



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	$V_T$	48			
Max Speed (Mechanical)	$\omega_{MAX}$	10000			
Continuous Stall Torque <sup>1</sup>	$T_{CS}$	Nm	0.011	0.014	0.018
		oz-in	1.6	2.0	2.6
Peak Torque (Maximum) <sup>1</sup>	$T_{pk}$	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	$\tau_{th}$	min	7.8	9.0	11
Thermal Resistance	$R_{th}$	°C/W	24	23	21
Max. Winding Temperature	$\Theta_{MAX}$	°C	155	155	155
Rotor Inertia	$J_r$	kg-m <sup>2</sup>	9.9E-07	1.2E-06	1.6E-06
		oz-in-s <sup>2</sup>	1.4E-04	1.7E-04	2.3E-04
Motor Weight	$W_m$	g	130	140	160
		oz	4.7	5.1	5.8

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

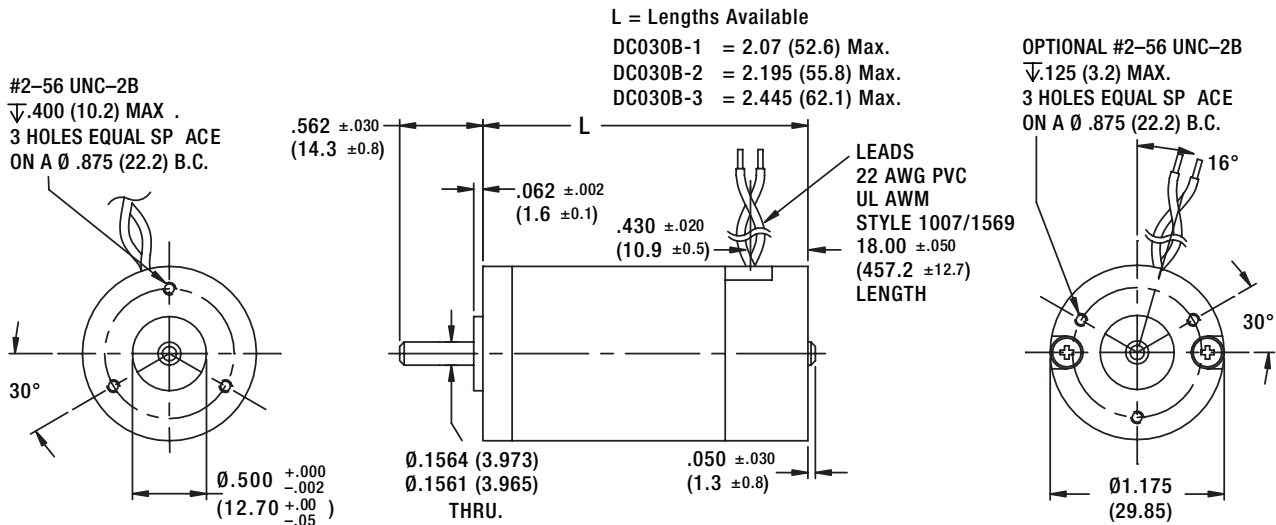
### Benefits

- 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

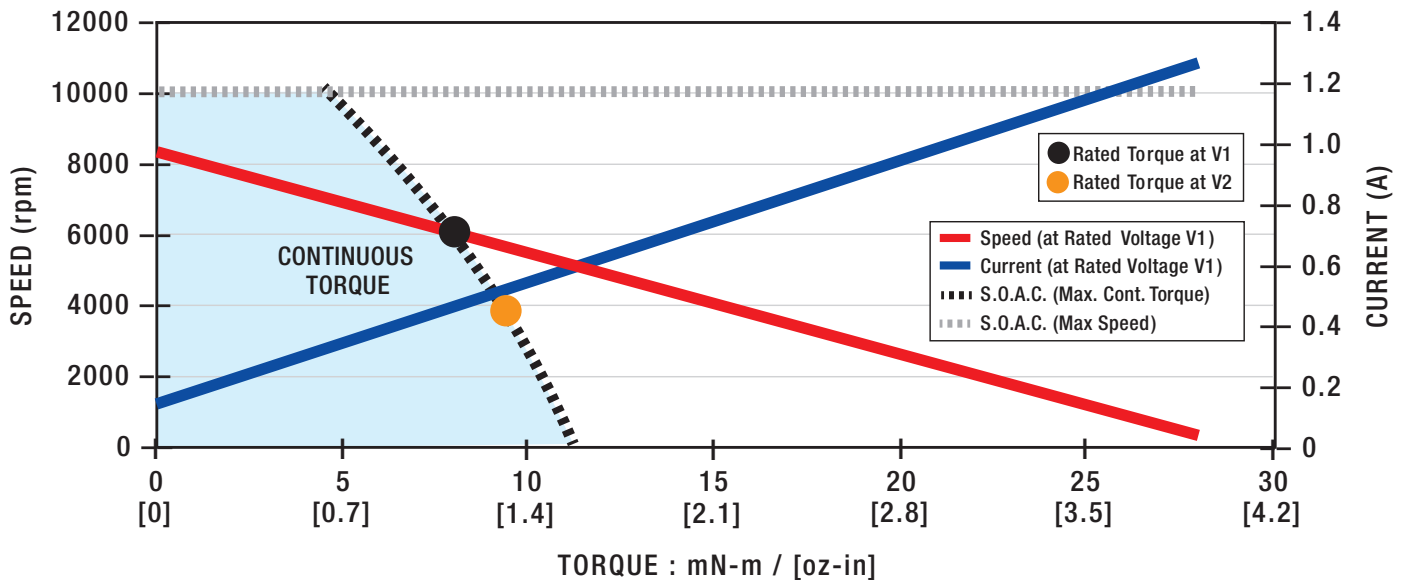
- Encoder: E30C/D
- Gearboxes: G30A, G35A
- Brake: B30A
- Programmable Drive: PBL4850E\*\*

