

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

Unimotor hd 230 V | 460 V

Compact, Powerful High Dynamic AC Servo Motors

Designed for maximum torque density, the Unimotor hd brushless AC Servo motor series provides an exceptionally compact, low inertia solution for applications that require very high torque during rapid acceleration and deceleration profiles. Unimotor hd motors fitted with high resolution SinCos or absolute encoders are pre-loaded with the motor "electronic nameplate" data during the manufacturing process. This data can be read by most Control Techniques' servo drives and used to automatically optimize the drive settings. This feature simplifies commissioning and maintenance, ensures consistent performance and saves time.

The Unimotor hd torque profile is closely matched to Digitax ST Servo drives providing up to 300% peak overload for maximum dynamic performance.

Key Features

- Torque range: 6.4 to 752 lb-in (0.72 to 85.0 Nm)
- High torque-to-inertia ratio for high-dynamic performance
- Compact and powerful
- Optional holding brake
- IP65 conformance
- Segmented stator design
- World class performance
- Winding to suit 230 V and 460 V
- Speeds include 2000, 3000, 4000 and 6000 rpm
- Large shafts to increase torsional rigidity
- Multiple feedback options:
  - Incremental encoder: High accuracy, medium resolution
  - Absolute: Medium accuracy, medium resolution, single-turn and multi-turn
  - SinCos/absolute: High accuracy, high resolution, single-turn and multi-turn
  - HIPERFACE (SICK) and EnDat (Heidenhain) protocols supported
  - Resolver: Robust for extreme applications and conditions; lower accuracy, medium resolution

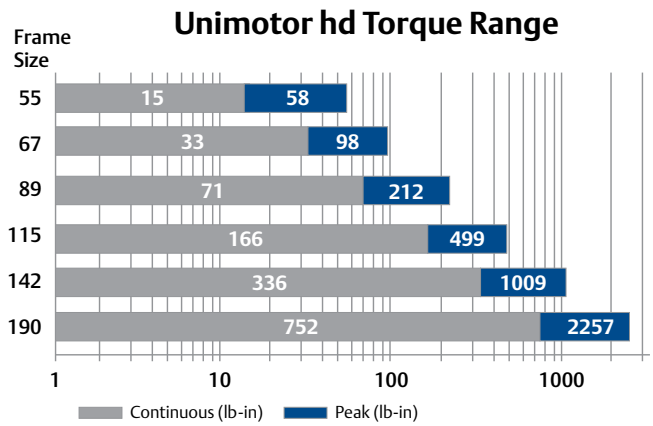
Approvals

RoHS Compliant

FM30610



Unimotor hd motors (shown with a Digitax ST Servo drive).





All Unimotor hd motors feature connections that rotate for easier cable routing and installation.

Unimotor hd 230 V | 460 V

Order Code information

Use the information below to create an order code for a Unimotor hd (top row is an example).

089	UD	B	30	5	B	A	CA		A	XXX	XXX
Frame Size	Motor Voltage	Stator Length	Speed	Brake (24 V)	Connection Type	Output Shaft	Feedback Device		Inertia	BCD	Shaft Diameter
		055 - 089 Frames	055 - 067 Frames	055 - 190 Frames	055 - 115 Frames		055 & 067 Frames		055-190 Frames	055 Frame Only‡	
055	**ED =** 230 V	A	**30 =** 3000 rpm	**0 =** Not Fitted	**B =** Power size 1.0 and Signal 90° and Rotatable	**A =** Keyway w/ full key installed	**AR** = Resolver		**A =** Std. + PTC	063	9.0 A-C
067	**UD =** 460 V	B	**60 =** 6000 rpm				**CR** = Incremental Encoder*****	4096 ppr (R35I)			11.0 A-C
089		C	**089 Frame**	**5 =** Holding Brake**			**EM** = Sin/Cos Inductive Multi-turn*****	EQI 1130	**C =** Std. + KTY84-130*		14.0 A-C
115		**115 Frame**	**30 =** 3000 rpm				**FM** = Sin/Cos Inductive Single-turn	ECI 1118			
142		B	**40 =** 4000 rpm	**6 =** Parking Brake‡	**D** = Hybrid power and signal 90° size 1.0*	**F=** Keyway w/ full & half key*** provided	**TL** = Optical Sin/Cos Multi-turn	SKM36			
190		C	**60 =** 6000 rpm				**UL** = Optical Sin/Cos Single-turn	SKS36			
		D	**115 Frame**		**142 Frame†**		**EG** = Inductive serial Multi-turn EnDat	EQI 1131*			
		142 Frame	**20 =** 2000 rpm		**B =** Power size 1.0 and Signal 90° and Rotatable		**FG** = Inductive serial Single-turn EnDat	ECI 1119*			
		C	**30 =** 3000 rpm		**D** = Hybrid power and signal 90° size 1.0*		**EN** = Optical serial Multi-turn EnDat	EQN 1135*			
		D	**142 Frame**		**E** = Hybrid power and signal 90° size 1.5*		**FN** = Optical serial Single-turn EnDat	ECN 1123*			
		E	**10 =** 1000 rpm		**J =** Power size 1.5 and Signal 90° Rotatable		**089 - 190 Frames**				
		190 Frame	**15 =** 1500 rpm		**190 Frame**		**AE** = Resolver				
		C	**20 =** 2000 rpm		**E =** Hybrid power and signal 90° size 1.5*		**CA** = Incremental Encoder*****	4096 ppr (CFS50)			
		D	**30 =** 3000 rpm		**J =** Power size 1.5 and signal 90° and Rotatable		**EB** = Sin/Cos Optical Multi-turn EnDat	EQN 1325			
		F	**190 Frame**				**FB** = Sin/Cos Optical Single-turn EnDat	ECN 1313			
			10 = 1000 rpm				**EC** = Inductive Multi-turn EnDat*****	EQI 1331****			
			15 = 1500 rpm				**FC** = Inductive Single-turn EnDat	ECI 1319****			
			20 = 2000 rpm				**RA** = Sin/Cos Optical Multi-turn Hiperface†	SRM 50 (GEN 2)			
							SA = Sin/Cos Optical Single-turn Hiperface	SRS 50 (GEN 2)			
							EF = Inductive serial Multi-turn EnDat	EQI 1331*			
							FF = Inductive serial Single-turn EnDat	ECI 1319*			
							BG = Optical serial Multi-turn EnDat	EQN 1337*			
							HB = Optical serial Single-turn EnDat	ECN 1325*			

