		
Motor	s	600
Winding	s	2
Max axial load	N	3.5
Max radial load	N	16
Weight	g	98

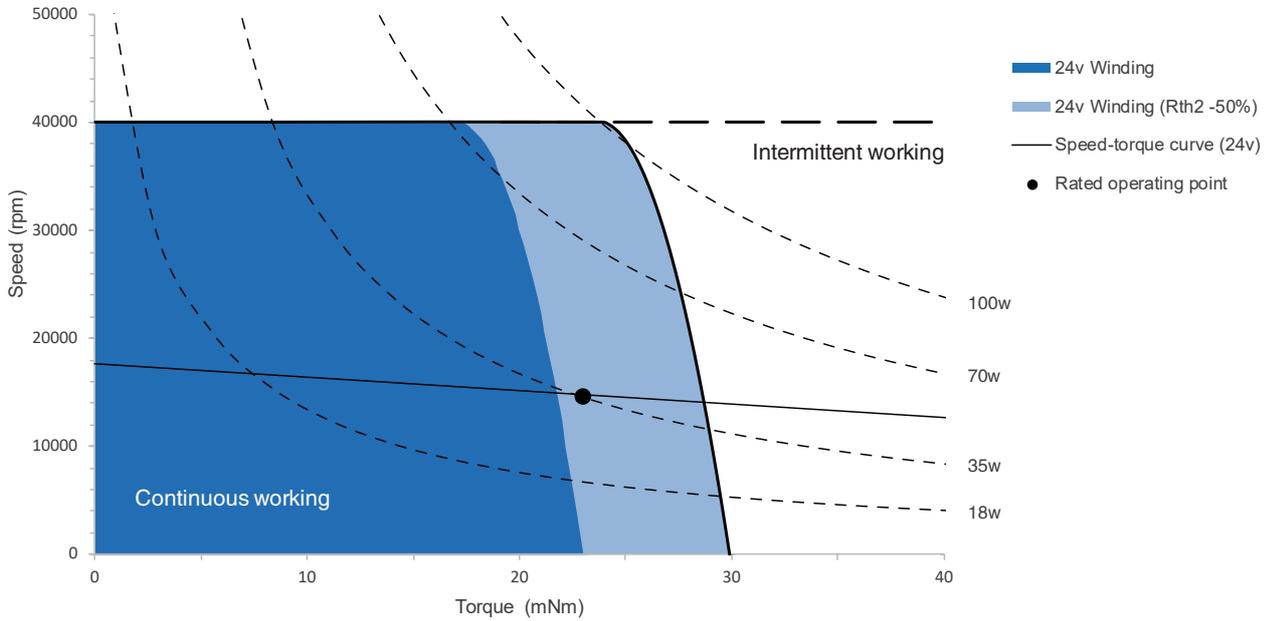
Combination

Gearbox

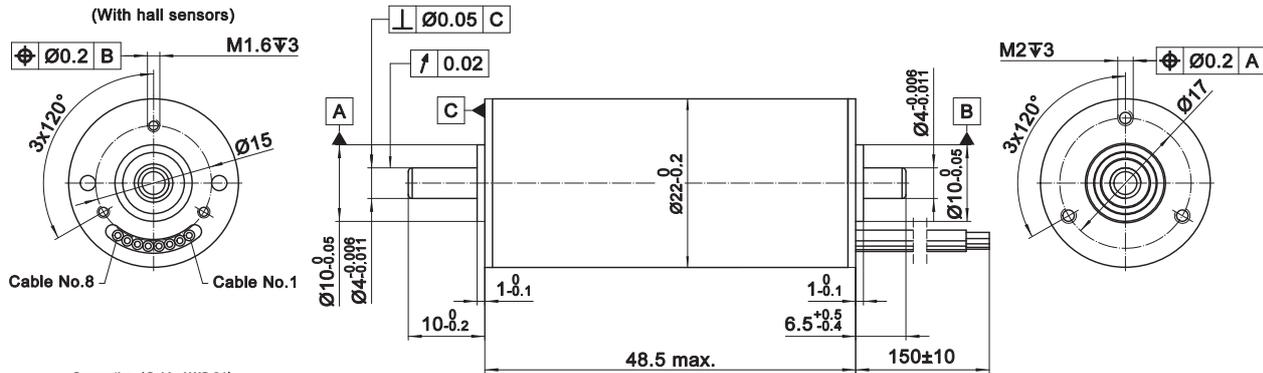
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Operating Range



Dimension

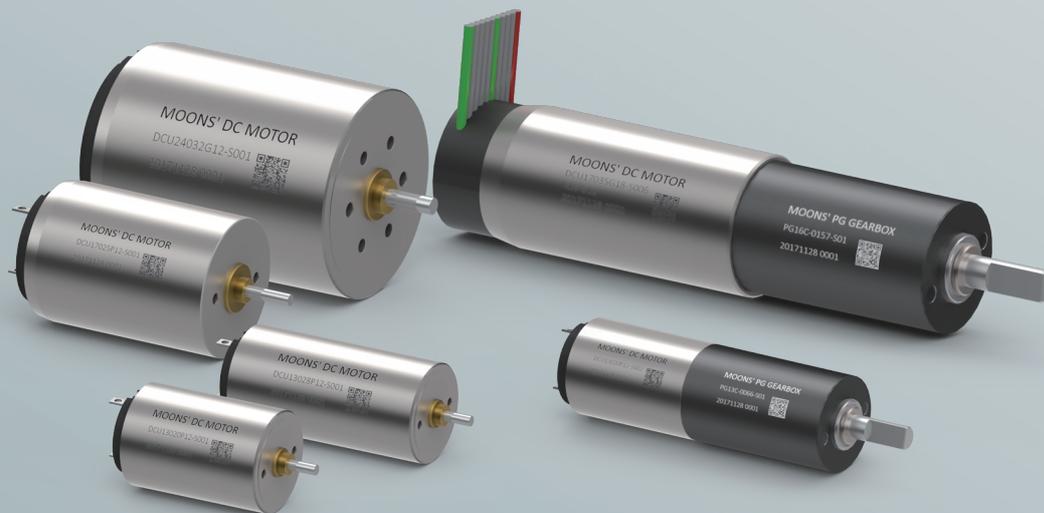


Connection (Cable AWG 24)

Cable No.	Signal	Color
1	Motor winding 1	brown
2	Motor winding 2	red
3	Motor winding 3	orange
4	V _{Hall} 4.5-24VDC	yellow
5	GND	green
6	Hall IC 1	blue
7	Hall IC 2	violet
8	Hall IC 3	grey

Coreless Brushed DC Motor

DCU08017
DCU10017
DCU10025
DCU13020
DCU13028
DCU16025
DCU16035
DCU17025
DCU17035
DCU24032



DCU08017

Ø8mm Precious Metal Brushes 0.3/1W

Motor Data		Part Numbers	
		DCU08017P06	DCU08017P12
Nominal voltage	V	6	12
No load speed	rpm	13500	16000
No load current	mA	14	6
Rated speed	rpm	3360	5460
Rated torque	mNm	0.60	0.60
Rated current	A	0.164	0.093
Stall torque	mNm	0.85	0.95
Stall current	A	0.21	0.14
Max efficiency	%	55	63
Terminal Resistance	Ohm	28.0	87.0
Terminal Inductance	mH	0.206	0.606
Torque constant	mNm / A	3.96	6.87
Speed constant	rpm / V	2410	1390
Speed/torque gradient	rpm / mNm	17030	17603
Mechanical time constant	ms	6.60	6.82
Rotor inertia	gcm ²	0.037	0.037

Specification

Max speed	rpm	18000
Number of pole pairs		1
Number of commutator segments		5
Ambient temperature	° C	-20~+65
Max winding temperature	° C	100
Thermal resistance		
Housing - Ambient	° C/ W	52.8
Winding - Housing	° C/ W	26.4
Thermal time constant		
Motor	s	21
Winding	s	2.7
Axial play	mm	≤0.3
Weight	g	4.5

Combination

Gearbox

PG08C

Ø8mm 0.1 Nm 16:1-1024:1

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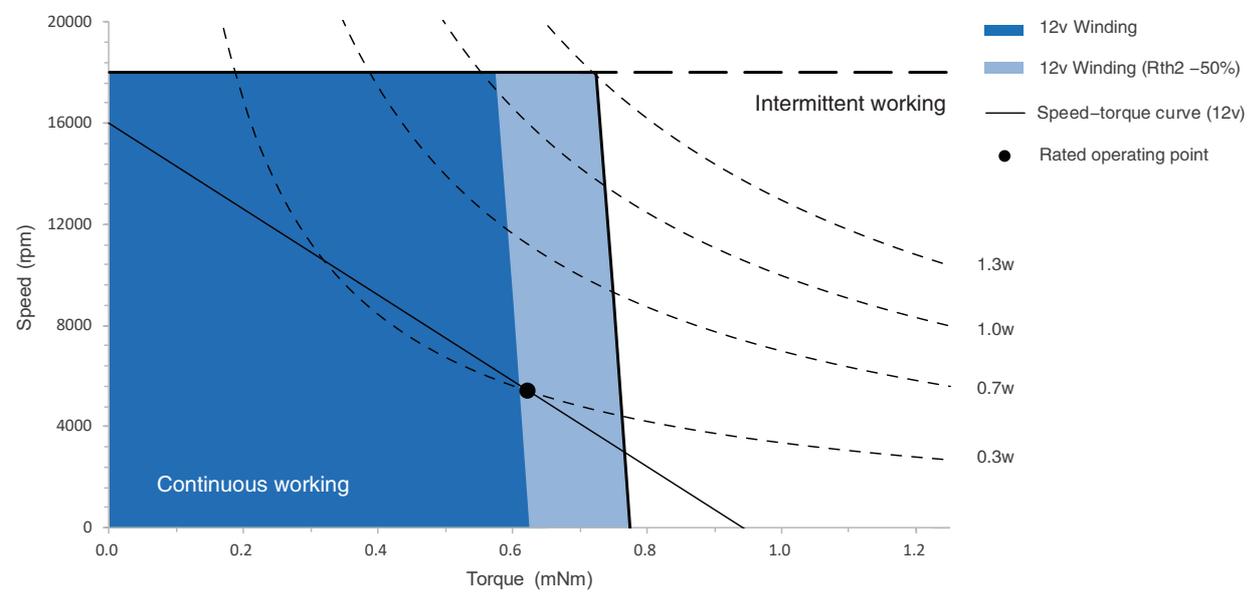
Encoder