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



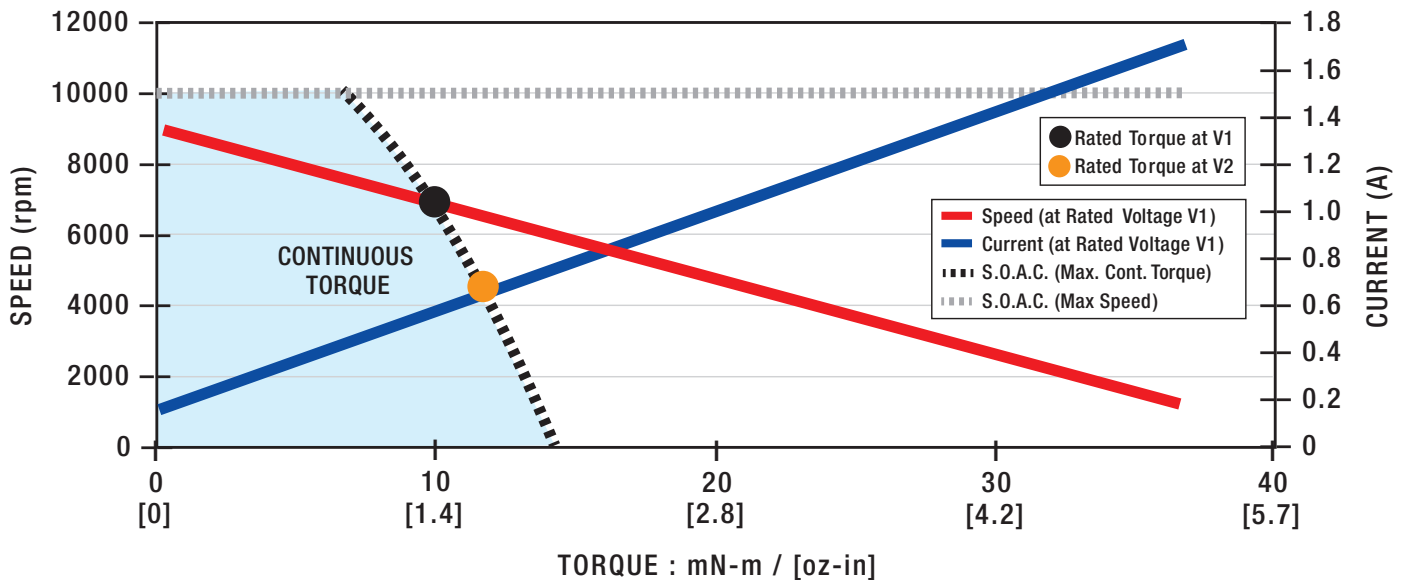
Motor Data		Units								
Rated Voltage <b>V1</b>	$V_r$	V	9.55	12.0	15.2	19.1	24.0	30.3	38.2	48.0
Rated Torque <sup>1</sup> •	$T_r$	Nm	0.0082	0.0081	0.0080	0.0079	0.0080	0.0079	0.0079	0.0079
		oz-in	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Rated Speed <sup>1</sup>	$\omega_r$	rpm	5810	5940	6120	6100	6050	6110	6110	6100
Rated Current <sup>1</sup>	$I_r$	A	1.2	0.93	0.74	0.58	0.46	0.36	0.29	0.23
Rated Power <sup>1</sup>	$P_r$	W	5.0	5.0	5.1	5.1	5.0	5.1	5.0	5.0
No Load Speed	$\omega_{nl}$	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 <b>V2</b>	$V_r$	V	7.58	9.55	12.0	15.2	19.1	24.0	30.3	38.2
Rated Torque <sup>1</sup> •	$T_r$	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 <sup>1</sup>	$\omega_r$	rpm	3580	3700	3780	3850	3820	3820	3850	3860
Rated Current <sup>1</sup>	$I_r$	A	1.3	1.0	0.81	0.64	0.51	0.40	0.32	0.25
Rated Power <sup>1</sup>	$P_r$	W	3.6	3.7	3.7	3.8	3.7	3.7	3.7	3.8
No Load Speed	$\omega_{nl}$	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/ $\sqrt{W}$	0.0078	0.0077	0.0078	0.0079	0.0079	0.0079	0.0079	0.0079
		oz-in/ $\sqrt{W}$	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	$R_{mt}$	$\Omega$	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	$\tau_e$	ms	0.50	0.51	0.51	0.52	0.52	0.52	0.52	0.52
Mechanical Time Constant	$\tau_m$	ms	16	16	16	16	16	16	16	16