142 hd Frames using connection type E or J			
Motor	**Frame**	**RPM**	**Order Code**
142ED	C	2000	E or J
	D	2000	E or J
	E	2000	E or J
142ED	C	3000	E or J
	D	3000	E or J
142UD	D	3000	E or J
	E	3000	E or J

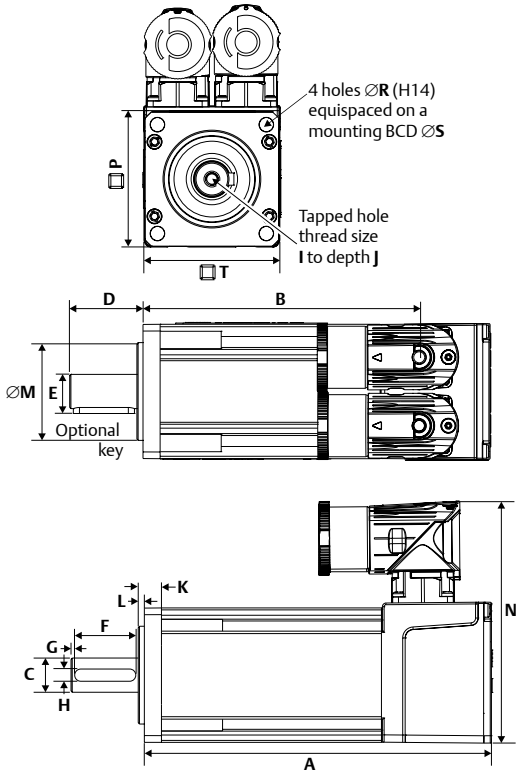
NOTES:
*Single cable option
**Holding brakes are not designed for dynamic use
***Half key provided to create a smooth shaft and balance
****Bearingless design recommenced for light duty applications only.
*****Express Availability motor standard feedback.
†Refe tings and Dimensions table for connector size data
‡Add **Bolt Circle Diameter (BCD) and Shaft Diameter** code for 055 frame only (11 and 14 mm are standard). ex. 055EDC600BACRA**063110**



The Unimotor hd series servo motor expands the capabilities of Control Techniques motion systems that provide high torque in a small size as well as support for incremental encoders, absolute encoders and resolver motor feedback.

Unimotor hd 55 mm Frame Ratings and Dimensions

Motor Frame Size (mm)		055ED			055UD		
Voltage (Vrms)		230			460		
Frame Length		A	B	C	A	B	C
Continuous Stall Torque (lb-in)		6.37	10.44	14.6	6.37	10.44	14.6
Continuous Stall Torque (Nm)		0.72	1.18	1.65	0.72	1.18	1.65
Peak Torque (lb-in)		25.49	41.78	58.42	25.49	41.78	58.42
Peak Torque (Nm)		2.88	4.72	6.6	2.88	4.72	6.6
Inertia (lb-in-sec²)		0.00012	0.00022	0.00032	0.00012	0.00022	0.00032
Inertia (kgm²)		0.000014	0.000025	0.000036	0.000014	0.000025	0.000036
Motor Weight (lb)		2.64	3.3	3.96	2.64	3.3	3.96
Motor Weight (kg)		1.2	1.5	1.8	1.2	1.5	1.8
Number of Poles		8	8	8	8	8	8
3000 rpm	Kt (lb-in/A) =	6.55	7.7	8.05	6.55	13.19	14.6
	Kt (Nm/A) =	0.74	0.87	0.91	0.74	1.49	1.65
	Ke (V/k rpm) =	45	52.5	55	45	90	100
Rated Torque (lb-in)		6.2	9.29	13.1	6.2	9.29	13.1
Rated Torque (Nm)		0.7	1.05	1.48	0.7	1.05	1.48
Stall Current (A)		0.97	1.36	1.81	0.97	0.79	1
Rated Power (HP)		0.29	0.44	0.62	0.29	0.44	0.62
Rated Power (kW)		0.22	0.33	0.46	0.22	0.33	0.46
R (ph-ph) (Ohms)		28.0	14.12	9.53	28.0	45.0	31.0
L (ph-ph) (mH)		50.0	32.00	23.0	50.0	100.0	75.0
6000 rpm	Kt (lb-in/A) =	3.98	3.81	4.25	6.55	6.99	7.35
	Kt(Nm/A) =	0.45	0.43	0.48	0.74	0.79	0.83
	Ke (V/k rpm) =	27	26	29	45	47.5	50
Rated Torque (lb-in)		6.02	7.97	10.62	6.02	7.97	10.62
Rated Torque (Nm)		0.68	0.9	1.2	0.68	0.9	1.2
Stall Current (A)		1.61	2.74	3.44	0.97	1.49	1.99
Rated Power (HP)		0.58	0.76	1.01	0.58	0.76	1.01
Rated Power (kW)		0.43	0.57	0.75	0.43	0.57	0.75
R (ph-ph) (Ohms)		8.50	3.55	2.38	28.00	10.70	7.80
L (ph-ph) (mH)		16.00	8.20	6.30	50.00	25.00	20.00



Shaft Dimensions		Shaft Diameter Code					
		9.0 mm		11.0 mm		14.0 mm	
		(in)	(mm)	(in)	(mm)	(in)	(mm)
Shaft Diameter (J6)	C	0.354	9.0	0.433	11.0	0.551	14.0
Shaft Length	D	0.790	20.0	0.906	23.0	1.181	30.0
Key Height	E	0.402	10.2	0.492	12.5	0.629	16.0
Key Length	F	0.591	15.0	0.591	15.0	0.886	22.0
Key-to-Shaft End	G	0.039	1.0	0.059	1.5	0.142	3.6
Key Width (H9)	H	0.118	3.0	0.157	4.0	0.197	5.0
Tapped Hole Thread Size	I	M4 x 10		M4 x 10		M5 x 12.5	
Tapped Hole Depth	J	0.394	10.0	0.531	13.5	0.492	12.5