R08

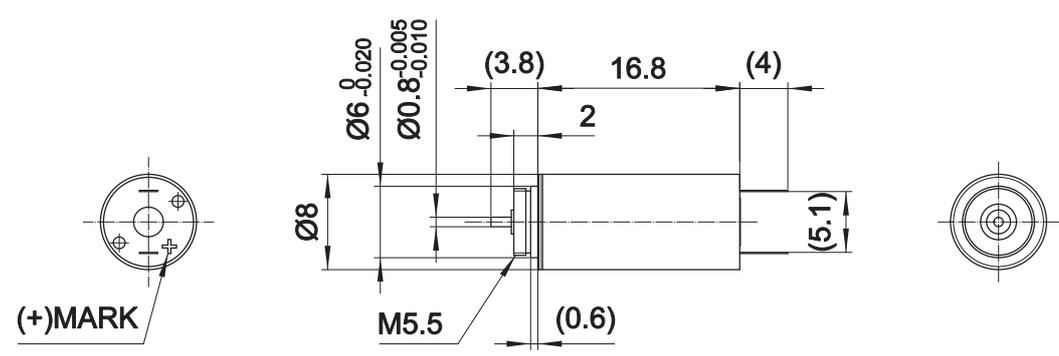
Ø8mm 12 Lines 2 Channels

Page 43

Operating Range



Dimension



DCU10017

Ø10mm Precious Metal Brushes 0.4/1.1W

Motor Data		Part Numbers	
		DCU10017P03	DCU10017P06
Nominal voltage	V	3	6
No load speed	rpm	13300	13800
No load current	mA	18.6	11.2
Rated speed	rpm	4990	5010
Rated torque	mNm	0.80	0.71
Rated current	A	0.403	0.197
Stall torque	mNm	1.33	1.21
Stall current	A	0.63	0.30
Max efficiency	%	69	65
Terminal Resistance	Ohm	4.7	19.8
Terminal Inductance	mH	0.042	0.197
Torque constant	mNm / A	2.09	4.00
Speed constant	rpm / V	4570	2390
Speed/torque gradient	rpm / mNm	10345	11844
Mechanical time constant	ms	7.37	7.57
Rotor inertia	gcm ²	0.068	0.061

Specification

Max speed	rpm	15000
Number of pole pairs		1
Number of commutator segments		5
Ambient temperature	° C	-20~+65
Max winding temperature	° C	100
Thermal resistance		
Housing - Ambient	° C/ W	54.5
Winding - Housing	° C/ W	23.4
Thermal time constant		
Motor	s	108
Winding	s	2.8
Axial play	mm	≤0.3
Weight	g	7.4

Combination

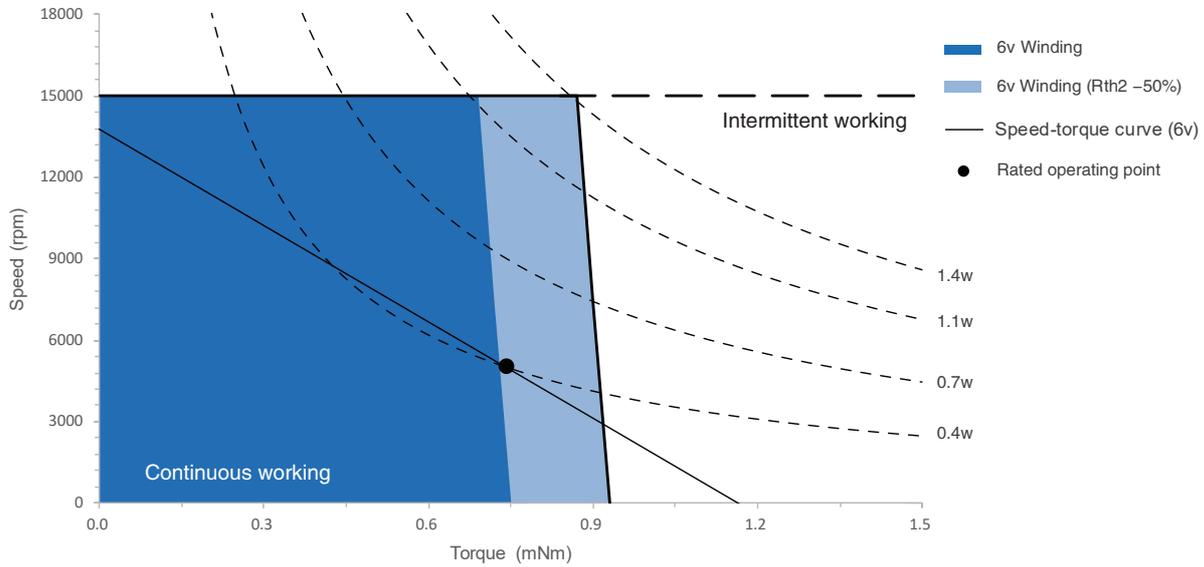
Gearbox

PG10C
 Ø10mm 0.15 Nm 16:1-1024:1
 Page 38

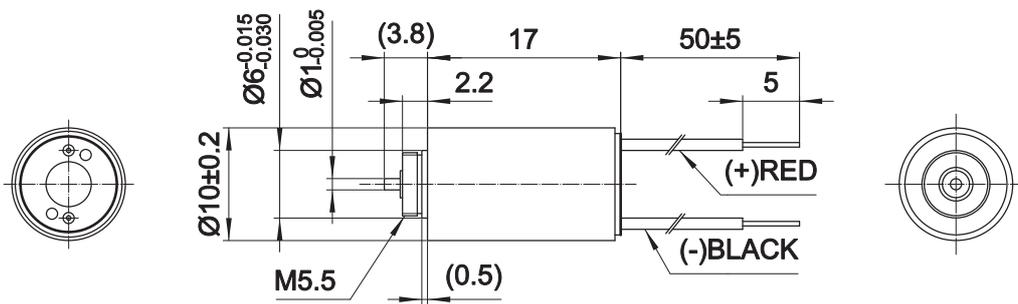
Encoder

R10
 Ø10mm 12 Lines 2 Channels
 Page 44

Operating Range



Dimension



DCU10025 Ø10mm Precious Metal Brushes 1.1/2.5W

Motor Data		Part Numbers		
		DCU10025P03	DCU10025P06	DCU10025P12
Nominal voltage	V	3	6	12
No load speed	rpm	13200	11900	13100
No load current	mA	19.2	10.4	4.6
Rated speed	rpm	6790	5900	6500
Rated torque	mNm	1.63	1.73	1.58
Rated current	A	0.777	0.374	0.188
Stall torque	mNm	3.39	3.48	3.19
Stall current	A	1.58	0.73	0.37
Max efficiency	%	79	78	79
Terminal Resistance	Ohm	1.9	8.2	32.4
Terminal Inductance	mH	0.026	0.128	0.432
Torque constant	mNm / A	2.15	4.75	8.60
Speed constant	rpm / V	4450	2010	1110
Speed/torque gradient	rpm / mNm	3940	3469	4180
Mechanical time constant	ms	4.46	4.07	4.25
Rotor inertia	gcm ²	0.108	0.112	0.097

Specification

Max speed	rpm	15000
Number of pole pairs		1
Number of commutator segments		5
Ambient temperature	° C	-20~+65
Max winding temperature	° C	100
Thermal resistance		
Housing - Ambient	° C/ W	41.3
Winding - Housing	° C/ W	10.8
Thermal time constant		
Motor	s	135
Winding	s	2
Axial play	mm	≤0.3
Weight	g	10.7

Combination

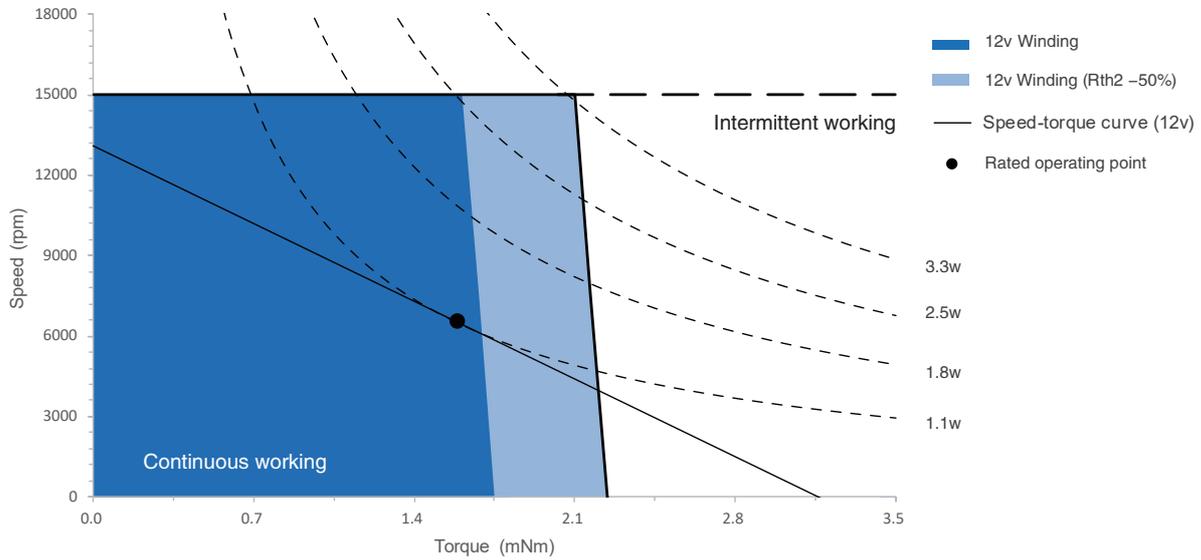
Gearbox

PG10C
 Ø10mm 0.15 Nm 16:1-1024:1
 Page 38

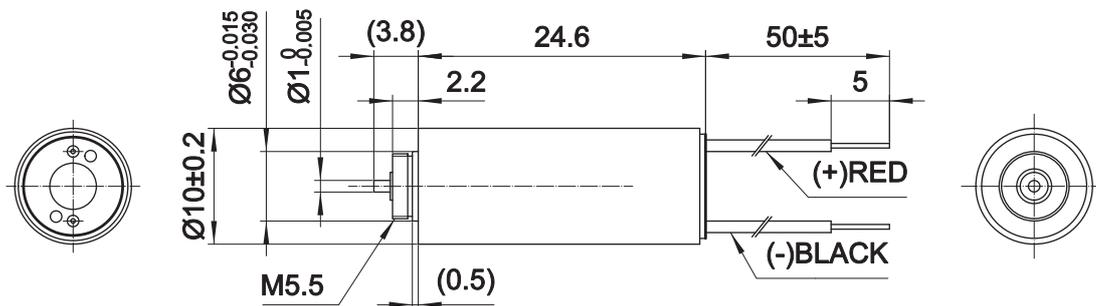
Encoder

R10
 Ø10mm 12 Lines 2 Channels
 Page 44

Operating Range



Dimension



DCU13020 Ø13mm Precious Metal Brushes 1.7/2.3W

Motor Data		Part Numbers				
		DCU13020P03	DCU13020P06	DCU13020P09	DCU13020P12	DCU13020P15
Nominal voltage	V	3	6	9	12	15
No load speed	rpm	9800	12100	12400	12900	12400
No load current	mA	23.3	23.0	11.7	8.0	7.1
Rated speed	rpm	5030	8100	7940	8630	8110
Rated torque	mNm	1.64	1.74	1.85	1.83	1.81
Rated current	A	0.596	0.409	0.275	0.218	0.167
Stall torque	mNm	3.44	5.12	5.36	5.62	5.33
Stall current	A	1.20	1.13	0.77	0.65	0.47
Max efficiency	%	74	73	79	78	77
Terminal Resistance	Ohm	2.5	5.3	11.7	18.6	32.0
Terminal Inductance	mH	0.041	0.099	0.246	0.402	0.688
Torque constant	mNm / A	2.87	4.53	6.97	8.76	11.37
Speed constant	rpm / V	3330	2110	1370	1090	840
Speed/torque gradient	rpm / mNm	2903	2471	2300	2327	2364
Mechanical time constant	ms	8.33	9.19	7.68	7.77	7.82
Rotor inertia	gcm ²	0.274	0.355	0.319	0.319	0.316

