TORQUE

Celera MOTION
A Novanta Company

Applimotion
Motors & Actuators

PRODUCT DATA SHEET

Omni™ Series Motors

Low-Profile Direct Drive Motors for the World's Machines and Robots

The Omni Series enables OEMs to design high performance, reliable, small and lightweight systems using flexible and easy-to-integrate rotary motor components.

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Omni™ Series Motors

Low-Profile Direct Drive Motors for the World's Machines and Robots

Compact and Powerful.

Designed for easy integration into OEM assemblies, the Omni Series is offered in a wide range of low-profile form factors with a large through hole for convenient routing of cables, optics, and other system elements. Frameless direct drive kit construction enables easy integration into machinery, robot joints, rotary stages and actuators.

Built using state-of-the art magnetic designs, the Omni Series delivers high torque density, low cogging and low stator and rotor mass in a thermally efficient package. Direct drive technology provides high speeds and accelerations with good mechanical stiffness and zero backlash, reducing settling times and increasing system performance and throughput.

Three models of the Omni Series motors are available: ULT for low-mid range torque requirements; UTH for high torque requirements; and UTO for applications that require an outside rotating configuration. All models are compatible with a wide range of controllers and drives. Windings and form factors can be customized to meet application requirements.

Benefits

- High torque density in low-profile form factors enables small footprint
- Large through hole for convenient routing of cables, optics, plumbing and other system elements
- High mechanical stiffness and low rotor inertia for efficient control of highly dynamic axes
- Low cogging for accurate and smooth motion
- Easy integration into system design
- Compatible with wide range of drives and controllers
- Custom windings and form factors available to meet application requirements

Specifications	Units	ULT Models	UTH Models	UTO Models
Continuous Torque:	Nm	0.043 to 6.581	0.092 to 15.903	0.014 to 9.102
Peak Torque:	Nm	0.129 to 19.744	0.275 to 47.708	0.042 to 27.307
Diameter:	mm	45 to 165 (Stator OD)	22-533 (Stator OD)	20 to 200 (Rotor OD)
Through Hole:	mm	32 to 120 (Rotor ID)	13-432 (Rotor ID)	9 to 100 (Stator ID)
Maximum Speed:	rpm	up to 5,000	up to 5,000	up to 10,000

Product groups listed and corresponding data are provided as a reference. Actual motor attributes are model and configuration specific. Standard and custom models are available within each group. Peak torque output is based on a 3:1 peak to continuous current ratio in the amplifier, and is based on limited duty cycle. Specifications subject to change.

RoHS CE

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Omni™ Series Motors

Low-Profile Direct Drive Motors for the World's Machines and Robots

Omni UTH High Performance Motors

SIZE		UTH-29	UTH-51	UTH-56	UTH-63		
MODEL NUMBER		UTH-29-A-19-A-x-000	UTH-51-A-27-A-x-000	UTH-56-A-47-B-x-000	UTH-63-A-8-A-x-000	UTH-63-B-18-A-x-000	UTH-63-B-18-B-x-000
PERFORMANCE SPECIFICATIONS							
Continuous Torque	Nm	0.092	0.184	0.699	0.113	0.268	0.275
	oz-in	13	26.0	99	16	38	39
Peak Torque	Nm	0.275	0.552	2.097	0.339	0.805	0.826
	oz-in	39	78.1	297	48	114	117
ELECTRICAL SPECIFICATIONS							
Continuous Current	Amp	1.00	2.5	7.00	2.00	5.00	2.00
Resistance	Ohm	18.00	4.15	0.56	9.10	1.25	6.60
Inductance	mH	9.50	2.60	0.84	1.00	0.23	0.90
Ke	V/krpm	10.4	8.6	10.0	6.6	5.7	13.7
Kt	Nm/amp	0.099	0.082	0.095	0.063	0.054	0.131
Kt sine	Nm/amp	0.086	0.071	0.083	0.055	0.047	0.151
Km	$Nm/w^{½}$	0.023	0.040	0.128	0.021	0.049	0.051
THERMAL SPECIFICATIONS							
Thermal Resistance	°C/w	6.0	3.5	3.0	3.0	3.0	3.0
MECHANICAL SPECIFICATIONS							
Stator OD	mm	29.21	50.80	55.88	63.50	63.50	63.50
Stator ID	mm	13.72	27.18	24.63	50.04	50.04	50.04
Rotor OD	mm	12.70	25.43	23.79	46.99	46.99	46.99
Rotor ID	mm	16.00	11.94	11.93	33.02	28.02	28.02
Stator Length	mm	6.48	26.67	42.42	8.13	18.80	19.37
End Turn, Lead Side	mm	3.05	8.89	9.02	1.78	2.29	2.86
Stack Height	mm	15.24	8.89	27.18	4.57	13.72	13.72
End Turn, Non-Lead Side	mm	3.05	8.89	6.22	1.78	2.79	2.79
Weight	kg	0.055	n/a	0.270	0.075	0.232	0.228
Poles Count	#	8.0	6	8.0	12.0	12.0	12.0
Rotor Inertia	$lb\text{-}in\text{-}sec^2$	2.67E-06	n/a	5.95E-05	1.60E-04	4.60E-04	4.60E-04
	$kg\text{-}m^2$	3.02E-07	n/a	6.72E-06	1.81E-05	5.20E-05	5.20E-05
Halls (optional)		Optional/ External	External	Optional/ External	Optional/ External	Optional/ External	Optional/ External