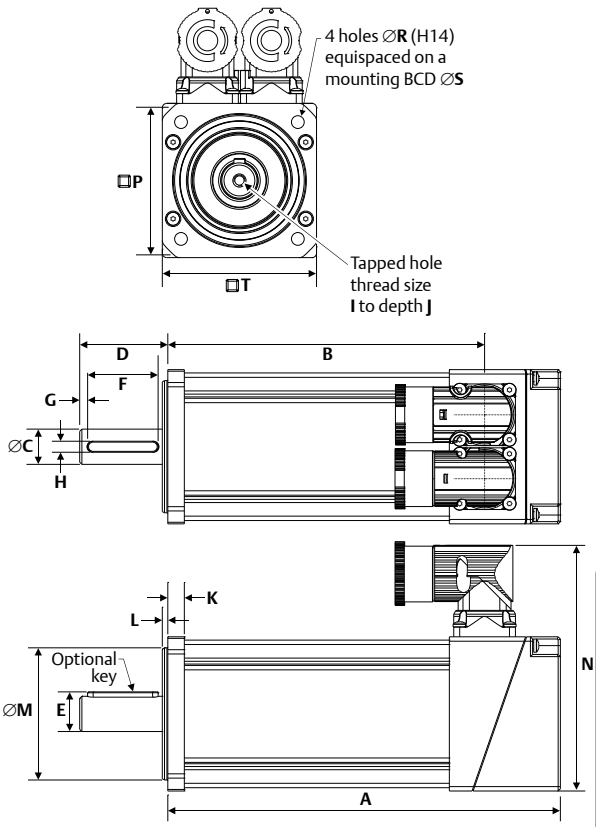
Motor Dimensions		Frame Length					
		A		B		C	
		(in)	(mm)	(in)	(mm)	(in)	(mm)
Unbraked Length	A	4.65	118	5.59	142	6.54	166
	B	3.55	90	4.49	114	5.43	138
Braked Length	A	6.22	158	7.17	182	8.11	206
	B	5.12	130	6.06	154	7.01	178

Flange Dimensions		BCD Code	
		Standard	
		063	
		(in)	(mm)
Flange Thickness	K	0.276	7.0
Pilot Thickness	L	0.098	2.5
Pilot Diameter (J6)	M	1.584	40.0
Flange Square	N	3.897	99.0
Mounting Hole Diameter (H14)	P	2.165	55.0
Mounting Hole BCD	R	0.228	5.8
Motor Housing	S	2.480	63.0
Terminal Box Width	T	2.115	55.0
Mounting Bolts		M5	

Unimotor hd 67 mm Frame Ratings and Dimensions

Motor Frame Size (mm)		067ED			067UD		
Voltage (Vrms)		230			460		
Frame Length		A	B	C	A	B	C
Continuous Stall Torque (lb-in)		12.8	22.6	32.7	12.8	22.5	32.7
Continuous Stall Torque (Nm)		1.45	2.55	3.70	1.45	2.55	3.70
Peak Torque (lb-in)		38.5	67.7	98.2	38.5	67.7	98.2
Peak Torque (Nm)		4.35	7.65	11.10	4.35	7.65	11.10
Inertia (lb-in-sec^2)		0.00027	0.00047	0.00066	0.00027	0.00047	0.00066
Inertia (kgm^2)		0.000030	0.000053	0.000075	0.000030	0.000053	0.000075
Motor Weight (lb)		4.40	5.72	7.04	4.41	5.73	7.05
Motor Weight (kg)		2.00	2.60	3.20	2.00	2.60	3.20
Number of Poles		10	10	10	10	10	10
3000 rpm	Kt (lb-in/A) =	8.23			7.08	14.16	
	Kt (Nm/A) =	0.93			0.80	1.60	
	Ke (V/k rpm) =	57.0			49.0	98.0	
Rated Torque (lb-in)		12.4	21.7	31.0	12.4	21.7	31.0
Rated Torque (Nm)		1.40	2.45	3.50	1.40	2.45	3.50
Stall Current (A)		1.56	2.74	3.98	1.81	1.59	2.31
Rated Power (HP)		0.59	1.03	1.48	0.59	1.03	1.48
Rated Power (kW)		0.44	0.77	1.10	0.44	0.77	1 .10
R (ph-ph) (Ohms)		14.92	4.88	3.33	11.69	15.20	10.70
L (ph-ph) (mH)		45.43	17.40	12.70	35.18	54.20	40.80
6000 rpm	Kt (lb-in/A) =	4.16			7.08		
	Kt (Nm/A) =	0.47			0.80		
	Ke (V/k rpm) =	28.5			49.0		
Rated Torque (lb-in)		11.5	19.5		11.5	19.5	27.4
Rated Torque (Nm)		1.30	2.20		1.30	2.20	3.10
Stall Current (A)		3.12	5.48		1.81	3.19	4.63
Rated Power (HP)		1.10	1.85		1.10	1.85	2.61
Rated Power (kW)		0.82	1.38		0.82	1.38	1.95
R (ph-ph) (Ohms)		3.86	1.22		11.69	3.79	2.68
L (ph-ph) (mH)		11.06	4.35		35.18	13.60	10.20

NOTES:
Δt= 212 °F (100 °C) winding 104 °F (40 °C) maximum ambient; all data subject to +/-10% tolerance
Stall torque, rated torque and power relate to maximum continuous operation tested in a 68 °F (20 °C) ambient above 12 kHz drive switching frequency
Maximum intermittent winding temperature is 284 °F (140 °C)



Motor Dimensions		Frame Length					
		A		B		C	
		(in)	(mm)	(in)	(mm)	(in)	(mm)
Unbraked Length	A	5.62	142.7	6.80	172.7	7.98	202.7
	B	4.28	108.8	5.46	138.8	6.65	168.8
Braked Length	A	7.00	177.7	8.18	207.7	9.37	237.7
	B	5.66	143.8	6.84	173.8	8.02	203.8

Shaft Dimensions		Shaft Diameter Code	
		14.0 mm	
		(in)	(mm)
Shaft Diameter	C	0.551	14.0
Shaft Length	D	1.181	30.0
Key Height	E	0.629	16.0
Key Length	F	0.964	25.0
Key-to-Shaft End	G	0.142	3.6
Key Width	H	0.197	5.0
Tapped Hole Thread Size	I	M5 x 0.8	
Tapped Hole Depth	J	0.53	13.5