Specification

Max speed	rpm	13000
Number of pole pairs		1
Number of commutator segments		5
Ambient temperature	° C	-20~+65
Max winding temperature	° C	100
Thermal resistance		
Housing - Ambient	° C / W	50.6
Winding - Housing	° C / W	16.8
Thermal time constant		
Motor	s	76
Winding	s	4.7
Axial play	mm	≤0.3
Weight	g	13.6

Combination

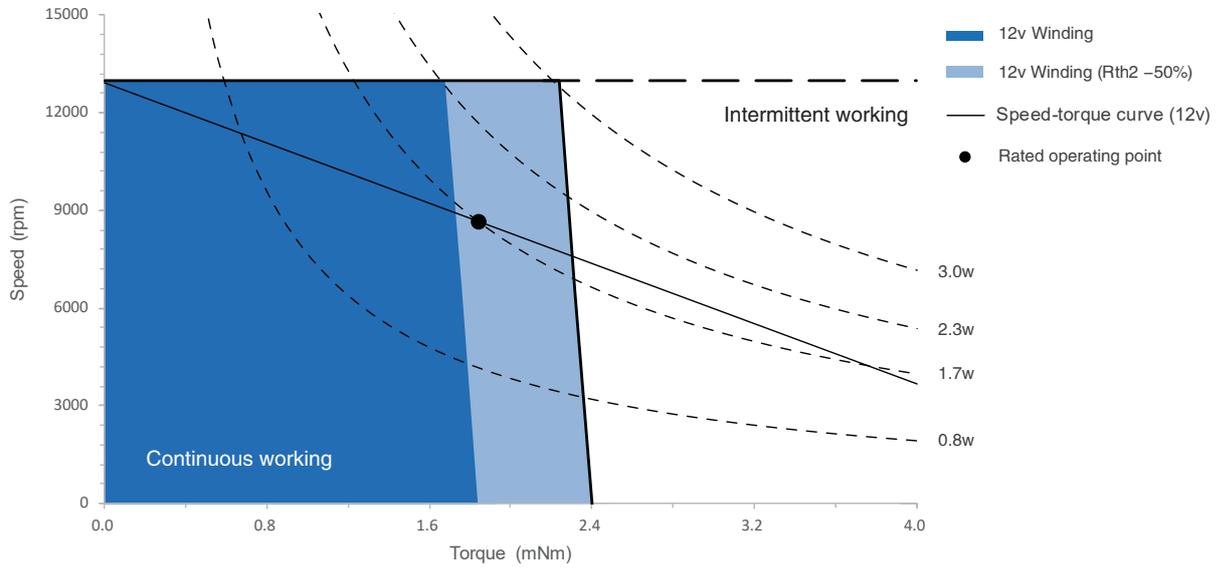
Gearbox

PG13C
 Ø13mm 0.3 Nm 16:1-425:1
 Page 39

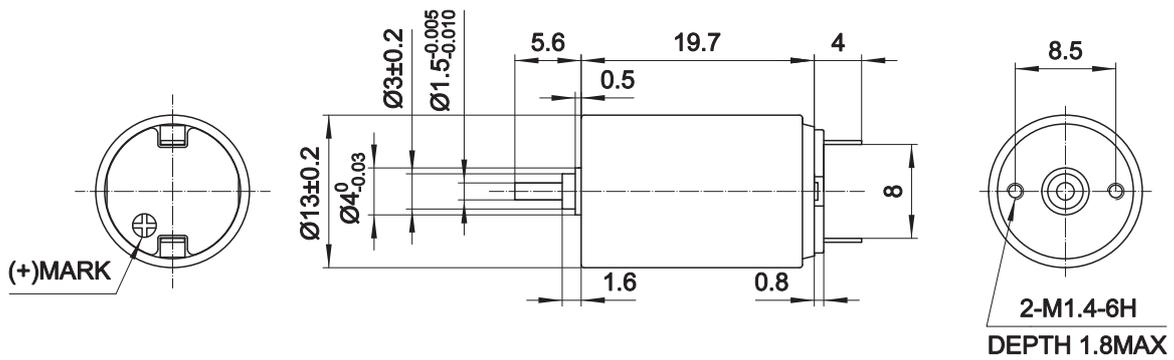
Encoder

R13
 Ø13mm 256 Lines 3 Channels
 Page 45

Operating Range



Dimension



DCU13028 Ø13mm Precious Metal Brushes 2.8/4.2W

Motor Data		Part Numbers				
		DCU13028P06	DCU13028P12	DCU13028P15	DCU13028P18	DCU13028P24
Nominal voltage	V	6	12	15	18	24
No load speed	rpm	9700	11800	12000	11400	11700
No load current	mA	16.7	16.8	10.0	10.5	7.5
Rated speed	rpm	6110	7980	8430	7730	7980
Rated torque	mNm	3.36	3.43	3.33	3.44	3.48
Rated current	A	0.591	0.359	0.293	0.231	0.179
Stall torque	mNm	9.18	11.36	11.34	10.91	11.40
Stall current	A	1.57	1.15	0.96	0.72	0.57
Max efficiency	%	80	82	81	85	84
Terminal Resistance	Ohm	3.8	10.4	15.6	25.0	41.9
Terminal Inductance	mH	0.904	0.244	0.372	0.574	0.977
Torque constant	mNm / A	5.86	9.84	11.79	15.16	19.89
Speed constant	rpm / V	1630	970	810	630	480
Speed/torque gradient	rpm / mNm	1066	1025	1072	1039	1011
Mechanical time constant	ms	4.72	4.5	4.73	4.58	4.44
Rotor inertia	gcm ²	0.423	0.419	0.421	0.421	0.419

Specification

Max speed	rpm	13000
Number of pole pairs		1
Number of commutator segments		5
Ambient temperature	° C	-20~+65
Max winding temperature	° C	100
Thermal resistance		
Housing - Ambient	° C/ W	36.3
Winding - Housing	° C/ W	8.4
Thermal time constant		
Motor	s	229
Winding	s	4.4
Axial play	mm	≤0.3
Weight	g	20.4