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Omni™ Series Motors

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Omni UTH High Performance Motors

SIZE		UTH-63				UTH-70
MODEL NUMBER		UTH-63-B-18-C-x-000	UTH-63-B-24-A-x-000	UTH-63-B-51-A-x-000	UTH-63-B-52-A-x-000	UTH-70-A-25-A-x-000
PERFORMANCE SPECIFICATIONS						
Continuous Torque	Nm	0.297	0.544	1.222	1.044	0.819
	oz-in	42	77	173	147.8	116
Peak Torque	Nm	0.890	1.631	3.665	3.132	2.457
	oz-in	126	231	519	443.5	348
ELECTRICAL SPECIFICATIONS						
Continuous Current	Amp	11.00	4.00	2.00	4.9	1.00
Resistance	Ohm	0.26	1.82	8.10	1.25	26.50
Inductance	mH	0.04	4.50	29.00	4.10	20.00
Ke	V/krpm	2.9	13.9	66.4	24.8	80.50
Kt	Nm/amp	0.028	0.133	0.634	0.237	0.77
Kt sine	Nm/amp	0.024	0.116	0.549	0.205	0.67
Km	$Nm/w^{½}$	0.054	0.099	0.223	0.212	0.15
THERMAL SPECIFICATIONS						
Thermal Resistance	°C/w	3.0	3.0	3.0	3.0	3.0
MECHANICAL SPECIFICATIONS						
Stator OD	mm	63.50	63.50	63.50	63.50	70.00
Stator ID	mm	49.53	29.15	29.15	29.16	47.67
Rotor OD	mm	46.23	28.14	27.94	27.94	45.89
Rotor ID	mm	35.56	12.67	12.80	12.80	36.02
Stator Length	mm	19.30	27.91	50.80	50.80	24.89
End Turn, Lead Side	mm	2.79	8.86	6.35	6.99	2.29
Stack Height	mm	13.72	12.70	38.10	38.10	20.32
End Turn, Non-Lead Side	mm	2.79	6.35	6.35	5.72	2.29
Weight	kg	0.239	0.274	0.692	0.524	0.315
Poles Count	#	12.0	8.0	8.0	8	26.0
Rotor Inertia	$lb\text{-}in\text{-}sec^2$	3.27E-04	6.32E-05	1.72E-04	5.40E-04	4.55E-04
	$kg\text{-}m^2$	3.69E-05	7.14E-06	1.94E-05	6.10E-05	5.14E-05
Halls (optional)		Optional/External	Optional/External	Optional/External	Internal	Optional/External

