



Shown with optional assemblies.

DC030B Series

The DC030B Series Brush Commutated DC Motor is a 30 mm diameter unit offered in 3 lengths with continuous output torques of 0.0113 to 0.0184 Nm.

DC Brush Commutated Motors

For applications that require reliability and performance with basic control. Yields high efficiencies by consuming less electricity.

Motor Characteristics

Motor Data	Units	Part No.		
		DC030B-1	DC030B-2	DC030B-3
Max DC Terminal Voltage V_T	V	48		
Max Speed (Mechanical) ω_{MAX}	rpm	10000		
Continuous Stall Torque ¹ T_{CS}	Nm	0.011	0.014	0.018
	oz-in	1.6	2.0	2.6
Peak Torque (Maximum) ¹ T_{pk}	Nm	0.045	0.065	0.10
	oz-in	6.4	9.2	15
Coulomb Friction Torque T_f	Nm	0.0025	0.0025	0.0025
	oz-in	0.35	0.35	0.35
Viscous Damping Factor D	Nm/(rad/s)	1.0E-06	1.2E-06	1.4E-06
	oz-in/krpm	0.016	0.018	0.021
Thermal Time Constant τ_{th}	min	7.8	9.0	11
Thermal Resistance R_{th}	°C/W	24	23	21
Max. Winding Temperature Θ_{MAX}	°C	155	155	155
Rotor Inertia J_r	kg-m ²	9.9E-07	1.2E-06	1.6E-06
	oz-in-s ²	1.4E-04	1.7E-04	2.3E-04
Motor Weight W_m	g	130	140	160
	oz	4.7	5.1	5.8

¹Recorded at maximum winding temperature at 25°C ambient and without heatsink. **For PBL4850E to operate a brush motor, an encoder is required.

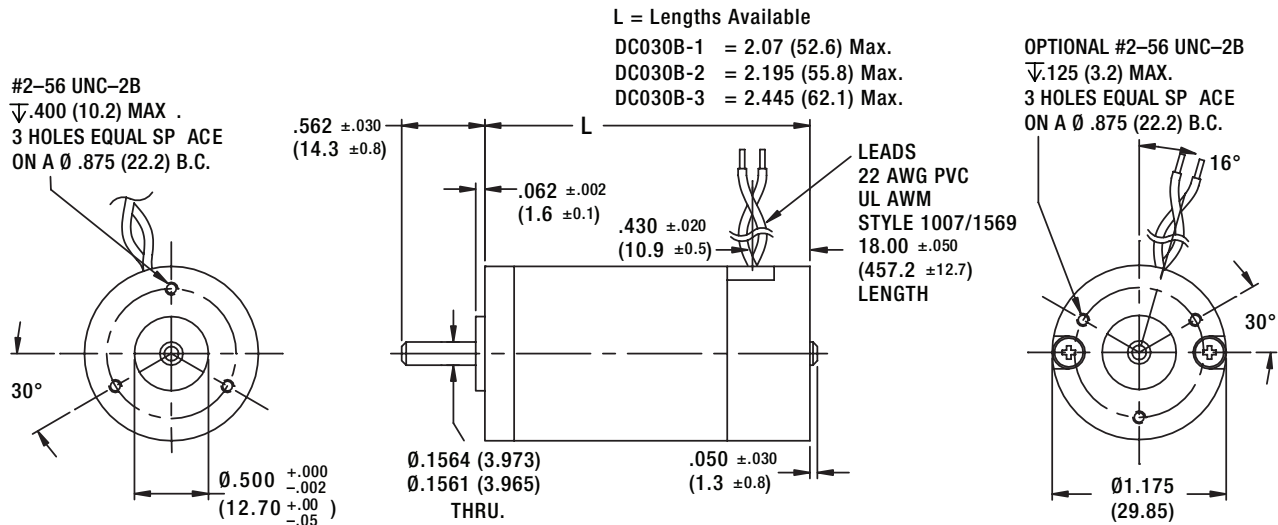
Benefits

- Speeds up to 10,000 RPM possible
- DC bus voltage up to 48 VDC
- Eight standard windings, special windings available
- 2 pole stator with ceramic magnets
- 7 slot skewed armature cogging reduction
- Sintered bronze bearings - ball bearings available
- Copper graphite brushes, RFI suppression available