<sup>1</sup>Recorded at maximum winding temperature at 25°C ambient and without heatsink.



Motor Data		Units								
Rated Voltage <b>V1</b>	$V_r$	V	9.55	12.0	15.2	19.1	24.0	30.3	38.2	48.0
Rated Torque <sup>1</sup> •	$T_r$	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 <sup>1</sup>	$\omega_r$	rpm	6520	6590	6790	6890	6840	6870	6890	6840
Rated Current <sup>1</sup>	$I_r$	A	1.5	1.2	0.90	0.72	0.57	0.45	0.35	0.28
Rated Power <sup>1</sup>	$P_r$	W	7.0	7.0	7.0	7.1	7.0	7.0	7.0	7.0
No Load Speed	$\omega_{nl}$	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 <b>V2</b>	$V_r$	V	7.58	9.55	12.0	15.2	19.1	24.0	30.3	38.2
Rated Torque <sup>1</sup> •	$T_r$	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 <sup>1</sup>	$\omega_r$	rpm	4220	4330	4430	4570	4550	4530	4560	4560
Rated Current <sup>1</sup>	$I_r$	A	1.6	1.3	1.0	0.80	0.63	0.50	0.39	0.31
Rated Power <sup>1</sup>	$P_r$	W	5.3	5.3	5.4	5.5	5.5	5.5	5.5	5.5
No Load Speed	$\omega_{nl}$	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/ $\sqrt{W}$	0.0089	0.0090	0.0092	0.0091	0.0092	0.0092	0.0092	0.0093
		oz-in/ $\sqrt{W}$	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	$R_{mt}$	$\Omega$	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	$\tau_e$	ms	0.52	0.54	0.54	0.55	0.55	0.56	0.56	0.56
Mechanical Time Constant	$\tau_m$	ms	15	15	14	15	14	14	14	14

<sup>1</sup>Recorded at maximum winding temperature at 25°C ambient and without heatsink.



Motor Data		Units								
Rated Voltage <b>V1</b>	$V_r$	V	9.55	12.0	15.2	19.1	24.0	30.3	38.2	48.0
Rated Torque <sup>1</sup> •	$T_r$	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 <sup>1</sup>	$\omega_r$	rpm	8500	8850	9020	9080	9170	9350	9310	9260
Rated Current <sup>1</sup>	$I_r$	A	2.1	1.7	1.3	0.99	0.79	0.63	0.49	0.39
Rated Power <sup>1</sup>	$P_r$	W	11	11	11	11	11	11	11	11
No Load Speed	$\omega_{nl}$	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 <b>V2</b>	$V_r$	V	6.00	7.58	9.55	12.0	15.2	19.1	24.0	30.3
Rated Torque <sup>1</sup> •	$T_r$	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 <sup>1</sup>	$\omega_r$	rpm	3630	3940	4070	4140	4270	4330	4300	4320
Rated Current <sup>1</sup>	$I_r$	A	2.5	2.0	1.6	1.2	0.98	0.79	0.62	0.49
Rated Power <sup>1</sup>	$P_r$	W	6.3	6.7	6.8	6.9	7.1	7.1	7.1	7.1
No Load Speed	$\omega_{nl}$	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/ $\sqrt{W}$	0.0099	0.010	0.010	0.010	0.011	0.010	0.011	0.011
		oz-in/ $\sqrt{W}$	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	$R_{mt}$	$\Omega$	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	$\tau_e$	ms	0.47	0.50	0.52	0.54	0.54	0.54	0.55	0.55
Mechanical Time Constant	$\tau_m$	ms	17	16	15	15	15	15	15	15

<sup>1</sup>Recorded at maximum winding temperature at 25°C ambient and without heatsink.