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Omni™ Series Motors

Low-Profile Direct Drive Motors for the World's Machines and Robots

Omni UTH High Performance Motors

SIZE		UTH-76			UTH-92	UTH-100	
MODEL NUMBER		UTH-76-A-24-A-x-000	UTH-76-A-24-B-x-000	UTH-76-B-70-A-x-000	UTH-92-A-28-A-x-000	UTH-100-A-25-A-x-000	UTH-100-A-25-B-x-000
PERFORMANCE SPECIFICATIONS							
Continuous Torque	Nm	0.688	0.609	2.952	0.934	1.963	1.921
	oz-in	97.4	86.2	418	132.3	278	272
Peak Torque	Nm	2.063	1.827	8.855	2.803	5.889	5.762
	oz-in	292.2	258.7	1254	396.9	834	816
ELECTRICAL SPECIFICATIONS							
Continuous Current	Amp	2.6	3.9	7.00	2.7	8.00	4.00
Resistance	Ohm	4.50	1.50	0.83	6.00	0.87	3.70
Inductance	mH	2.20	0.66	1.30	1.94	1.36	6.00
Ke	V/krpm	31.0	18.3	42.00	39.7	25.00	50.00
Kt	Nm/amp	0.296	0.175	0.40	0.379	0.24	0.48
Kt sine	Nm/amp	0.256	0.151	0.35	0.328	0.21	0.41
Km	Nm/$w^{½}$	0.140	0.143	0.44	0.155	0.25	0.25
THERMAL SPECIFICATIONS							
Thermal Resistance	°C/w	3.0	4.0	2.0	2.0	1.5	1.5
MECHANICAL SPECIFICATIONS							
Stator OD	mm	76.20	76.20	75.94	92.08	101.60	101.60
Stator ID	mm	60.45	60.45	46.48	75.44	65.02	65.02
Rotor OD	mm	59.18	59.18	45.21	73.66	62.99	62.99
Rotor ID	mm	47.63	47.63	28.58	63.50	43.18	43.18
Stator Length	mm	28.58	24.13	69.84	34.04	24.64	24.43
End Turn, Lead Side	mm	3.18	3.18	6.98	5.08	4.57	4.57
Stack Height	mm	17.78	17.78	57.78	19.05	15.49	15.29
End Turn, Non-Lead Side	mm	7.62	3.18	5.08	9.91	4.57	4.57
Weight	kg	0.330	0.330	1.280	n/a	0.69	0.69
Poles Count	#	16	16	20.0	14	12.00	12.00
Rotor Inertia	lb-in-sec²	0.0009	0.0009	1.44E-03	n/a	1.91E-03	1.91E-03
	kg-m²	1.02E-04	1.02E-04	1.63E-04	n/a	2.16E-04	2.16E-04
Halls (optional)		Internal	Internal	Optional/External	Internal	Optional/External	Optional/external

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Omni™ Series Motors

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Omni UTH High Performance Motors

SIZE		UTH-100		UTH-114			
MODEL NUMBER		UTH-100-A-25-E-x-000	UTH-100-A-40-A-x-000	UTH-114-A-20-A-x-000	UTH-114-B-21-A-x-000	UTH-114-B-21-B-x-000	UTH-114-A-36-B-x-000
PERFORMANCE SPECIFICATIONS							
Continuous Torque	Nm	1.534	3.952	1.645	1.076	0.932	3.990
	oz-in	217.2	559.6	233	152.3	132	565
Peak Torque	Nm	4.601	11.855	4.936	3.227	2.796	11.969
	oz-in	651.5	1678.8	699	456.9	396	1695
ELECTRICAL SPECIFICATIONS							
Continuous Current	Amp	18.8	12.6	3.00	4.0	21.00	6.00
Resistance	Ohm	0.17	0.57	7.40	3.80	0.14	2.00
Inductance	mH	0.19	1.10	11.00	3.70	0.10	4.80
Ke	V/krpm	9.5	36.6	60.60	31.5	4.70	71.00
Kt	Nm/amp	0.091	0.349	0.58	0.301	0.05	0.68
Kt sine	Nm/amp	0.079	0.303	0.50	0.260	0.04	0.59
Km	$Nm/w^{½}$	0.220	0.463	0.21	0.154	0.12	0.48
THERMAL SPECIFICATIONS							
Thermal Resistance	°C/w	1.5	1.0	1.5	1.5	1.5	1.3
MECHANICAL SPECIFICATIONS							
Stator OD	mm	101.60	101.60	114.30	114.30	114.30	114.30
Stator ID	mm	65.02	65.02	74.42	92.96	92.96	73.91
Rotor OD	mm	62.99	62.99	72.89	89.15	89.15	72.89
Rotor ID	mm	43.18	43.18	53.34	76.20	76.20	53.34
Stator Length	mm	24.38	39.73	20.25	0.813	20.47	36.58
End Turn, Lead Side	mm	4.57	4.57	5.00	5.08	5.08	5.59
Stack Height	mm	15.24	30.58	10.00	10.34	10.31	25.40
End Turn, Non-Lead Side	mm	4.57	4.57	5.25	4.90	5.08	5.59
Weight	kg	0.644	1.134	0.60	0.264	0.40	1.22
Poles Count	#	12	12	16.00	24	24.00	16.00
Rotor Inertia	$lb\text{-}in\text{-}sec^2$	0.0013	0.0026	1.66E-03	n/a	2.84E-03	3.79E-03
	$kg\text{-}m^2$	1.47E-04	2.94E-04	1.88E-04	n/a	3.21E-04	4.28E-04
Halls (optional)		Internal	Internal	Optional/external	Internal	Optional/external	Optional/external