Optional Assemblies

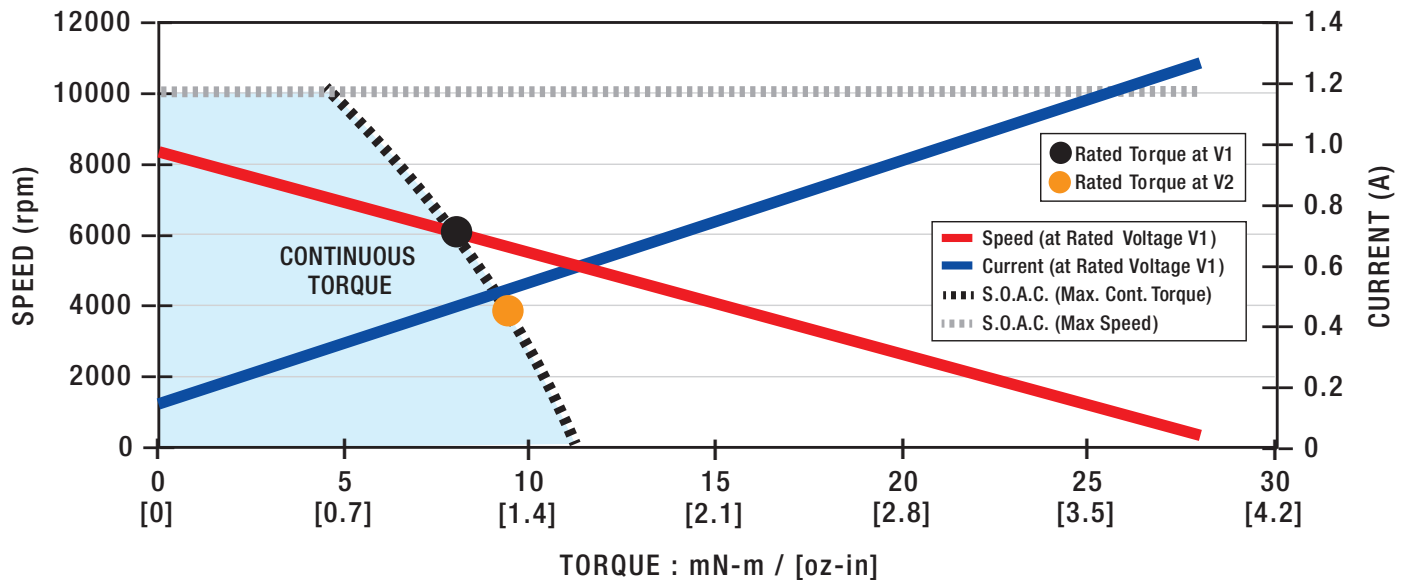
- Encoder: E30C/D
- Gearboxes: G30A, G35A
- Brake: B30A
- Programmable Drive: PBL4850E**