Combination

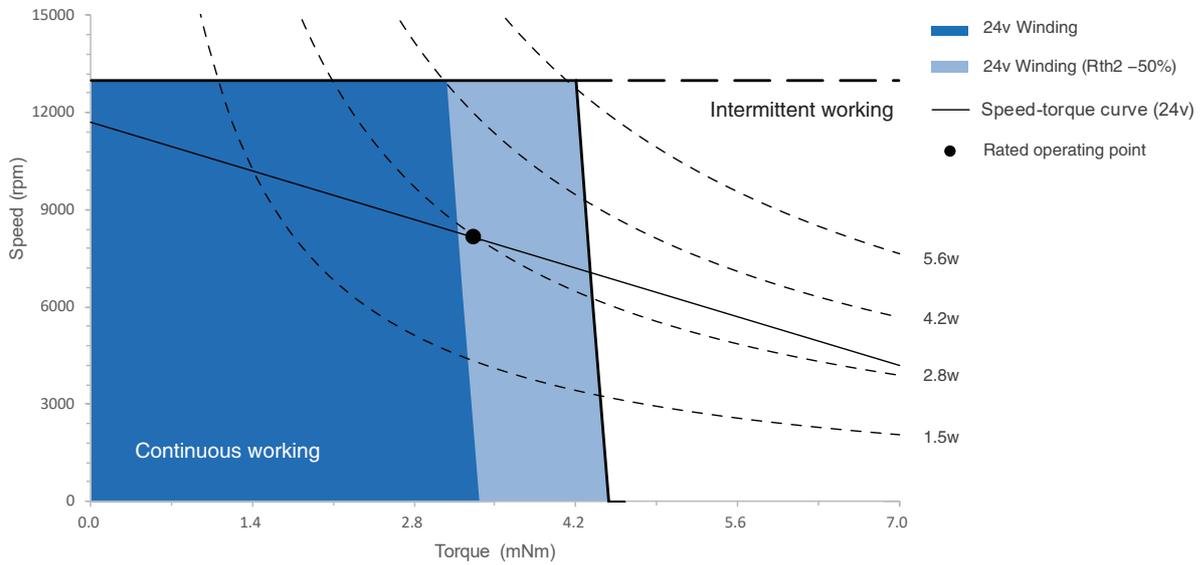
Gearbox

PG13C
 Ø13mm 0.3 Nm 16:1-425:1
 Page 39

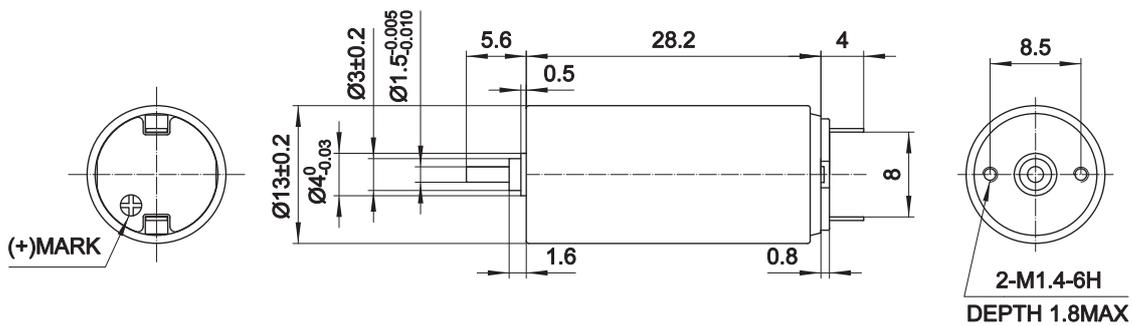
Encoder

R13
 Ø13mm 256 Lines 3 Channels
 Page 45

Operating Range



Dimension



DCU16025

Ø16mm Precious Metal Brushes 2/3W

Motor Data		Part Numbers		
		DCU16025P06	DCU16025P12	DCU16025P24
Nominal voltage	V	6	12	24
No load speed	rpm	10800	10600	12700
No load current	mA	22.3	7.7	6.8
Rated speed	rpm	5490	5680	8180
Rated torque	mNm	1.87	2.11	2.23
Rated current	A	0.384	0.206	0.133
Stall torque	mNm	3.90	4.63	6.39
Stall current	A	0.76	0.44	0.36
Max efficiency	%	69	75	74
Terminal Resistance	Ohm	7.9	27.5	66.4
Terminal Inductance	mH	0.027	0.144	0.419
Torque constant	mNm / A	5.16	10.61	17.68
Speed constant	rpm / V	1850	900	540
Speed/torque gradient	rpm / mNm	2846	2333	2028
Mechanical time constant	ms	6.65	6.06	5.71
Rotor inertia	gcm ²	0.223	0.248	0.269

Specification

Max speed	rpm	13000
Number of pole pairs		1
Number of commutator segments		5
Ambient temperature	° C	-20~+65
Max winding temperature	° C	100
Thermal resistance		
Housing - Ambient	° C/ W	40.6
Winding - Housing	° C/ W	10.5
Thermal time constant		
Motor	s	281
Winding	s	4.8
Axial play	mm	≤0.3
Weight	g	24.3

Combination

Gearbox

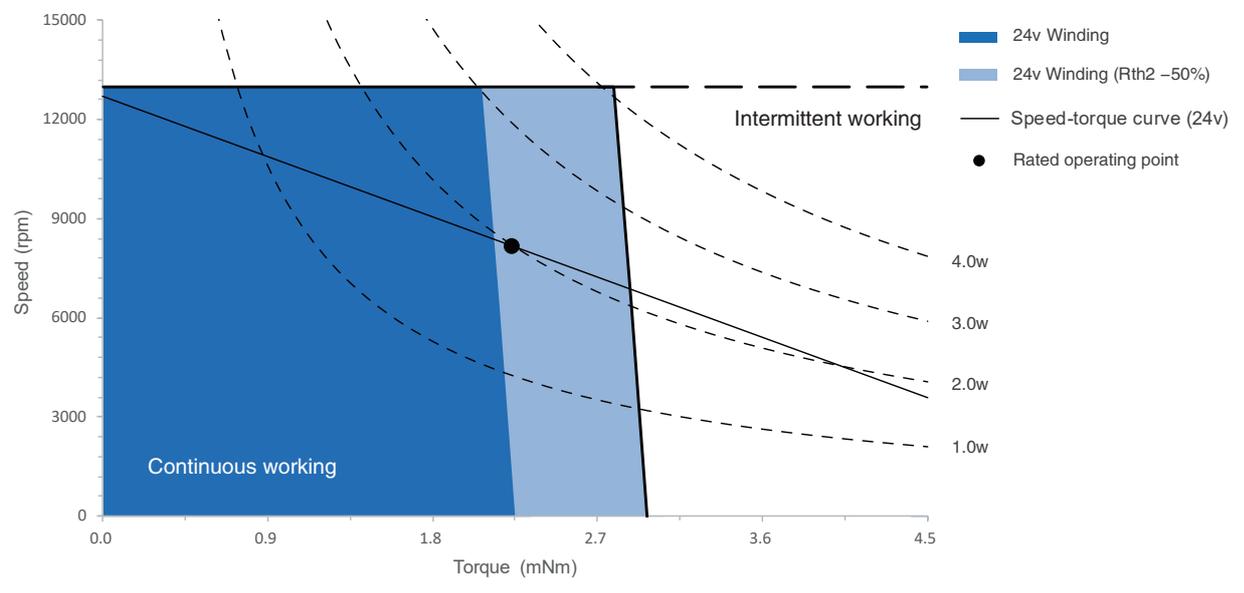
PG16C
 Ø16mm 0.5 Nm 19:1-850:1
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Encoder

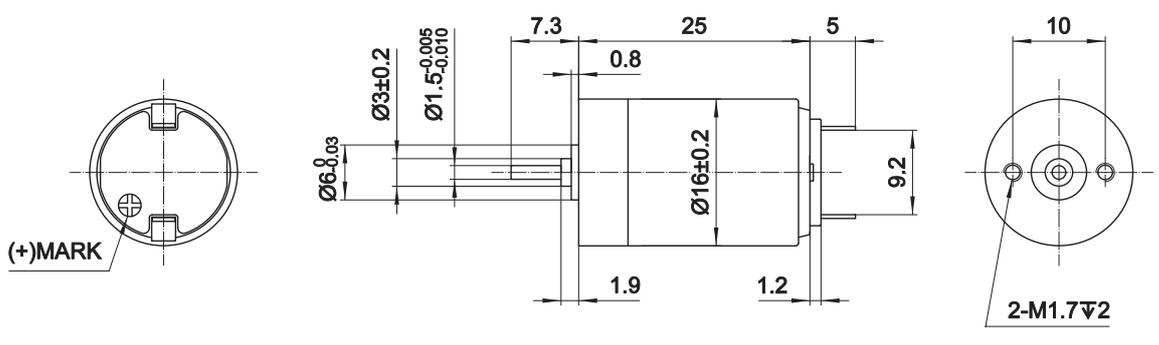
R16
 Ø16mm 512 Lines 3 Channels
 Page 46

K16
 Ø16mm 200 Lines 2 Channels
 Page 47

Operating Range



Dimension



DCU16035

Ø16mm Precious Metal Brushes 4/5.5W

Motor Data		Part Numbers	
		DCU16035P12	DCU16035P24
Nominal voltage	V	12	24
No load speed	rpm	10700	11900
No load current	mA	8.0	4.7
Rated speed	rpm	7330	8650
Rated torque	mNm	4.13	4.27
Rated current	A	0.397	0.228
Stall torque	mNm	13.24	15.75
Stall current	A	1.25	0.82
Max efficiency	%	85	85
Terminal Resistance	Ohm	9.6	29.1
Terminal Inductance	mH	0.061	0.223
Torque constant	mNm / A	10.6	19.1
Speed constant	rpm / V	900	500
Speed/torque gradient	rpm / mNm	816	762
Mechanical time constant	ms	3.30	3.17
Rotor inertia	gcm ²	0.386	0.397

Specification

Max speed	rpm	13000
Number of pole pairs		1
Number of commutator segments		5
Ambient temperature	° C	-20~+65
Max winding temperature	° C	100
Thermal resistance		
Housing - Ambient	° C/ W	30.0
Winding - Housing	° C/ W	9.4
Thermal time constant		
Motor	s	458
Winding	s	9.5
Axial play	mm	≤0.3
Weight	g	36.3

Combination

Gearbox

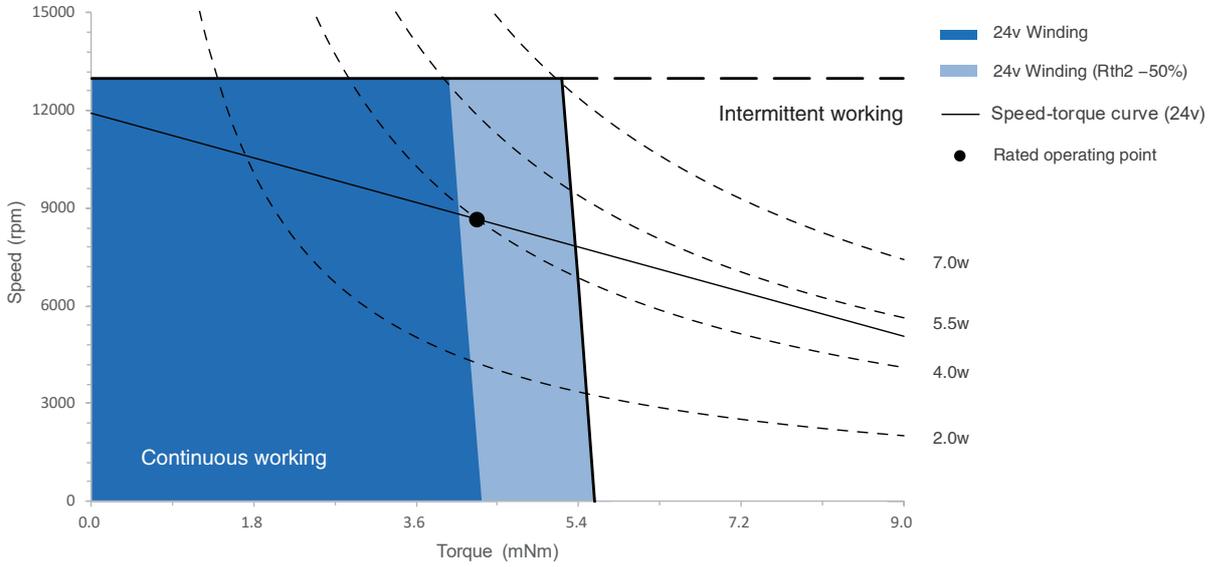
PG16C
 Ø16mm 0.5 Nm 19:1-850:1
 Page 40

Encoder

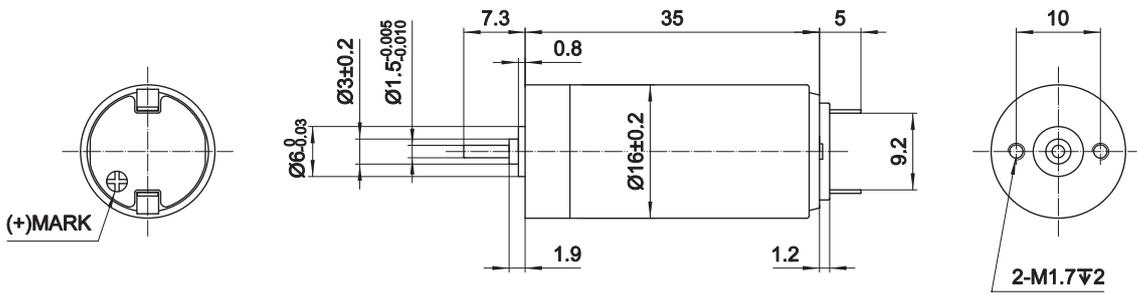
R16
 Ø16mm 512 Lines 3 Channels
 Page 46