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Omni™ Series Motors

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Omni UTH High Performance Motors

SIZE		UTH-127		UTH-152	UTH-165	
MODEL NUMBER		UTH-127-B-28-A-x-000	UTH-127-A-30-A-x-000	UTH-152-A-40-A-x-000	UTH-165-A-38-A-x-000	UTH-165-A-56-A-x-000
PERFORMANCE SPECIFICATIONS						
Continuous Torque	Nm	2.973	4.569	11.729	8.56	13.64
	oz-in	421	647	1661	1212	1932
Peak Torque	Nm	8.919	13.706	35.188	25.67	40.93
	oz-in	1136	1746	4484	3636	5796
ELECTRICAL SPECIFICATIONS						
Continuous Current	Amp	14.00	6.00	9.00	8.7	14.4
Resistance	Ohm	0.50	3.13	1.42	1.50	0.72
Inductance	mH	1.10	9.30	3.20	2.00	1.29
Ke	V/krpm	22.00	84.60	138.00	115.0	110.0
Kt	Nm/amp	0.21	0.81	1.32	1.098	1.050
Kt sine	Nm/amp	0.18	0.70	1.14	0.951	0.909
Km	$Nm/w^{½}$	0.30	0.46	1.11	0.896	1.238
THERMAL SPECIFICATIONS						
Thermal Resistance	°C/w	0.9	0.9	0.8	0.8	0.6
MECHANICAL SPECIFICATIONS						
Stator OD	mm	127.00	127.00	152.40	165.10	165.10
Stator ID	mm	84.32	76.45	108.20	137.41	137.41
Rotor OD	mm	81.28	74.95	106.68	135.89	135.84
Rotor ID	mm	55.88	53.34	88.90	118.11	118.11
Stator Length	mm	27.31	27.94	39.37	41.28	55.58
End Turn, Lead Side	mm	6.35	6.35	7.62	6.35	6.35
Stack Height	mm	15.88	16.51	26.67	28.58	42.88
End Turn, Non-Lead Side	mm	5.08	5.08	5.08	6.35	6.35
Weight	kg	1.16	1.26	2.05	1.488	n/a
Poles Count	#	6.00	12.00	20.00	32	32
Rotor Inertia	$lb\text{-}in\text{-}sec^2$	4.12E-03	3.32E-03	1.37E-02	0.018	0.039
	$kg\text{-}m^2$	4.65E-04	3.75E-04	1.55E-03	2.03E-03	4.38E-03
Halls (optional)		Optional/external	Optional/external	Optional/external	Internal	Internal

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Omni UTH High Performance Motors

SIZE		UTH-230		UTH-434	UTH-533	
MODEL NUMBER		UTH-230-A-32-A-x-000	UTH-230-A-32-F-x-000	UTH-434-A-92-A-x-000	UTH-533-A-50-A-x-000	UTH-533-A-50-B-x-000
PERFORMANCE SPECIFICATIONS						
Continuous Torque	Nm	15.81	15.903	53.62	80.91	74.72
	oz-in	2239	2252	7593	11457	10581
Peak Torque	Nm	47.42	47.708	160.85	242.72	224.15
	oz-in	6716	6080	22778	34372	31743
ELECTRICAL SPECIFICATIONS						
Continuous Current	Amp	15.7	3.50	15.0	3.5	40.8
Resistance	Ohm	0.52	10.50	1.00	18.50	0.14
Inductance	mH	1.10	18.30	5.10	95.00	0.60
Ke	V/krpm	117.0	476.00	416.0	2700.0	213.0
Kt	Nm/amp	1.117	4.54	3.972	25.778	2.034
Kt sine	Nm/amp	0.967	3.94	3.439	22.323	1.761
Km	$Nm/w^{½}$	1.549	1.40	3.972	5.993	5.535
THERMAL SPECIFICATIONS						
Thermal Resistance	°C/w	0.7	0.7	0.4	0.4	0.4
MECHANICAL SPECIFICATIONS						
Stator OD	mm	230.00	229.99	441.96	533.40	533.40
Stator ID	mm	184.66	184.91	377.44	463.80	463.80
Rotor OD	mm	183.13	183.13	364.74	459.74	459.74
Rotor ID	mm	159.99	159.99	0.00	431.80	431.80
Stator Length	mm	32.21	32.20	91.44	50.29	50.29
End Turn, Lead Side	mm	5.99	6.35	22.86	14.35	14.35
Stack Height	mm	19.51	19.50	45.72	21.59	21.59
End Turn, Non-Lead Side	mm	6.71	6.35	22.86	14.35	14.35
Weight	kg	n/a	2.98	n/a	n/a	n/a
Poles Count	#	32	32.00	24	60	60
Rotor Inertia	$lb\text{-}in\text{-}sec^2$	0.069	7.11E-02	n/a	n/a	n/a
	$kg\text{-}m^2$	7.80E-03	8.03E-03	n/a	n/a	n/a
Halls (optional)		External	Optional/external	External	External	External