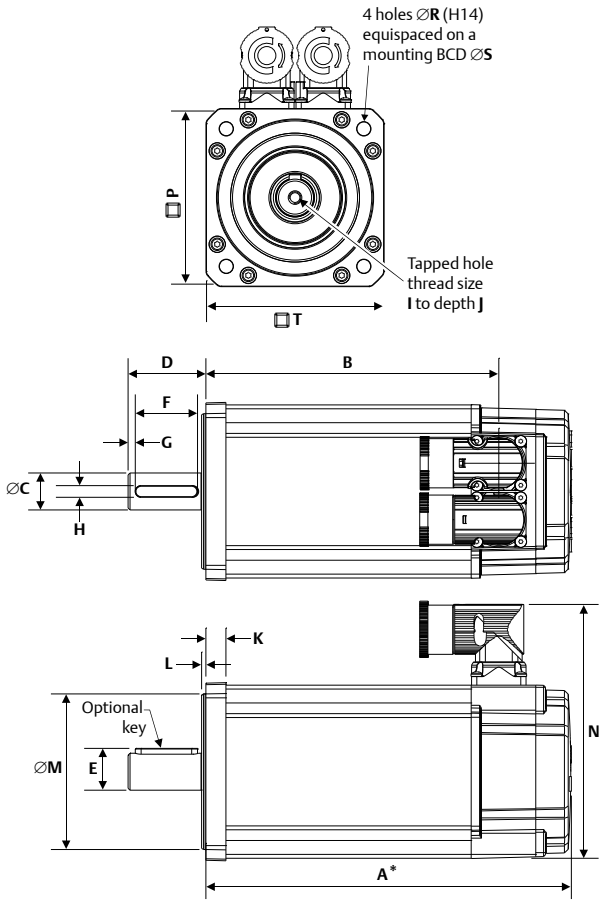
Flange Dimensions		BCD Code	
		Standard	
		075	
		(in)	(mm)
Flange Thickness	K	0.295	7.5
Pilot Thickness	L	0.098	2.5
Pilot Diameter	M	2.362	60.0
Overall Height	N	4.389	111.5
Flange Square	P	2.755	70.0
Mounting Hole Diameter	R	0.228	5.8
Mounting Hole BCD	S	2.953	75.0
Motor Housing	T	2.637	67.0
Mounting Bolts		M5	

Unimotor hd 89 mm Frame Ratings and Dimensions

Motor Frame Size (mm)		089ED			089UD		
Voltage (Vrms)		230			460		
Frame Length		A	B	C	A	B	C
Continuous Stall Torque (lb-in)		28.3	48.7	70.8	28.3	48.7	70.8
Continuous Stall Torque (Nm)		3.20	5.50	8.00	3.20	5.50	8.00
Peak Torque (lb-in)		85.0	146.0	212.4	85.0	146.0	212.4
Peak Torque (Nm)		9.60	16.50	24.00	9.60	16.50	24.00
Inertia (lb-in-sec²)		0.00077	0.00142	0.00207	0.00077	0.00142	0.00207
Inertia (kgm²)		0.000087	0.000161	0.000234	0.000087	0.000161	0.000234
Motor Weight (lb)		6.8	9.2	11.7	6.8	9.2	11.7
Motor Weight (kg)		3.30	4.40	5.50	3.30	4.40	5.50
Number of Poles		10	10	10	10	10	10
3000 rpm	Kt (lb-in/A) =	8.2			14.2		
	Kt (Nm/A) =	0.93			1.60		
	Ke (V/k rpm) =	57.0			98.0		
Rated Torque (lb-in)		26.6	42.9	61.1	26.6	42.9	61.1
Rated Torque (Nm)		3.0	4.85	6.90	3.00	4.85	6.90
Stall Current (A)		3.44	5.91	8.60	2.00	3.44	5.00
Rated Power (HP)		1.26	2.04	2.91	1.26	2.04	2.91
Rated Power (kW)		0.94	1.52	2.17	0.94	1.52	2.17
R (ph-ph) (Ohms)		3.28	1.57	0.89	10.10	5.05	2.68
L (ph-ph) (mH)		21.55	11.84	7.09	65.17	38.36	21.72
4000 rpm	Kt (lb-in/A) =	6.2			10.6		
	Kt (Nm/A) =	0.70			1.20		
	Ke (V/k rpm) =	42.8			73.5		
Rated Torque (lb-in)		25.7	40.3	56.2	25.7	40.3	56.2
Rated Torque (Nm)		2.90	4.55	6.35	2.90	4.55	6.35
Stall Current (A)		4.57	7.86	11.43	2. 67	4.58	6.67
Rated Power (HP)		1.62	2.56	3.57	1.62	2.56	3.57
Rated Power (kW)		1.21	1.91	2.66	1.21	1.91	2.66
R (ph-ph) (Ohms)		2.04	0.79	0.54	6.16	2.47	1.75
L (ph-ph) (mH)		13.20	5.97	4.38	39.78	18.8	14.03
6000 rpm	Kt (lb-in/A) =	4.2			7.1		
	Kt (Nm/A) =	0.47			0.80		
	Ke (V/k rpm) =	28.5			49.0		
Rated Torque (lb-in)		23.5	33.6	44.3	23.5	33.6	44.3
Rated Torque (Nm)		2.65	3.80	5.00	2.65	3.80	5.00
Stall Current (A)		6.88	11.83	17.20	4.00	6.88	10.00
Rated Power (HP)		2.24	3.21	4.21	2.24	3.21	4.21
Rated Power (kW)		1.67	2.39	3.14	1.67	2.39	3.14
R (ph-ph) (Ohms)		0.98	0.39	0.23	2.52	1.27	0.83
L (ph-ph) (mH)		6.24	2.96	1.89	16.29	9.59	6.66

NOTES:
Δt= 212 °F (100 °C) winding 104 °F (40 °C) maximum ambient; all data subject to +/-10% tolerance
Stall torque, rated torque and power relate to maximum continuous operation tested in a 68 °F (20 °C) ambient above 12 kHz drive switching frequency
Maximum intermittent winding temperature is 284 °F (140 °C)

*Motor length increases 0.512 in (13 mm) for feedback options FB, EB, CA, SA and RA; motor length decreases 0.394 in (10 mm) for feedback option AE