K16
 Ø16mm 200 Lines 2 Channels
 Page 47

Operating Range



Dimension



DCU17025 Ø17mm Precious Metal Brushes 3.5/4.5W

Motor Data		Part Numbers			
		DCU17025P06	DCU17025P12	DCU17025P18	DCU17025P24
Nominal voltage	V	6	12	18	24
No load speed	rpm	10400	10400	10700	11400
No load current	mA	12.3	8.2	6.3	3.5
Rated speed	rpm	7310	7520	7800	8260
Rated torque	mNm	3.69	3.90	3.88	3.89
Rated current	A	0.686	0.365	0.250	0.195
Stall torque	mNm	12.47	14.16	14.47	14.91
Stall current	A	2.27	1.29	0.91	0.73
Max efficiency	%	86	83	84	87
Terminal Resistance	Ohm	2.6	9.3	19.8	32.7
Terminal Inductance	mH	0.068	0.272	0.600	0.900
Torque constant	mNm / A	5.49	10.98	15.92	20.32
Speed constant	rpm / V	1740	870	600	470
Speed/torque gradient	rpm / mNm	837	737	746	756
Mechanical time constant	ms	5.96	5.80	5.79	5.91
Rotor inertia	gcm ²	0.680	0.752	0.741	0.746

Specification

Max speed	rpm	12000
Number of pole pairs		1
Number of commutator segments		5
Ambient temperature	° C	-20~+65
Max winding temperature	° C	100
Thermal resistance		
Housing - Ambient	° C/ W	35.0
Winding - Housing	° C/ W	13.2
Thermal time constant		
Motor	s	360
Winding	s	7
Axial play	mm	≤0.3
Weight	g	30

Combination

Gearbox

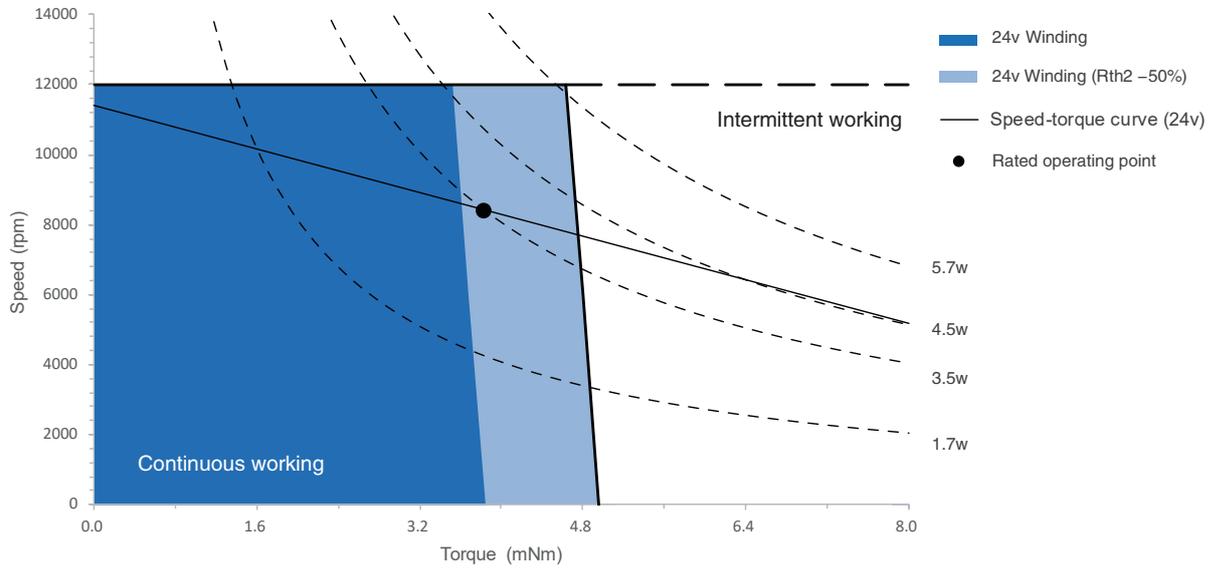
PG16C
 Ø16mm 0.5 Nm 19:1-850:1
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Encoder

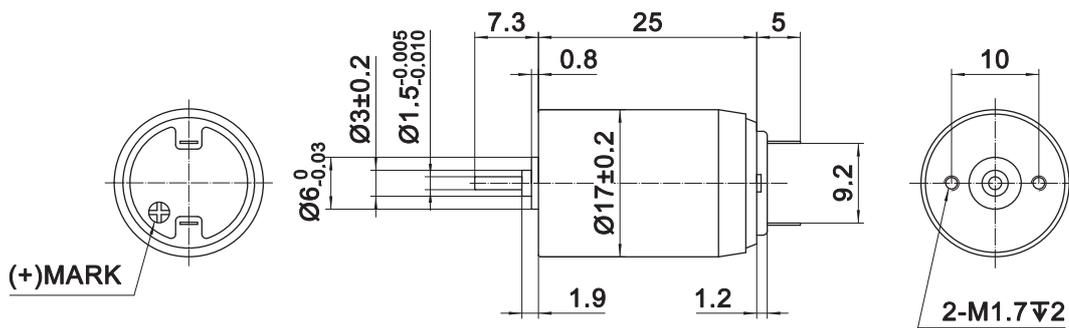
R16
 Ø16mm 512 Lines 3 Channels
 Page 46

K16
 Ø16mm 200 Lines 2 Channels
 Page 47

Operating Range



Dimension



DCU17035

Ø17mm Graphite Brushes 7.5/9W

Motor Data		Part Numbers			
		DCU17035G12	DCU17035G18	DCU17035G24	DCU17035G36
Nominal voltage	V	12	18	24	36
No load speed	rpm	9900	11000	11500	10500
No load current	mA	19.7	24.6	24.7	12.8
Rated speed	rpm	7130	8320	9050	7990
Rated torque	mNm	7.25	7.18	7.72	7.66
Rated current	A	0.650	0.491	0.421	0.253
Stall torque	mNm	26.10	29.91	37.12	32.93
Stall current	A	2.27	1.94	1.90	1.03
Max efficiency	%	83	79	79	79
Terminal Resistance	Ohm	5.3	9.3	12.6	34.8
Terminal Inductance	mH	0.166	0.285	0.453	1.340
Torque constant	mNm / A	11.51	15.40	19.49	31.83
Speed constant	rpm / V	830	620	490	300
Speed/torque gradient	rpm / mNm	229	192	188	155
Mechanical time constant	ms	4.36	4.34	3.78	3.92
Rotor inertia	gcm ²	1.09	1.11	1.14	1.14

Specification

Max speed	rpm	12000
Number of pole pairs		1
Number of commutator segments		5
Ambient temperature	° C	-20~+85
Max winding temperature	° C	125
Thermal resistance		
Housing - Ambient	° C/ W	21.3
Winding - Housing	° C/ W	11.6
Thermal time constant		
Motor	s	504
Winding	s	12.3
Axial play	mm	≤0.3
Weight	g	41.4

Combination

Gearbox

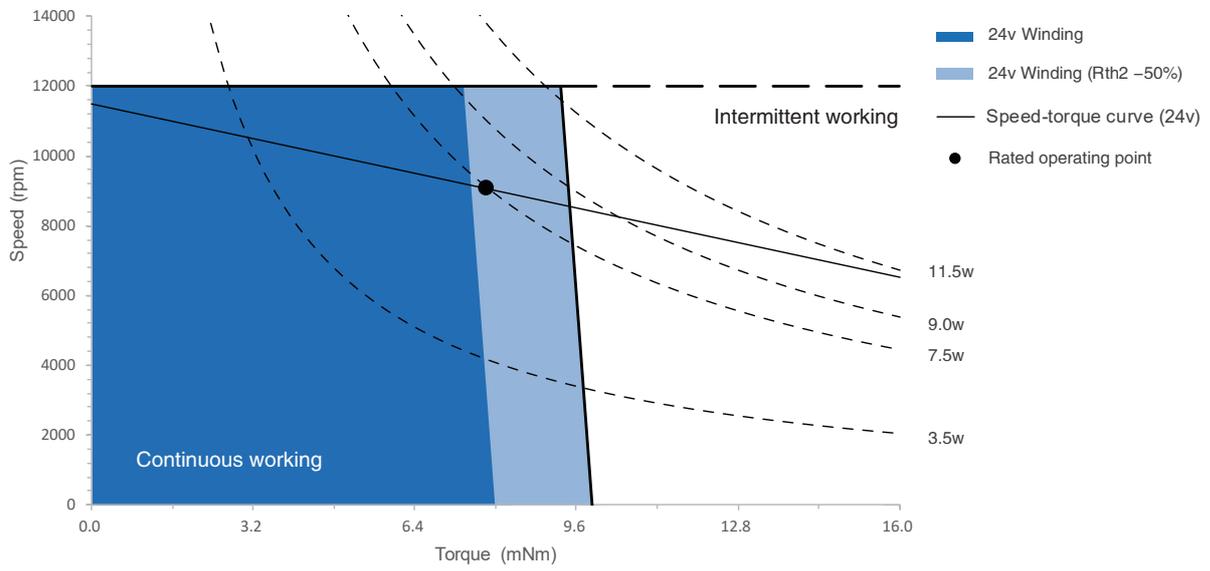
PG16C
 Ø16mm 0.5 Nm 19:1-850:1
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Encoder

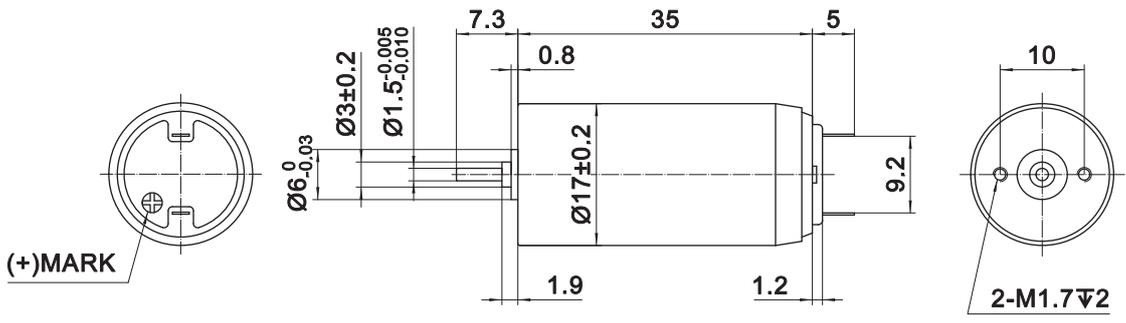
R16
 Ø16mm 512 Lines 3 Channels
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K16
 Ø16mm 200 Lines 2 Channels
 Page 47