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Omni™ Series Motors

Low-Profile Direct Drive Motors for the World's Machines and Robots

Omni ULT Ultra Thin Motors

SIZE		ULT-45	ULT-63				
MODEL NUMBER		ULT-45-A-10-A-x-00x	ULT-63-A-8-A-x-00x	ULT-63-A-8-F-x-00x	ULT-63-A-18-C-x-00x	ULT-63-B-18-B-x-00x	ULT-63-C-18-A-x-00x
PERFORMANCE SPECIFICATIONS							
Continuous Torque	Nm	0.043	0.091	0.094	0.242	0.204	0.191
	oz-in	6	13	13.0	34	29	27
Peak Torque	Nm	0.129	0.272	0.282	0.725	0.613	0.572
	oz-in	18	39	40	103	87	81
ELECTRICAL SPECIFICATIONS							
Continuous Current	Amp	1.4	5.6	3.9	3.2	2.00	4.20
Resistance	Ohm	10.00	0.96	1.96	3.00	7.50	1.70
Inductance	mH	1.10	0.12	0.26	0.45	1.20	0.24
Ke	V/krpm	3.2	1.7	2.5	8.0	10.7	4.8
Kt	Nm/amp	0.031	0.016	0.024	0.073	0.102	0.045
Kt sine	Nm/amp	0.026	0.014	0.021	0.064	0.088	0.039
Km	$Nm/w^{½}$	0.010	0.017	0.017	0.420	0.037	0.035
THERMAL SPECIFICATIONS							
Thermal Resistance	°C/w	4.5	3.0	3.0	3.0	3.0	3.0
MECHANICAL SPECIFICATIONS							
Stator OD	mm	43.18	63.50	63.50	63.50	63.50	63.50
Stator ID	mm	33.53	49.53	49.53	49.53	50.04	49.53
Rotor OD	mm	32.00	48.39	48.39	48.39	48.39	48.39
Rotor ID	mm	25.40	38.10	38.10	38.10	38.10	38.10
Stator Length	mm	10.67	8.26	9.27	18.24	18.24	18.24
End Turn, Lead Side	mm	2.79	1.78	1.78	2.03	2.03	2.03
Stack Height	mm	5.08	4.57	4.57	13.72	13.72	13.72
End Turn, Non-Lead Side	mm	2.79	1.91	2.92	2.49	2.49	2.49
Weight	kg	0.032	0.060	0.051	0.173	0.173	0.173
Poles Count	#	12.0	12.0	12.0	12.0	12.0	12.0
Rotor Inertia	$lb\text{-}in\text{-}sec^2$	2.93E-05	1.18E-04	1.18E-04	3.42E-04	3.42E-04	3.42E-04
	$kg\text{-}m^2$	3.31E-06	1.33E-05	1.33E-05	3.86E-05	3.86E-05	3.86E-05
Halls (optional)		External	External	External	Optional/External	Optional/External	Optional/External