Dimensional Drawings: DC030B-1 • DC030B-2 • DC030B-3



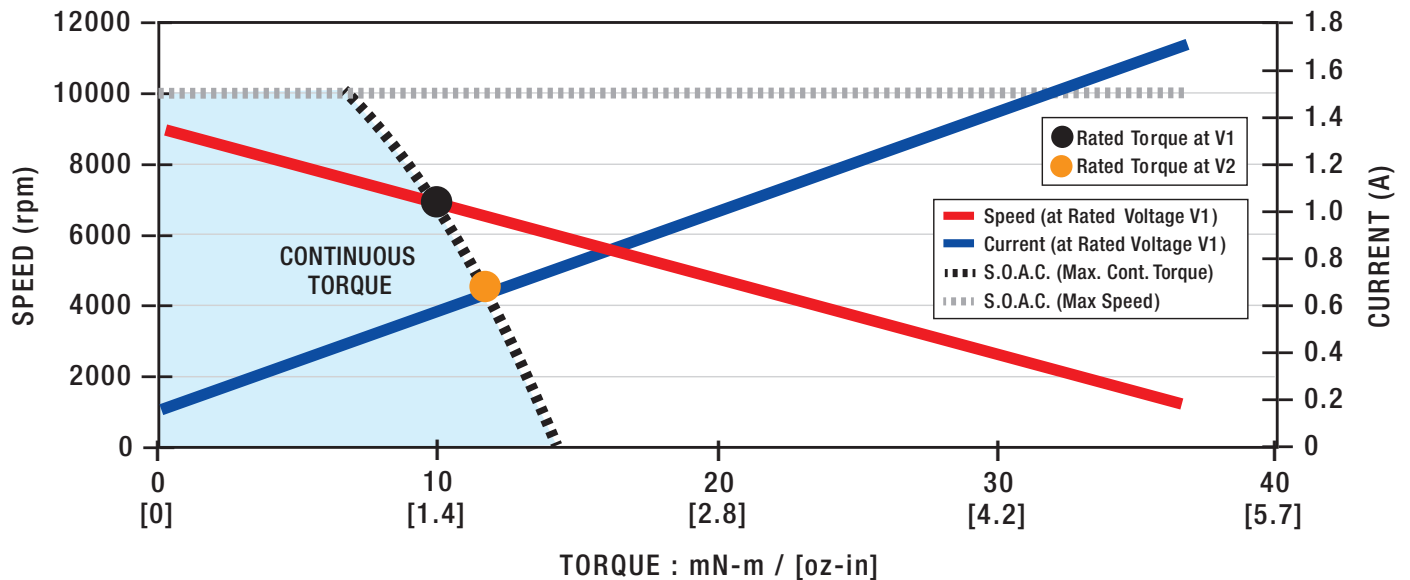
Motor Data		Units								
Rated Voltage V1	V _r	V	9.55	12.0	15.2	19.1	24.0	30.3	38.2	48.0
Rated Torque ¹ •	T _r	Nm	0.0082	0.0081	0.0080	0.0079	0.0080	0.0079	0.0079	0.0079
		oz-in	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Rated Speed ¹	ω _r	rpm	5810	5940	6120	6100	6050	6110	6110	6100
Rated Current ¹	I _r	A	1.2	0.93	0.74	0.58	0.46	0.36	0.29	0.23
Rated Power ¹	P _r	W	5.0	5.0	5.1	5.1	5.0	5.1	5.0	5.0
No Load Speed	ω _{nl}	rpm	7630	7710	7810	7740	7700	7730	7700	7700
No Load Current	I _{nl}	A	0.30	0.25	0.20	0.16	0.13	0.096	0.076	0.061
Rated Voltage V2	V _r	V	7.58	9.55	12.0	15.2	19.1	24.0	30.3	38.2
Rated Torque ¹ •	T _r	Nm	0.0095	0.0094	0.0094	0.0093	0.0093	0.0093	0.0093	0.0093
		oz-in	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Rated Speed ¹	ω _r	rpm	3580	3700	3780	3850	3820	3820	3850	3860
Rated Current ¹	I _r	A	1.3	1.0	0.81	0.64	0.51	0.40	0.32	0.25
Rated Power ¹	P _r	W	3.6	3.7	3.7	3.8	3.7	3.7	3.7	3.8
No Load Speed	ω _{nl}	rpm	5970	6060	6090	6090	6050	6050	6030	6050
No Load Current	I _{nl}	A	0.29	0.23	0.19	0.15	0.12	0.091	0.072	0.058
Motor Constant	K _M	Nm/√W	0.0078	0.0077	0.0078	0.0079	0.0079	0.0079	0.0079	0.0079
		oz-in/√W	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Torque Constant	K _T	Nm/A	0.0110	0.0137	0.0171	0.0217	0.0274	0.0345	0.0436	0.0548
		oz-in/A	1.56	1.93	2.42	3.07	3.88	4.88	6.18	7.76
Voltage Constant	K _E	V/(rad/s)	0.0110	0.0137	0.0171	0.0217	0.0274	0.0345	0.0436	0.0548
		V/krpm	1.15	1.43	1.79	2.27	2.87	3.61	4.57	5.74
Terminal Resistance	R _{mt}	Ω	2.01	3.10	4.81	7.61	12.1	19.1	30.3	48.0
Inductance	L	mH	1.0	1.6	2.5	3.9	6.3	9.9	16	25
Peak Current	I _{pk}	A	4.8	3.9	3.2	2.5	2.0	1.6	1.3	1.0
Electrical Time Constant	τ _e	ms	0.50	0.51	0.51	0.52	0.52	0.52	0.52	0.52
Mechanical Time Constant	τ _m	ms	16	16	16	16	16	16	16	16

¹Recorded at maximum winding temperature at 25°C ambient and without heatsink.