Operating Range



Dimension



DCU24032 Ø24mm Graphite Brushes 9.5/13.5W

Motor Data		Part Numbers			
		DCU24032G09	DCU24032G12	DCU24032G18	DCU24032G24
Nominal voltage	V	9	12	18	24
No load speed	rpm	9700	9700	10100	9600
No load current	mA	40.0	25.6	18.3	21.0
Rated speed	rpm	7450	7550	8050	7560
Rated torque	mNm	9.83	10.65	10.92	11.89
Rated current	A	1.162	0.942	0.659	0.506
Stall torque	mNm	42.85	50.53	53.66	60.58
Stall current	A	4.89	4.29	3.15	2.47
Max efficiency	%	83	82	85	83
Terminal Resistance	Ohm	1.8	2.8	5.7	9.7
Terminal Inductance	mH	0.386	0.068	0.143	0.284
Torque constant	mNm / A	8.76	11.79	17.05	24.49
Speed constant	rpm / V	1090	810	560	390
Speed/torque gradient	rpm / mNm	229	192	188	155
Mechanical time constant	ms	7.74	5.70	6.24	5.66
Rotor inertia	gcm ²	3.23	2.83	3.17	3.50

Specification

Max speed	rpm	11000
Number of pole pairs		1
Number of commutator segments		5
Ambient temperature	° C	-20~+85
Max winding temperature	° C	125
Thermal resistance		
Housing - Ambient	° C/ W	24
Winding - Housing	° C/ W	5.6
Thermal time constant		
Motor	s	669
Winding	s	7.5
Axial play	mm	≤0.3
Weight	g	78.8

Combination

Gearbox

PG22C

Ø22mm 0.8 Nm 4:1-509:1

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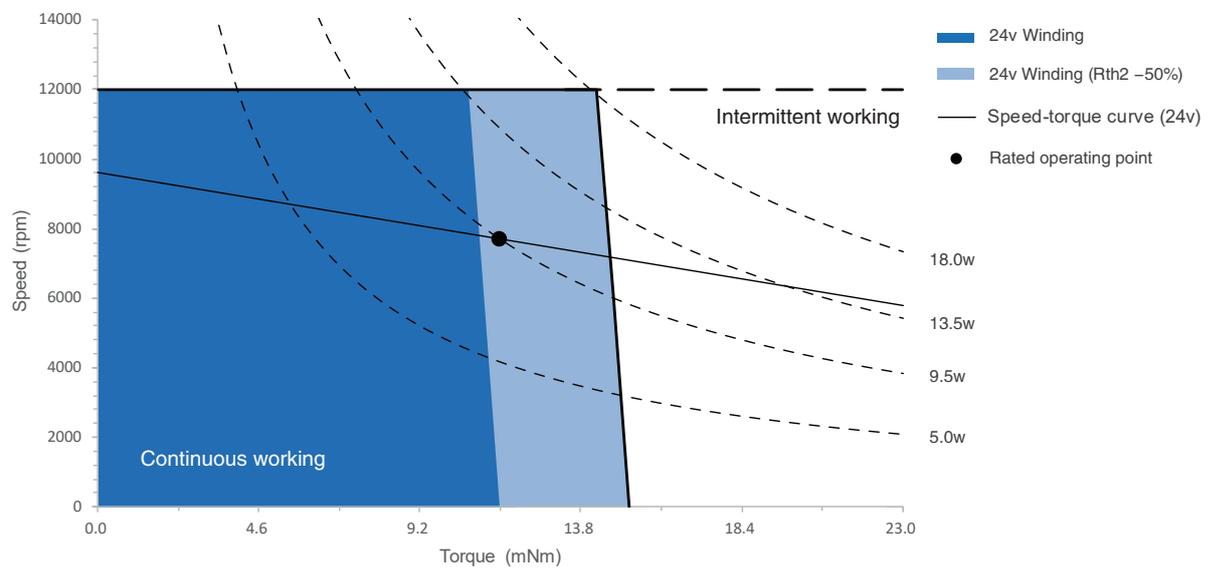
Encoder

K16

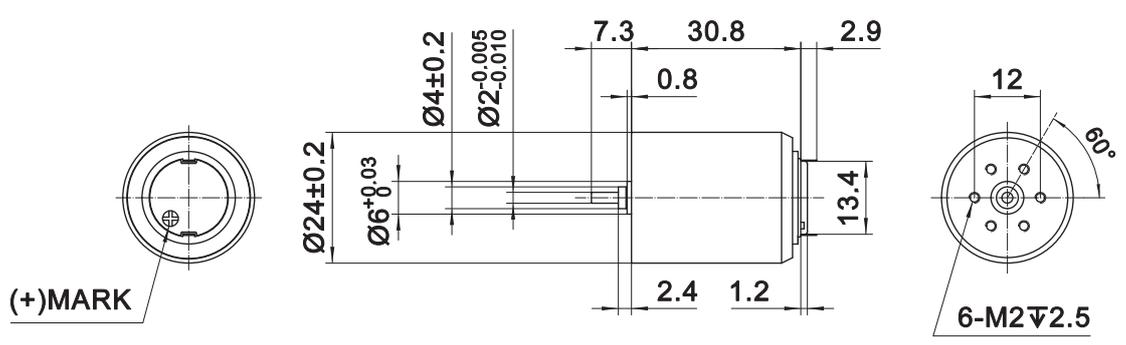
Ø16mm 200 Lines 2 Channels

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Operating Range



Dimension



Planetary

Gearbox

PG08C

PG10C

PG13C

PG16C

PG22C



PG08C Planetary Gearhead $\varnothing 8\text{mm}$ 0.1Nm

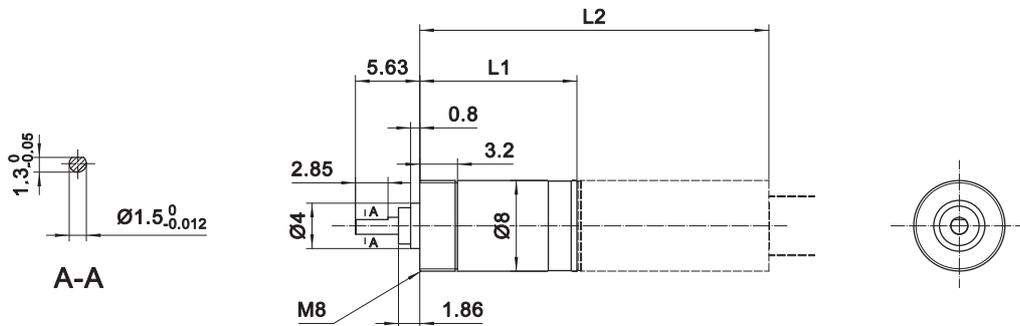
Gearhead Data

Reduction Ratio		4:1	16:1	64:1	256:1	1024:1
Number of stages		1	2	3	4	5
Max. continuous torque	Nm	0.01	0.02	0.06	0.08	0.10
Max. intermittent torque	Nm	0.02	0.03	0.09	0.12	0.15
Weight	g	2.6	3.2	3.9	4.6	5.3
Max. efficiency	%	90	81	66	58	42
Gearhead length L	mm	8.8	11.3	13.9	16.4	19.0
Gearmotor length L2						
L-DCU08017	mm	25.6	28.1	30.7	33.2	35.8

Specification

Planetary gearhead		straight teeth
Output shaft		stainless steel, hardened
Bearing at output		sleeve bearing
Radial play	mm	≤ 0.07
Axial play	mm	≤ 0.15
Direction of rotation (drive to output)		=
Operating temperature	$^{\circ}\text{C}$	-20~+65

Dimension



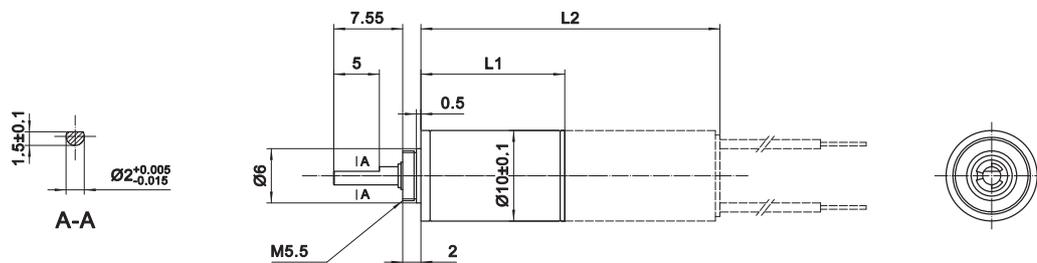
PG10C Planetary Gearhead Ø10mm 0.15Nm

Gearhead Data					
Reduction Ratio		16:1	64:1	256:1	1024:1
Number of stages		2	3	4	5
Max. continuous torque	Nm	0.03	0.10	0.15	0.15
Max. intermittent torque	Nm	0.05	0.15	0.23	0.23
Weight	g	6.9	8.3	9.7	11.1
Max. efficiency	%	81	73	66	59
Gearhead length L	mm	12.9	15.8	18.7	21.6
Gearmotor length L2	mm				
└ DCU10017		29.9	32.8	35.7	38.6
└ DCU10025		37.5	40.4	43.3	46.2

Specification

Planetary gearhead	straight teeth	
Output shaft	stainless steel, hardened	
Bearing at output	sleeve bearing	
Radial play	mm	≤ 0.07
Axial play	mm	≤ 0.2
Direction of rotation (drive to output)	=	
Operating temperature	°C	-20~+65