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Omni™ Series Motors

Low-Profile Direct Drive Motors for the World's Machines and Robots

Omni ULT Ultra Thin Motors

SIZE		ULT-100			
MODEL NUMBER		ULT-100-A-15-A-x-00x	ULT-100-A-15-C-x-00x	ULT-100-A-15-D-x-00x	ULT-100-A-24-A-x-00x
PERFORMANCE SPECIFICATIONS					
Continuous Torque	Nm	0.671	0.706	0.692	1.179
	oz-in	95	100	98	167
Peak Torque	Nm	2.013	2.118	2.076	3.538
	oz-in	285	300	294	501
ELECTRICAL SPECIFICATIONS					
Continuous Current	Amp	4.00	9.3	10.4	4.30
Resistance	Ohm	3.75	0.70	0.55	3.30
Inductance	mH	6.70	1.40	1.10	9.70
Ke	V/krpm	17.5	8.0	7.0	29.0
Kt	Nm/amp	0.124	0.076	0.066	0.277
Kt sine	Nm/amp	0.167	0.066	0.057	0.239
Km	$Nm/w^{½}$	0.145	0.091	0.089	0.152
THERMAL SPECIFICATIONS					
Thermal Resistance	°C/w	1.5	1.5	1.5	1.5
MECHANICAL SPECIFICATIONS					
Stator OD	mm	101.60	101.60	101.60	101.60
Stator ID	mm	55.63	55.63	55.63	55.63
Rotor OD	mm	54.61	54.61	54.61	54.61
Rotor ID	mm	48.26	48.26	48.26	43.18
Stator Length	mm	14.73	17.48	17.48	24.39
End Turn, Lead Side	mm	3.05	4.45	4.45	4.70
Stack Height	mm	8.89	8.89	8.89	15.24
End Turn, Non-Lead Side	mm	2.79	4.45	4.45	4.45
Weight	kg	0.360	0.371	0.371	0.716
Poles Count	#	16.0	16.0	16.0	16.0
Rotor Inertia	$lb\text{-}in\text{-}sec^2$	3.79E-04	3.79E-04	3.79E-04	7.46E-04
	$kg\text{-}m^2$	4.28E-05	4.28E-05	4.28E-05	8.43E-05
Halls (optional)		Optional/Internal	Optional/Internal	Optional/Internal	Optional/Internal

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Omni™ Series Motors

Low-Profile Direct Drive Motors for the World's Machines and Robots

Omni ULT Ultra Thin Motors

SIZE		ULT-100		ULT-127				
MODEL NUMBER		ULT-100-A-24-C-x-00x	ULT-100-A-24-E-x-00x	ULT-127-B-19-A-x-00x	ULT-127-A-30-A-x-00x	ULT-127-A-30-C-x-00x	ULT-127-A-30-D-x-00x	ULT-127-A-45-A-x-00x
PERFORMANCE SPECIFICATIONS								
Continuous Torque	Nm	1.179	1.073	1.702	3.135	2.655	3.199	4.576
	oz-in	167	152	241	444	376	453	648
Peak Torque	Nm	3.538	3.220	5.106	9.406	7.965	9.597	13.728
	oz-in	501	456	723	1332	1128	1359	1944
ELECTRICAL SPECIFICATIONS								
Continuous Current	Amp	7.4	19.4	5.50	5.50	32.7	14.40	6.70
Resistance	Ohm	1.10	0.16	2.50	2.50	0.07	0.36	2.00
Inductance	mH	3.20	3.20	5.60	6.50	0.13	0.80	5.20
Ke	V/krpm	22.6	22.6	32.5	63.9	8.5	23.2	71.4
Kt	Nm/amp	0.159	0.055	0.310	0.610	0.081	0.221	0.682
Kt sine	Nm/amp	0.138	0.048	0.269	0.530	0.070	0.192	0.590
Km	Nm/$w^{½}$	0.152	0.138	0.196	0.356	0.307	0.369	0.482
THERMAL SPECIFICATIONS								
Thermal Resistance	°C/w	1.5	1.5	1.2	1.2	1.2	1.2	1.0
MECHANICAL SPECIFICATIONS								
Stator OD	mm	101.60	101.60	130.18	130.18	130.18	130.18	130.18
Stator ID	mm	55.63	55.63	98.04	98.04	98.04	98.04	98.04
Rotor OD	mm	54.61	54.61	96.52	96.52	96.52	96.52	96.52
Rotor ID	mm	43.18	43.18	81.03	82.60	82.60	82.55	73.15
Stator Length	mm	24.64	24.64	18.92	30.10	30.48	30.48	47.88
End Turn, Lead Side	mm	4.70	4.70	4.57	7.24	7.62	7.62	6.48
Stack Height	mm	15.24	15.24	10.16	17.78	17.78	17.78	35.05
End Turn, Non-Lead Side	mm	4.70	4.70	4.19	5.08	5.08	5.08	6.35
Weight	kg	0.723	0.715	0.560	0.920	0.720	0.900	2.130
Poles Count	#	16.0	16.0	24.0	24.0	24.0	24.0	24.0
Rotor Inertia	lb-in-sec^2	7.46E-04	7.46E-04	3.56E-03	5.63E-03	5.63E-03	5.63E-03	1.70E-02
	kg-m^2	8.43E-05	8.43E-05	4.02E-04	6.36E-04	6.36E-04	6.36E-04	1.92E-03
Halls (optional)		Optional/ Internal	Optional/ Internal	Optional/ Internal	Optional/ Internal	Optional/ Internal	Optional/ Internal	Optional/ Internal