Motor Data		Units								
Rated Voltage V1	V _r	V	9.55	12.0	15.2	19.1	24.0	30.3	38.2	48.0
Rated Torque ¹ •	T _r	Nm	0.010	0.010	0.0099	0.0099	0.0098	0.0098	0.0097	0.0098
		oz-in	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Rated Speed ¹	ω _r	rpm	6520	6590	6790	6890	6840	6870	6890	6840
Rated Current ¹	I _r	A	1.5	1.2	0.90	0.72	0.57	0.45	0.35	0.28
Rated Power ¹	P _r	W	7.0	7.0	7.0	7.1	7.0	7.0	7.0	7.0
No Load Speed	ω _{nl}	rpm	8100	8060	8120	8230	8130	8150	8140	8100
No Load Current	I _{nl}	A	0.34	0.27	0.21	0.17	0.14	0.11	0.084	0.066
Rated Voltage V2	V _r	V	7.58	9.55	12.0	15.2	19.1	24.0	30.3	38.2
Rated Torque ¹ •	T _r	Nm	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
		oz-in	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6
Rated Speed ¹	ω _r	rpm	4220	4330	4430	4570	4550	4530	4560	4560
Rated Current ¹	I _r	A	1.6	1.3	1.0	0.80	0.63	0.50	0.39	0.31
Rated Power ¹	P _r	W	5.3	5.3	5.4	5.5	5.5	5.5	5.5	5.5
No Load Speed	ω _{nl}	rpm	6370	6360	6360	6490	6420	6400	6410	6390
No Load Current	I _{nl}	A	0.32	0.25	0.20	0.16	0.13	0.099	0.078	0.062
Motor Constant	K _M	Nm/√W	0.0089	0.0090	0.0092	0.0091	0.0092	0.0092	0.0092	0.0093
		oz-in/√W	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Torque Constant	K _T	Nm/A	0.0105	0.0133	0.0167	0.0207	0.0264	0.0332	0.0419	0.0530
		oz-in/A	1.49	1.88	2.37	2.93	3.73	4.71	5.94	7.51
Voltage Constant	K _E	V/(rad/s)	0.0105	0.0133	0.0167	0.0207	0.0264	0.0332	0.0419	0.0530
		V/krpm	1.10	1.39	1.75	2.17	2.76	3.48	4.39	5.55
Terminal Resistance	R _{mt}	Ω	1.40	2.17	3.34	5.20	8.24	13.1	20.6	32.9
Inductance	L	mH	0.73	1.2	1.8	2.9	4.6	7.3	12	18
Peak Current	I _{pk}	A	6.8	5.5	4.6	3.7	2.9	2.3	1.9	1.5
Electrical Time Constant	τ _e	ms	0.52	0.54	0.54	0.55	0.55	0.56	0.56	0.56
Mechanical Time Constant	τ _m	ms	15	15	14	15	14	14	14	14

¹Recorded at maximum winding temperature at 25°C ambient and without heatsink.



Motor Data		Units								
Rated Voltage V1	V _r	V	9.55	12.0	15.2	19.1	24.0	30.3	38.2	48.0
Rated Torque ¹ •	T _r	Nm	0.013	0.012	0.012	0.012	0.011	0.011	0.011	0.011
		oz-in	1.8	1.7	1.7	1.6	1.6	1.6	1.6	1.6
Rated Speed ¹	ω _r	rpm	8500	8850	9020	9080	9170	9350	9310	9260
Rated Current ¹	I _r	A	2.1	1.7	1.3	0.99	0.79	0.63	0.49	0.39
Rated Power ¹	P _r	W	11	11	11	11	11	11	11	11
No Load Speed	ω _{nl}	rpm	9830	9960	9930	9900	9940	10000	10000	9970
No Load Current	I _{nl}	A	0.45	0.36	0.29	0.23	0.18	0.15	0.12	0.090
Rated Voltage V2	V _r	V	6.00	7.58	9.55	12.0	15.2	19.1	24.0	30.3
Rated Torque ¹ •	T _r	Nm	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016
		oz-in	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2
Rated Speed ¹	ω _r	rpm	3630	3940	4070	4140	4270	4330	4300	4320
Rated Current ¹	I _r	A	2.5	2.0	1.6	1.2	0.98	0.79	0.62	0.49
Rated Power ¹	P _r	W	6.3	6.7	6.8	6.9	7.1	7.1	7.1	7.1
No Load Speed	ω _{nl}	rpm	6090	6210	6160	6140	6220	6280	6220	6220
No Load Current	I _{nl}	A	0.39	0.31	0.25	0.20	0.16	0.13	0.098	0.077
Motor Constant	K _M	Nm/√W	0.0099	0.010	0.010	0.010	0.011	0.010	0.011	0.011
		oz-in/√W	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5
Torque Constant	K _T	Nm/A	0.00876	0.0109	0.0138	0.0175	0.0219	0.0272	0.0346	0.0436
		oz-in/A	1.24	1.54	1.96	2.47	3.10	3.85	4.90	6.18
Voltage Constant	K _E	V/(rad/s)	0.00876	0.0109	0.0138	0.0175	0.0219	0.0272	0.0346	0.0436
		V/krpm	0.917	1.14	1.45	1.83	2.29	2.85	3.62	4.57
Terminal Resistance	R _{mt}	Ω	0.790	1.17	1.80	2.79	4.33	6.75	10.7	17.0
Inductance	L	mH	0.37	0.58	0.94	1.5	2.3	3.7	5.9	9.4
Peak Current	I _{pk}	A	12	10	8.4	6.8	5.5	4.5	3.6	2.8
Electrical Time Constant	τ _e	ms	0.47	0.50	0.52	0.54	0.54	0.54	0.55	0.55
Mechanical Time Constant	τ _m	ms	17	16	15	15	15	15	15	15

¹Recorded at maximum winding temperature at 25°C ambient and without heatsink.