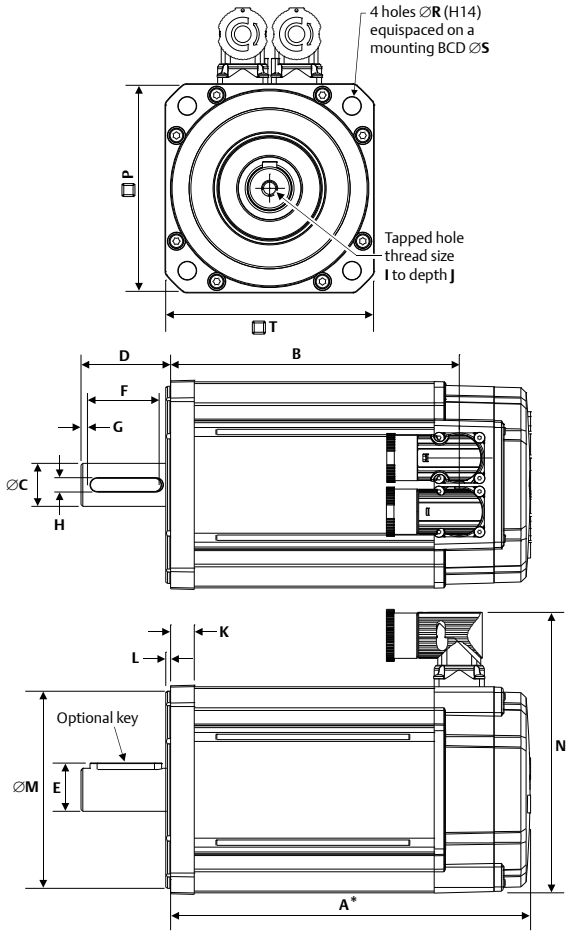
Motor Dimensions			Frame Length A (in)	A (mm)	B (in)	B (mm)	C (in)	C (mm)
Feedback EC and FC only*	Unbraked Length	A*	5.82	147.8	7.00	177.8	8.16	207.8
		B	4.35	110.5	5.53	140.5	6.71	170.5
	Braked Length	A*	7.40	187.9	8.58	217.9	9.76	247.9
		B	5.93	150.6	7.11	180.6	8.29	210.6

Flange Dimensions		(in)	(mm)
Flange Thickness	K	0.406	10.3
Pilot Thickness	L	0.087	2.2
Pilot Diameter	M	3.150	80.0
Overall Height	N	5.140	130.5
Flange Square	P	3.583	91.0
Mounting Hole Diameter	R	0.276	7.0
Mounting Hole BCD	S	3.940	100.0
Motor Housing	T	3.504	89.0
Mounting Bolts		M6	

Shaft Dimensions		(in)	(mm)
Shaft Diameter	C	0.750	19.0
Shaft Length	D	1.575	40.0
Key Height	E	0.850	21.5
Key Length	F	1.260	32.0
Key-to-Shaft End	G	0.146	3.7
Key Width	H	0.236	6.0
Tapped Hole Thread Size	I	M6 x 1.0	
Tapped Hole Depth	J	0.670	17.0

Unimotor hd 115 mm Frame Ratings and Dimensions

Motor Frame Size (mm)		115ED			115UD		
Voltage (Vrms)		230			460		
Frame Length		B	C	D	B	C	D
Continuous Stall Torque (lb-in)		90.3	129.2	166.4	90.3	129.2	166.4
Continuous Stall Torque (Nm)		10.20	14.60	18.80	10.20	14.60	18.80
Peak Torque (lb-in)		270.8	387.6	499.1	270.8	387.6	499.1
Peak Torque (Nm)		30.60	43.80	56.40	30.60	43.80	56.40
Inertia (lb-in-sec²)		0.00390	0.00566	0.00742	0.00391	0.00566	0.00742
Inertia (kgm²)		0.000441	0.000639	0.000838	0.000441	0.000639	0.000838
Motor Weight (lb)		15.87	19.62	23.6	15.87	19.62	23.6
Motor Weight (kg)		7.20	8.90	10.70	7.20	8.90	10.70
Number of Poles		10	10	10	10	10	10
2000 rpm	Kt (lb-in/A) =	12.4			21.2		
	Kt (Nm/A) =	1.40			2.40		
	Ke (V/k rpm) =	85.5			147.0		
Rated Torque (lb-in)		76.1	105.3	138.1	76.1	105.3	138.1
Rated Torque (Nm)		8.60	11.90	15.60	8.60	11.90	15.60
Stall Current (A)		7.29	10.43	13.43	4.25	6.08	7.83
Rated Power (HP)		2.41	3.34	4.38	2.41	3.34	4.38
Rated Power (kW)		1.80	2.49	3.27	1.80	2.49	3.27
R (ph-ph) (Ohms)		1.40	0.77	0.61	4.41	2.41	1.80
L (ph-ph) (mH)		12.84	7.87	6.62	40.59	24.69	19.45
3000 rpm	Kt (lb-in/A) =	8.2			14.2		
	Kt (Nm/A) =	0.93			1.60		
	Ke (V/k rpm) =	57.0			98.0		
Rated Torque (lb-in)		68.2	92.9		68.2	92.9	120.4
Rated Torque (Nm)		7.70	10.50		7.70	10.50	13.60
Stall Current (A)		10.97	15.70		6.38	9.13	11.75
Rated Power (HP)		3.25	4.43		3.25	4.43	5.73
Rated Power (kW)		2.42	3.30		2.42	3.30	4.27
R (ph-ph) (Ohms)		0.58	0.39		1.83	1.21	0.78
L (ph-ph) (mH)		5.40	4.01		16.93	12.72	8.65



NOTES:
Δt= 212 °F (100 °C) winding 104 °F (40 °C) maximum ambient; all data subject to +/-10% tolerance
Stall torque, rated torque and power relate to maximum continuous operation tested in a 68 °F (20 °C) ambient above 12 kHz drive switching frequency
Maximum intermittent winding temperature is 284 °F (140 °C)

Motor Dimensions			Frame Length B (in)	B (mm)	C (in)	C (mm)	D (in)	D (mm)
Feedback EC and FC only*	Unbraked Length	A*	7.63	193.8	8.81	223.8	9.99	253.8
		B	6.06	154.0	7.24	184.0	8.43	214.0
	Braked Length	A*	9.09	230.9	10.27	260.9	11.45	290.9
		B	7. 52	191.1	8.70	221.1	9.89	251.1