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Omni™ Series Motors

Low-Profile Direct Drive Motors for the World's Machines and Robots

Omni ULT Ultra Thin Motors

SIZE		ULT-165						
MODEL NUMBER		ULT-165-A-12-A-x-00x	ULT-165-A-12-B-x-00x	ULT-165-A-12-D-x-00x	ULT-165-A-18-B-x-00x	ULT-165-A-18-C-x-00x	ULT-165-A-38-A-x-00x	ULT-165-A-38-B-x-00x
PERFORMANCE SPECIFICATIONS								
Continuous Torque	Nm	1.398	1.342	1.885	3.510	3.474	6.581	5.633
	oz-in	198	190	267	497	492	932	798
Peak Torque	Nm	4.195	4.025	5.656	10.529	10.423	19.744	16.899
	oz-in	594	570	801	1491	1476	2796	2393
ELECTRICAL SPECIFICATIONS								
Continuous Current	Amp	2.60	4.90	11.00	6.50	9.30	6.3	8.7
Resistance	Ohm	13.70	3.70	0.75	2.40	1.15	3.00	1.50
Inductance	mH	13.30	3.50	1.50	5.00	2.60	6.90	3.20
Ke	V/krpm	57.0	28.5	18.0	52.5	39.0	109.0	75.7
Kt	Nm/amp	0.544	0.272	0.172	0.500	0.372	1.041	0.723
Kt sine	Nm/amp	0.590	0.236	0.149	0.434	0.322	0.901	0.626
Km	$Nm/w^{½}$	0.482	0.141	0.198	0.323	0.347	0.601	0.590
THERMAL SPECIFICATIONS								
Thermal Resistance	°C/w	1.0	1.0	1.0	0.9	0.9	0.8	0.8
MECHANICAL SPECIFICATIONS								
Stator OD	mm	165.10	165.10	165.10	165.10	165.10	165.10	165.10
Stator ID	mm	128.52	128.52	128.52	128.52	128.52	128.52	128.52
Rotor OD	mm	127.00	127.00	127.00	127.00	127.00	127.00	127.00
Rotor ID	mm	112.06	112.06	112.01	109.22	109.22	109.22	109.22
Stator Length	mm	11.99	11.99	19.00	19.05	20.96	37.80	38.05
End Turn, Lead Side	mm	3.15	3.15	6.65	3.81	4.70	4.65	4.65
Stack Height	mm	5.69	5.69	5.69	11.43	11.43	28.58	28.58
End Turn, Non-Lead Side	mm	6.65	3.15	6.65	3.81	4.83	4.57	4.83
Weight	kg	0.430	0.434	0.844	0.870	0.870	2.080	1.488
Poles Count	#	36.0	36.0	36.0	36.0	36.0	36.0	36.0
Rotor Inertia	$lb\text{-}in\text{-}sec^2$	5.55E-03	5.55E-03	5.55E-04	3.07E-01	3.07E-01	8.01E-01	0.0080
	$kg\text{-}m^2$	6.27E-04	6.27E-04	6.27E-05	3.47E-02	3.47E-02	9.05E-02	9.0E-04
Halls (optional)		Optional/ Internal	Optional/ Internal	Optional/ Internal	Optional/ Internal	Optional/ Internal	Optional/ Internal	Internal