Dimension



PG13C Planetary Gearhead Ø13mm 0.3Nm

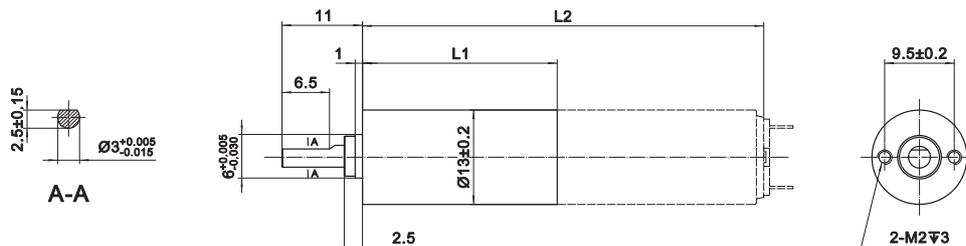
Gearhead Data

Reduction Ratio		16:1	66:1	271:1
		19:1	77:1	315:1
			90:1	366:1
				425:1
Number of stages		2	3	4
Max. continuous torque	Nm	0.20	0.30	0.30
Max. intermittent torque	Nm	0.30	0.45	0.45
Weight	g	13.5	16.0	18.9
Max. efficiency	%	81	73	66
Gearhead length L1	mm	19.1	22.9	26.6
Gearmotor length L2				
└ DCU13020	mm	39.8	43.6	47.3
└ DCU13028	mm	48.3	52.1	55.8

Specification

Planetary gearhead	straight teeth	
Output shaft	stainless steel, hardened	
Bearing at output	sleeve bearing	
Radial play	mm	≤ 0.1
Axial play	mm	≤ 0.25
Max. radial load	N	5
Max. axial load	N	5 (5mm from flange)
Max. force for press fits	N	15
Recommend input speed	rpm	≤ 10000
Direction of rotation (drive to output)	=	
Ambient temperature	° C	-20~+65

Dimension



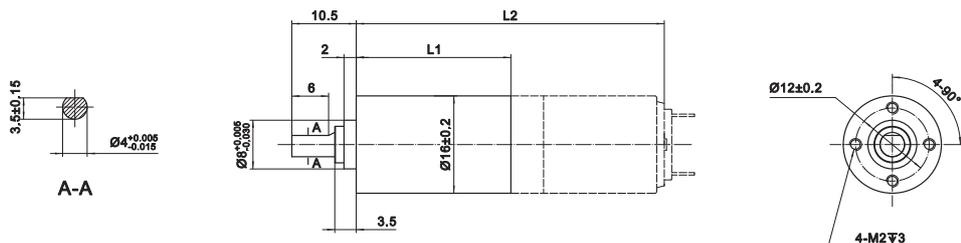
PG16C Planetary Gearhead Ø16mm 0.5Nm

Gearhead Data				
Reduction Ratio		19:1	84:1	369:1
		23:1	103:1	455:1
		29:1	127:1	560:1
			157:1	690:1
				850:1
Number of stages		2	3	4
Max. continuous torque	Nm	0.30	0.40	0.50
Max. intermittent torque	Nm	0.45	0.60	0.75
Weight	g	19.0	22.5	26.0
Max. efficiency	%	81	73	66
Gearhead length L1	mm	18.0	21.6	25.2
Gearmotor length L2				
└DCU16025	mm	44.4	48.0	51.6
└DCU16035	mm	54.4	58.0	61.6
└DCU17025	mm	44.4	48.0	51.6
└DCU17035	mm	54.4	58.0	61.6

Specification

Planetary gearhead	straight teeth	
Output shaft	stainless steel, hardened	
Bearing at output	sleeve bearing	
Radial play	mm	≤ 0.1
Axial play	mm	≤ 0.25
Max. radial load	N	8
Max. axial load	N	10 (5mm from flange)
Max. force for press fits	N	50
Recommend input speed	rpm	≤ 10000
Direction of rotation (drive to output)	=	
Ambient temperature	°C	-20~+65

Dimension



PG22C Planetary Gearhead Ø22mm 0.8Nm

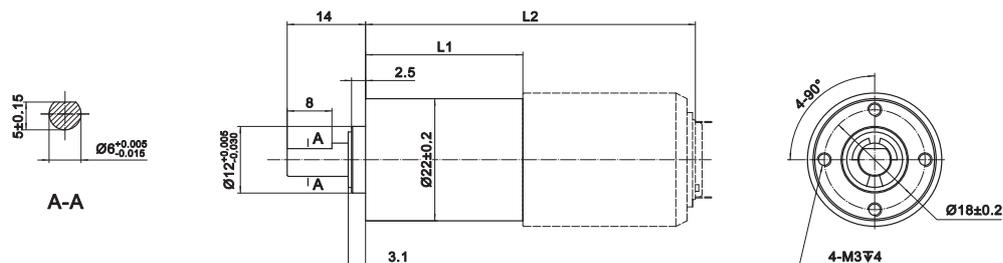
Gearhead Data

Reduction Ratio		4:1	16:1	64:1	256:1
		5:1	19:1	76:1	304:1
			22:1	90:1	361:1
				107:1	428:1
					509:1
Number of stages		1	2	3	4
Max. continuous torque	Nm	0.20	0.40	0.60	0.80
Max. intermittent torque	Nm	0.30	0.60	0.90	1.20
Weight	g	34.3	34.6	54.4	64.0
Max. efficiency	%	84	70	59	49
Gearhead length L1	mm	17.7	22.9	28.1	33.3
Gearmotor length L2					
└DCU24032	mm	49.9	55.1	60.3	65.5

Specification

Planetary gearhead		straight teeth
Output shaft		stainless steel, hardened
Bearing at output		sleeve bearing
Radial play	mm	≤ 0.1
Axial play	mm	≤ 0.35
Max. radial load	N	8
Max. axial load	N	15 (5mm from flange)
Max. force for press fits	N	100
Recommend input speed	rpm	≤ 10000
Direction of rotation (drive to output)		=
Ambient temperature	° C	-20~+65

Dimension



Encoder

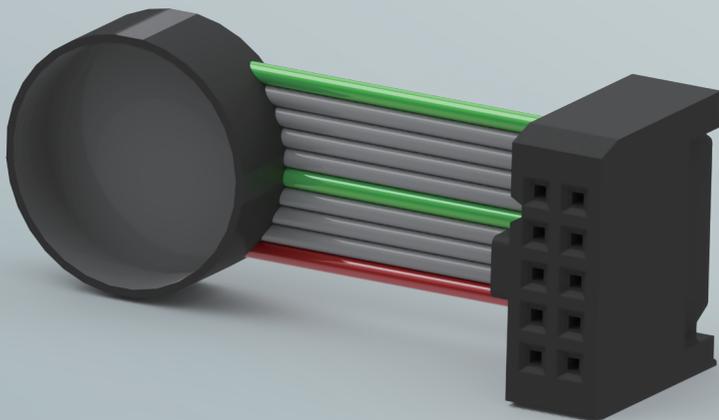
R08

R10

R13

R16

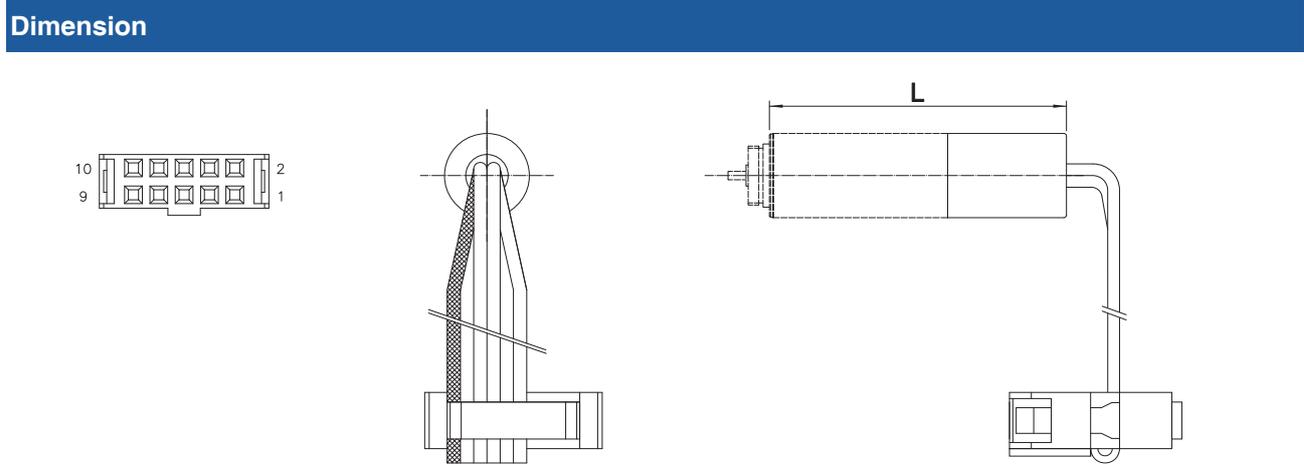
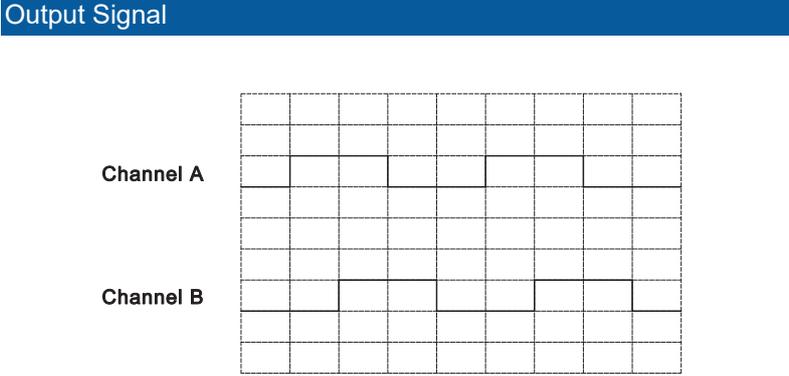
K16



R08 Magnetic Encoder Ø8mm 2 Channels

Encoder Data		
Lines per revolution		12
Number of channels		2 (A,B)
Supply voltage	V	5
Supply current	mA	≤20
Max. output current/chanel	mA	3
Max. frequency	kHz	20
Operating temperature	°C	-20~+65
Length L		
└DCU08017	mm	28.0

Connection	
PIN No.	Function
1	Motor(+)
2	Vcc(5V)
3	Channel A
4	Channel B
5	GND
6	Motor (-)