Flange Dimensions		(in)	(mm)
Flange Thickness	K	0.519	13.2
Pilot Thickness	L	0.106	2.7
Pilot Diameter	M	4.33	110.0
Overall Height	N	6.16	156.5
Flange Square	P	4.57	116.0
Mounting Hole Diameter	R	0.394	10.0
Mounting Hole BCD	S	5.12	130.0
Motor Housing	T	4.53	115.0
Mounting Bolts		M8	

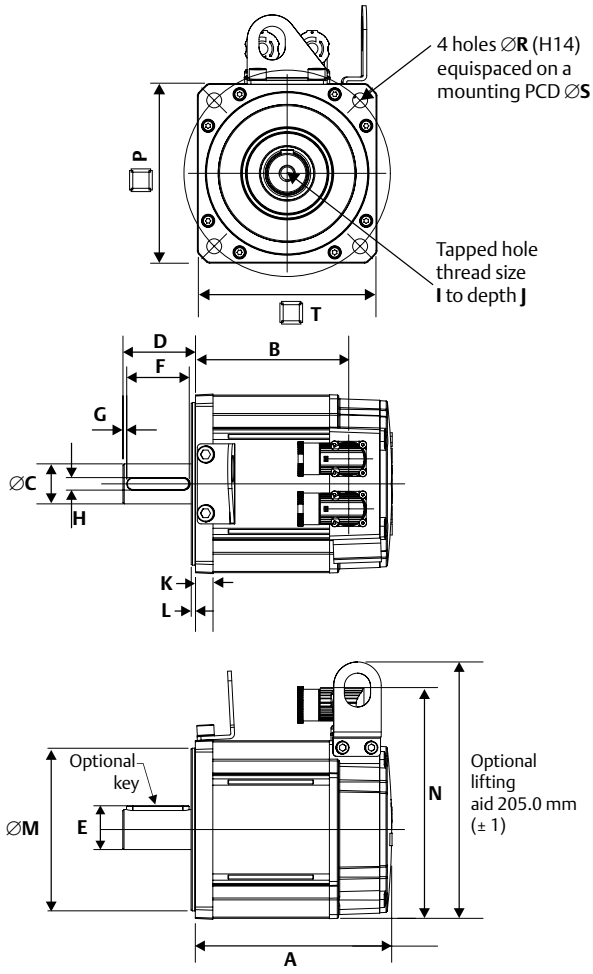
Shaft Dimensions		(in)	(mm)
Shaft Diameter	C	0.945	24.0
Shaft Length	D	1.97	50.0
Key Height	E	1.06	27.0
Key Length	F	1.57	40.0
Key-to-Shaft End	G	0.209	5.3
Key Width	H	0.315	8.0
Tapped Hole Thread Size	I	M8 x 1.25	
Tapped Hole Depth	J	0.79	20.0

*Motor length increases 0.512 in (13 mm) for feedback options FB, EB, CA, SA and RA; motor length decreases 0.394 in (10 mm) for feedback option AE

Unimotor hd 142 mm Frame Ratings and Dimensions

Motor Frame Size (mm)		142ED			142UD		
Voltage (Vrms)		230			460		
Frame Length		C	D	E	C	D	E
Continuous Stall Torque (lb-in)		221.3	278.8	336.3	221.3	278.8	336.3
Continuous Stall Torque (Nm)		25.0	31.5	38.0	25.0	31.5	38.0
Peak Torque (lb-in)		662.9	836.4	1008.9	662.9	836.4	1008.9
Peak Torque (Nm)		74.9	94.5	114.0	74.9	94.5	114.0
Inertia (lb-in-sec²)		.01505	.01956	.02407	.01505	.01956	.02407
Inertia (kgm²)		.0017	.00221	.00272	.0017	.00221	.00272
Motor Weight (lb)		25.4	33.1	40.8	25.4	33.1	40.8
Motor Weight (kg)		11.5	15.0	18.5	11.5	15.0	18.5
Number of Poles		10	10	10	10	10	10
1000 rpm	Kt (lb-in/A) =	24.78					
	Kt (Nm/A) =	2.8					
	Ke (V/k rpm) =	171.0					
Rated Torque (lb-in)		206.2	256.7	305.4			
Rated Torque (Nm)		23.3	29.0	34.5			
Stall Current (A)		8.9	11.2	13.6			
Rated Power (HP)		3.27	4.08	4.84			
Rated Power (kW)		2.44	3.04	3.61			
R (ph-ph) (Ohms)		1.36	0.94	0.72			
L (ph-ph) (mH)		21.34	15.17	12.3			
Power Connector Size		1.0					
1500 rpm	Kt (lb-in/A) =				28.32		
	Kt (Nm/A) =				3.2		
	Ke (V/k rpm) =				196.0		
Rated Torque (lb-in)					197.4	238.9	280.6
Rated Torque (Nm)					22.3	27.0	31.7
Stall Current (A)					7.8	9.8	11.9
Rated Power (HP)					4.69	5.63	6.71
Rated Power (kW)					3.5	4.2	5.0
R (ph-ph) (Ohms)					1.36	0.94	0.72
L (ph-ph) (mH)					21.34	15.17	12.3
Power Connector Size					1.0		
2000 rpm	Kt (lb-in/A) =	12.39			21.24		
	Kt (Nm/A) =	1.4			2.4		
	Ke (V/k rpm) =	85.5			147.0		
Rated Torque (lb-in)		189.4	227.5	261.9	189.4	227.5	261.9
Rated Torque (Nm)		21.4	25.7	29.6	21.4	25.7	29.6
Stall Current (A)		17.8	22.5	27.1	10.4	13.1	15.8
Rated Power (HP)		6.01	7.21	8.31	6.01	7.21	8.31
Rated Power (kW)		4.48	5.38	6.2	4.48	5.38	6.2
R (ph-ph) (Ohms)		0.34	0.24	0.18	0.79	0.62	0.49
L (ph-ph) (mH)		5.33	3.79	3.07	12 .15	9.66	8.34
Power Connector Size		1.5*			1.0		
3000 rpm	Kt (lb-in/A) =	8.23			14.16		
	Kt (Nm/A) =	0.93			1.6		
	Ke (V/k rpm) =	57.0			98.0		
Rated Torque (lb-in)		162.8	184.9		162.8	184.9	203.6
Rated Torque (Nm)		18.4	20.9		18.4	20.9	23.0
Stall Current (A)		26.9	33.9		15.6	19.7	23.8
Rated Power (HP)		7.75	8.81		7.75	8.81	9.70
Rated Power (kW)		5.78	6.57		5.78	6.57	7.23
R (ph-ph) (Ohms)		0.12	0.10		0.34	0.24	0.18
L (ph-ph) (mH)		1.90	1.57		5.33	3.79	3.07
Power Connector Size		1.5*			1.0	1.5*	

*These frames use Order Code Connection Type option "J".