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Omni™ Series Motors

Low-Profile Direct Drive Motors for the World's Machines and Robots

Omni UTO Outside Running Motors

SIZE		UTO-20	UTO-52	UTO-70	UTO-200		
MODEL NUMBER		UTO-20-A-8-A-N-001	UTO-52-A-18-A-N-000	UTO-70-A-25-A-N-000	UTO-200-A-24-A-N-000	UTO-200-A-24-B-N-000	UTO-200-B-36-A-N-000
PERFORMANCE SPECIFICATIONS							
Continuous Torque	Nm	0.014	0.353	1.087	6.497	5.727	9.102
	oz-in	2	50	154	920	811	1289
Peak Torque	Nm	0.042	1.059	3.262	19.490	17.181	27.307
	oz-in	6	150	462	2760	2433	3867
ELECTRICAL SPECIFICATIONS							
Continuous Current	Amp	2.10	6.90	20.30	4.60	29.30	32.50
Resistance	Ohm	2.65	0.63	0.15	4.20	0.11	0.09
Inductance	mH	0.26	0.40	0.12	7.20	0.14	0.15
Ke	V/krpm	0.6	5.4	5.6	147.0	20.5	29.3
Kt	Nm/amp	0.006	0.052	0.053	1.403	0.196	0.280
Kt sine	Nm/amp	0.005	0.045	0.046	1.215	0.169	0.242
Km	Nm/$w^{½}$	0.004	0.065	0.140	0.685	0.604	0.959
THERMAL SPECIFICATIONS							
Thermal Resistance	°C/w	8	3	1.5	1	1	1
MECHANICAL SPECIFICATIONS							
Stator OD	mm	15.79	40.89	58.17	171.20	171.20	171.20
Stator ID	mm	8.99	17.84	28.70	100.00	100.00	100.08
Rotor OD	mm	0.78	2.05	2.76	7.84	7.84	7.84
Rotor ID	mm	0.65	1.18	2.36	7.45	7.45	6.93
Stator Length	mm	7.80	17.53	24.58	24.13	29.21	35.56
End Turn, Lead Side	mm	1.04	3.18	4.32	4.83	7.62	10.16
Stack Height	mm	5.72	11.43	15.59	13.97	13.97	15.24
End Turn, Non-Lead Side	mm	1.04	2.92	4.67	5.33	7.62	10.16
Weight	kg	0.033	0.281	0.475	2.400	2.400	3.780
Poles Count	#	12.0	16.0	16.0	30.0	30.0	40.0
Rotor Inertia	lb-in-sec²	3.57E-06	2.76E-04	1.48E-03	7.60E-02	7.60E-02	8.17E-02
	kg-m²	4.03E-07	3.12E-05	1.67E-04	8.59E-03	8.59E-03	9.23E-03
Halls (optional)		Optional/external	Optional/external	Optional/external	Optional/internal	Optional/internal	Optional/internal

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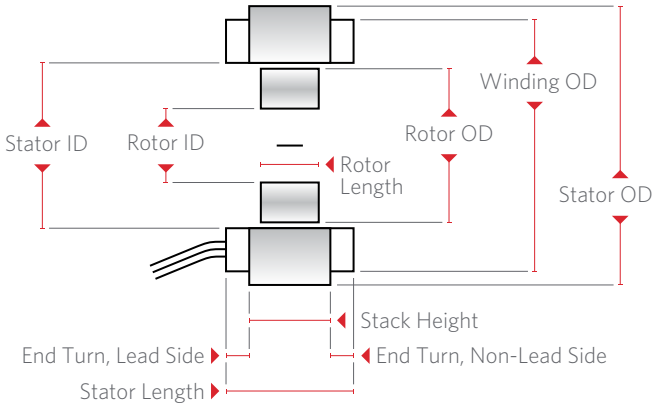
How to Order

Motor

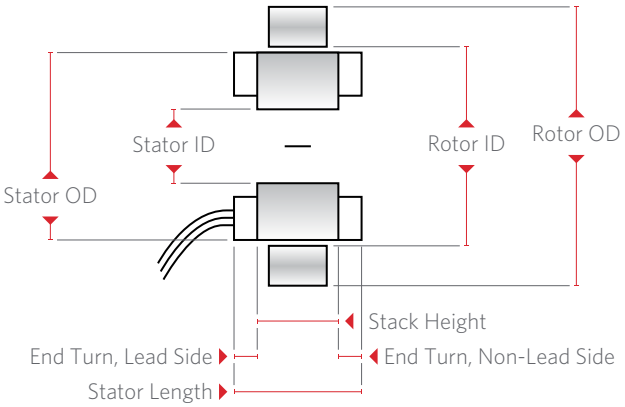
UTH-100-A-25-A-N-000 (example)

- **Mechanical Configuration**
  - 000 = Standard
  - 001 = No back iron
- **Feedback Option**
  - N = None
  - H = Halls
- **Winding Option**
  - Factory code
- **Axial Length**
  - mm
- **Magnetic Attributes**
  - Factory code
- **Diameter**
  - mm
- **Motor Series**
  - UTH = High performance
  - ULT = Ultra thin
  - UTO = Outside rotating

Dimensional Interface — UTH, ULT Models



Dimensional Interface — UTO Models



Notes

1. Ring magnets are limited to 5000 rpm, contact factory for higher speed magnet material.
2. Mechanical speed limits are imposed on all motors, contact factory for special options for higher speeds.
3. Kt value is calculated from the Ke value and is a static value. Amplifier design will impact actual running torque, contact factory.
4. Peak torque output is based on a 3:1 peak to continuous current ratio in the amplifier, and is limited to 10% duty cycle.
5. Dimensions are for -N-000 configurations; consult celeramotion.com or contact us for other configurations.

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