Product Overview

Slotless Brushless DC Motor

Coreless Brushed DC Motor

Planetary Gearbox

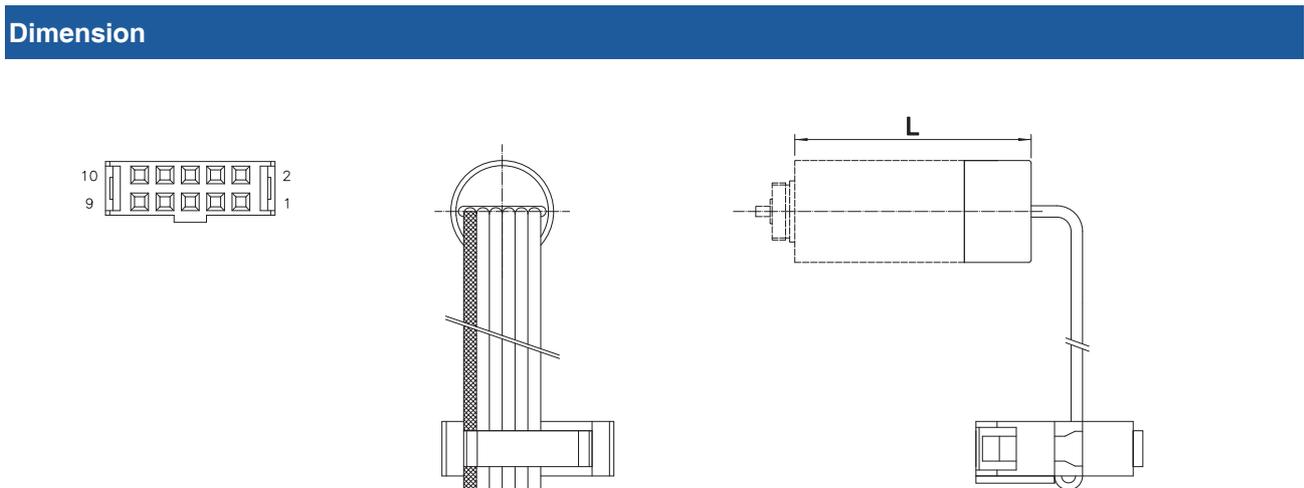
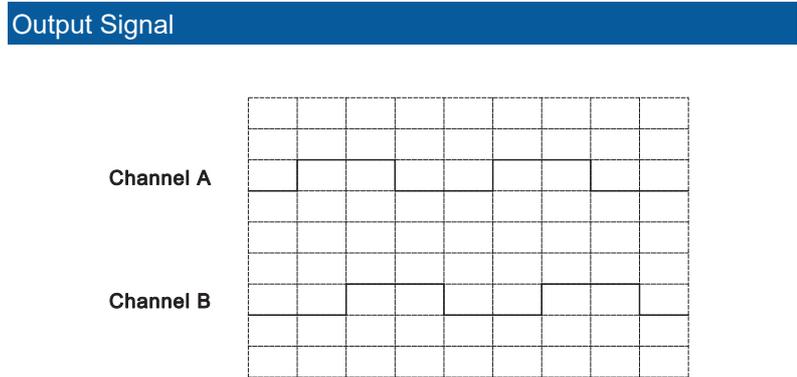
Encoder

Technical

R10 Magnetic Encoder Ø10mm 2 Channels

Encoder Data		
Pulses per revolution		12
Number of channels		2 (A,B)
Supply voltage	V	3~24
Supply current	mA	≤10
Max. output current/chanel	mA	10
Max. frequency	kHz	20
Length L		
└DCU10017	mm	23.5
└DCU10025	mm	31.1

Connection	
PIN No.	Function
1	Motor(+)
2	Vcc(5V)
3	Channel A
4	Channel B
5	GND
6	Motor (-)



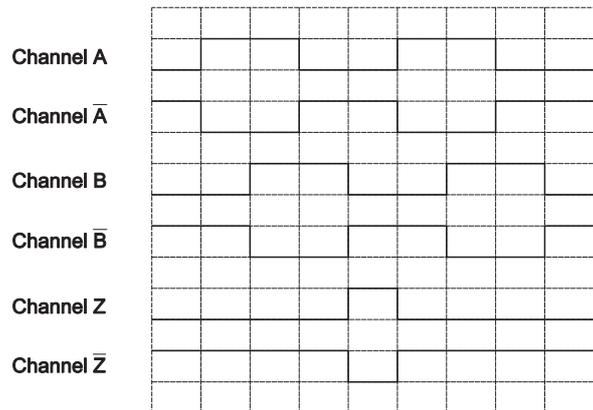
R13 Magnetic Encoder Ø13mm 3 Channels

Encoder Data		
Lines per revolution		256
Number of channels		3 (A,B,Z)
Supply voltage	V	5
Supply current	mA	≤40
Max. output current/chanel	mA	5
Max. frequency	kHz	80
Length L		
└DCU13020	mm	25.4
└DCU13028	mm	33.9

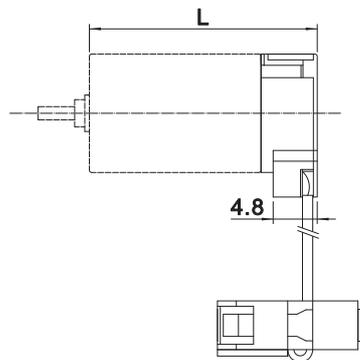
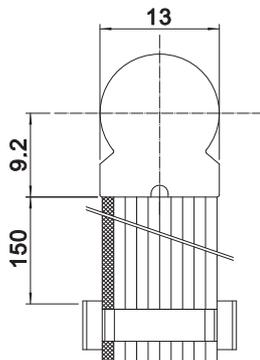
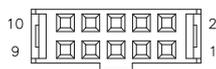
Connection

PIN No.	Function
1	Motor(+)
2	Vcc(5V)
3	GND
4	Motor(-)
5	Channel \bar{A}
6	Channel A
7	Channel \bar{B}
8	Channel B
9	Channel \bar{Z}
10	Channel Z

Output Signal



Dimension



R16 Magnetic Encoder Ø16mm 3 Channels

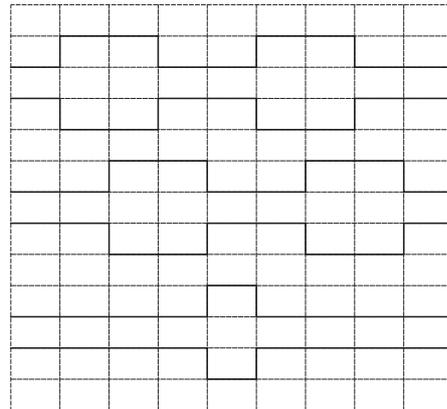
Encoder Data		
Lines per revolution		512
Number of channels		3 (A,B,Z)
Supply voltage	V	5
Supply current	mA	≤40
Max. output current/channel	mA	5
Max. frequency	kHz	160
Length L		
↳DCU16025	mm	30.4
↳DCU16035	mm	40.4
↳DCU17025	mm	30.4
↳DCU17035	mm	40.4

Connection

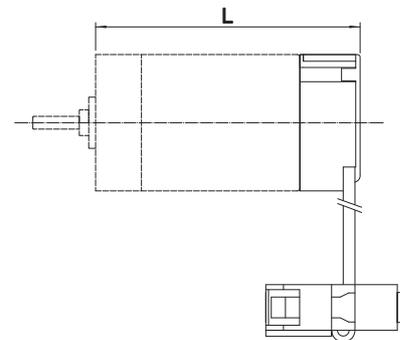
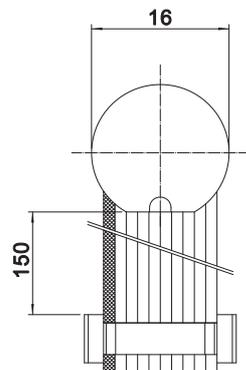
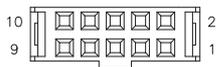
PIN No.	Function
1	Motor(+)
2	Vcc(5V)
3	GND
4	Motor(-)
5	Channel \bar{A}
6	Channel A
7	Channel \bar{B}
8	Channel B
9	Channel \bar{Z}
10	Channel Z

Output Signal

- Channel A
- Channel \bar{A}
- Channel B
- Channel \bar{B}
- Channel Z
- Channel \bar{Z}



Dimension



K16 Magnetic Encoder Ø8mm 2 Channels

Encoder Data

Lines per revolution		200
Number of channels		2 (A,B)
Supply voltage	V	5
Supply current	mA	≤20
Max. output current/chanel	mA	3
Max. frequency	kHz	20
Operating temperature	°C	-20~+65

Length L

└DCU16025	mm	37.5
└DCU16035	mm	47.5
└DCU17025	mm	37.5
└DCU17035	mm	47.5
└DCU24032	mm	43.3

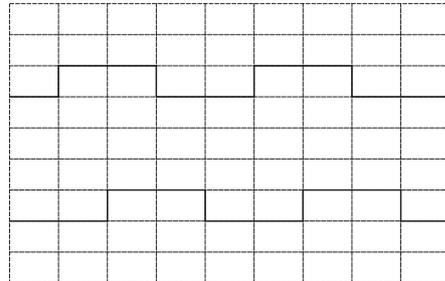
Connection

PIN No.	Function
1	Vcc
2	Channel B
3	GND
4	Channel A

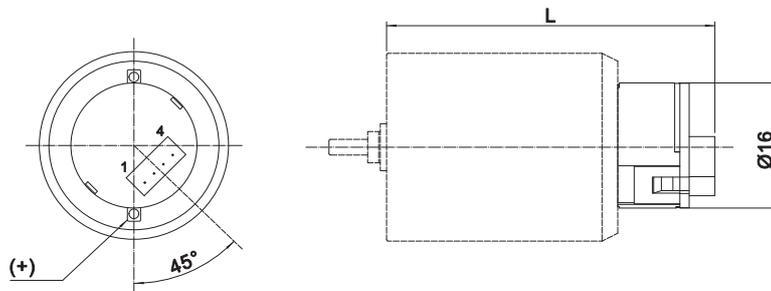
Output Signal

Channel A

Channel B



Dimension



Technical

Customized Components



Pinion



Bearing



Flange



Winding



Shaft



FPC & Cables

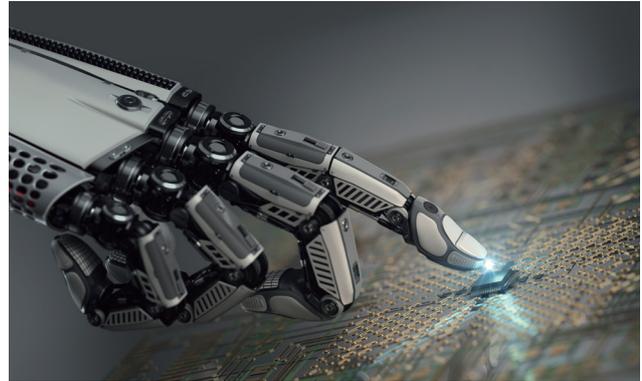
Application

Product Overview

Slotless Brushless DC Motor



Factory Automation



Robotics

Coreless Brushed DC Motor



Medical Technology



Laboratory Automation

Planetary Gearbox



Aerospace



Measuring Technology

Encoder

Technical

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