Motor Dimensions		Frame Length C (in)	C (mm)	D (in)	D (mm)	E (in)	E (mm)
Unbraked Length	A	8.54	217.0	9.72	247.0	10.91	277.0
	B	7.19	182.5	8.37	212.5	9.55	242.5
Braked Length	A	11.12	282.5	12.30	312.5	13.48	342.5
	B	9.76	248.0	10.94	278.0	12.13	308.0

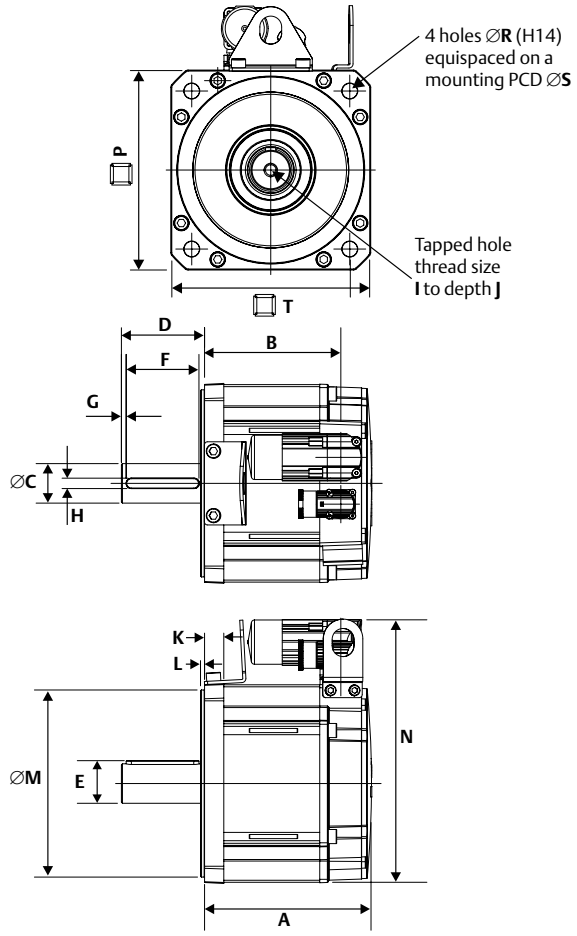
Flange Dimensions		(in)	(mm)
Flange Thickness	K	0.551	14.00
Pilot Thickness	L	0.134	3.40
Pilot Diameter	M	5.120	130.0
Overall Height	N	4.1/8.1*	104/205*
Flange Square	P	5.591	142.0
Mounting Hole Dia.	R	0.472	12.0
Mounting Hole BCD	S	6.500	165.0
Motor Housing	T	5.591	142.0
Mounting Bolts		M10	

Shaft Dimensions		(in)	(mm)
Shaft Diameter	C	1.260	32.0
Shaft Length	D	2.283	58.0
Key Height	E	1.380	35.0
Key Length	F	1.970	50.0
Key-to-Shaft End	G	0.118	3.0
Key Width	H	0.394	10.0
Tapped Hole Thread Size	I	M12 x 1.75	
Tapped Hole Depth	J	1.142	29.0

Unimotor hd 190 mm Frame Ratings and Dimensions

Motor Frame Size (mm)		190ED			190UD		
Voltage (Vrms)		230			460		
Frame Length		C	D	F	C	D	F
Continuous Stall Torque (lb-in)		460.2	548.7	752.3	460.2	548.7	752.3
Continuous Stall Torque (Nm)		52.0	62.0	85.0	52.0	62.0	85.0
Peak Torque (lb-in)		1380.7	1646.2	2256.9	1380.7	1646.2	2256.9
Peak Torque (Nm)		156.0	186.0	255.0	156.0	186.0	255.0
Inertia (lb-in-sec²)		.04833	.06275	.09161	.04833	.06275	.09161
Inertia (kgm²)		.00546	.00709	.0103	.00546	.00709	.0103
Motor Weight (lb)		51.8	66.1	85.5	51.8	66.1	85.5
Motor Weight (kg)		23.5	28.6	38.8	23.5	28.6	38.6
Number of Poles		10	10	10	10	10	10
1000 rpm	Kt (lb-in/A) =	24.78					
	Kt (Nm/A) =	2.8					
	Ke (V/k rpm) =	171.0					
Rated Torque (lb-in)		433.7	500.1	685.9			
Rated Torque (Nm)		49.0	56.5	77.5			
Stall Current (A)		18.6	22.1	30.4			
Rated Power (HP)		6.88	7.94	10.89			
Rated Power (kW)		5.13	5.92	8.12			
R (ph-ph) (Ohms)		0.47	0.4	0.23			
L (ph-ph) (mH)		12.3	10.4	6.79			
1500 rpm	Kt (lb-in/A) =				28.32		
	Kt (Nm/A) =				3.2		
	Ke (V/k rpm) =				196.0		
Rated Torque (lb-in)					408.9	462.0	606.3
Rated Torque (Nm)					46.2	52.2	68.5
Stall Current (A)					16.3	19.4	26.6
Rated Power (HP)					9.74	11.00	14.43
Rated Power (kW)					7.26	8.2	10.76
R (ph-ph) (Ohms)					0.47	0.4	0.23
L (ph-ph) (mH)					12.3	10.4	6.79
2000 rpm	Kt (lb-in/A) =	12.39			21.24		
	Kt (Nm/A) =	1.4			2.4		
	Ke (V/k rpm) =	85.5			147		
Rated Torque (lb-in)		376.2			376.2		
Rated Torque (Nm)		42.5			42.5		
Stall Current (A)		37.1			21.7		
Rated Power (HP)		11.9			11.9		
Rated Power (kW)		8.9			8.9		
R (ph-ph) (Ohms)		0.12			0.34		
L (ph-ph) (mH)		3.07			8.2		

NOTES:
Δt= 212 °F (100 °C) winding 104 °F (40 °C) maximum ambient; all data subject to +/-10% tolerance
Stall torque, rated torque and power relate to maximum continuous operation tested in a 68 °F (20 °C) ambient above 12 kHz drive switching frequency
Maximum intermittent winding temperature is 284 °F (140 °C)



Motor Dimensions		Frame Length					
		C		D		E	
		(in)	(mm)	(in)	(mm)	(in)	(mm)
Unbraked Length	A	8.69	220.6	9.87	250.6	12.23	310.6
	B	7.52	191.1	8.70	221.1	9.89	251.1
Braked Length	A	12.56	319.1	13.74	349.1	16.11	409.1
	B	11.40	289.6	12.58	319.6	14.94	379.6

Flange Dimensions		(in)	(mm)
Flange Thickness	K	0.728	18.5
Pilot Thickness	L	0.154	3.9
Pilot Diameter	M	7.090	180.0
Overall Height	N	9.940	252.5
Flange Square	P	7.490	190.3
Mounting Hole Diameter	R	0.571	14.5
Mounting Hole BCD	S	8.465	215.0
Motor Housing	T	7.480	190.0
Mounting Bolts		M12	

Shaft Dimensions		(in)	(mm)
Shaft Diameter	C	1.500	38.0
Shaft Length	D	3.150	80.0
Key Height	E	1.614	41.0
Key Length	F	2.760	70.0
Key-to-Shaft End	G	0.181	4.6
Key Width	H	0.394	10.0
Tapped Hole Thread Size	I	M12 x 1.75	
Tapped Hole Depth	J	1.142	29.0

Unimotor hd Selection Considerations

Feedback Options

Feedback Device Order Code	Feedback Type	Encoder Supply Voltage	SinCos Cycles or Incremental Pulses per Revolution	Resolution Available to Position Loop	Feedback Accuracy
055-067 Motors					
AR	Resolver[1]	7 Vrms Excitation 5 kHz	1	**Medium** 16384 (14 bit)	**Low** +/- 600 arc second
CR	Incremental encoder	5 Vdc	4096	**Medium** 16384 (14 bit)	**Medium** +/- 150 arc second
EM (Multi-Turn) FM (Single-Turn)	Inductive Absolute encoder EnDat[2]	5 Vdc	16	**High** 2.62 x 10^5 (18 bits)	**Medium** +/- 480 arc second
089, 115, 142 and 190 Motors					
AE	Resolver[1]	6 Vrms Excitation 6 kHz	1	**Medium** 16384 (14 bit)	**Medium** +/- 720 arc second
CA	Incremental encoder	5 Vdc	4096	**Medium** 16384 (14 bit)	**High** +/- 60 arc second
EC (Multi-Turn) FC (Single-Turn)	Inductive Absolute encoder EnDat[2/3]	7 - 10 Vdc	32	Medium absolute position 524288 (19 bits)	**Medium** +/- 280 arc second
RA (Multi-Turn) SA (Single-Turn)	Optical SinCos encoder[2] HIPERFACE	7 - 12 Vdc	1024	**Very high** 1.04 x 10^6 (20 bits)	**High** For SinCos integral non-linearity +/- 45 arc second For SinCos differential non-linearity +/- 7 arc second (total accuracy+/-52 arc second)
EB (Multi-Turn) FB (Single-Turn)	Optical Absolute encoder EnDat[2/3]	3.6 - 14 Vdc	2048	**Very high** 2.08 x 10^6 (21 bits)	**Very high** +/-20 arc second (differential non-linearity +/- 1% signal period)

NOTES:
[1]Resolution value shown when used with the Unidrive M resolver input or SM-Resolver Option Module (Unidrive SP and Digitax ST)
[2]Resolution value shown when used with the Unidrive M, Unidrive SP or Digitax ST when the encoder type is set to either SC EnDat or SC Hiper, depending on the encoder - multi-turn devices have 4096 (12 bit) resolution
[3]Optical EnDat encoders are recommended for heavy duty applications. Inductive EnDat encoders are recommended for std duty applications

Motor Selection

Motor Derating

Adverse operating conditions require that the motor performance be derated. These conditions include ambient temperature above 104 °F (40 °C), motor mounting position, drive switching frequency or a drive oversized for the motor.

Ambient Temperatures

For ambient temperatures above 104 °F (40 °C), the torque must be derated using the following formula as a guideline for motors up to 3000 rpm. Consult factory for higher-speed motor derating information.

New derated torque =

Specified torque x $\sqrt{1 - ([\text{ambient temperature}^* - 40] / 100)}$

*Measured in °C

For example, with an ambient temperature of 169 °F (76 °C), the new derated torque will be 0.8 x specified torque.

Drive Switching Frequency

Most drive current ratings are reduced at higher switching frequencies. See individual drive manuals for details.

See the table below for motor derating factors (these figures are for guidance only).

Switching Frequency	Motor Type/Frame					
	055	067	089	115	142	190
3 kHz	0.92	0.93	0.89	0.89	0.83	0.90
4 kHz	0.93	0.94	0.91	0.92	0.85	0.95
5/6 kHz	0.95	0.95	0.95	0.96	0.88	1
8 kHz	0.96	0.98	0.97	0.98	0.91	1
10/12/16 kHz	1	1	1	1	1	1

Mounting Arrangements

In general, motor torque should be derated if the motor mounting surface is heated from an external source such as a gearbox, the motor is connected to a poor thermal conductor, or the motor is mounted in a confined space
with restricted air flow.

Ingress Protection

IP65 conformance; sealed against water spray and dust when mounted and connected.

Thermal Protection

An incorrect system set up can give rise to excessive motor temperatures. This can be guarded against by the use of the motor thermistor protection facility.

Servo motor/drive system faults

Common but often unnoticed causes of motor overheating can be created by:

- Instability (self induced oscillation) within the overall servo feedback system
- Incorrect parameter settings in the drive protection system, for example peak current, and I^2t (thermal protection calculation for the drive)

The increase in resistance is measured by the drive and a "th trip" will occur. Only once the motor has cooled can the trip be cleared.

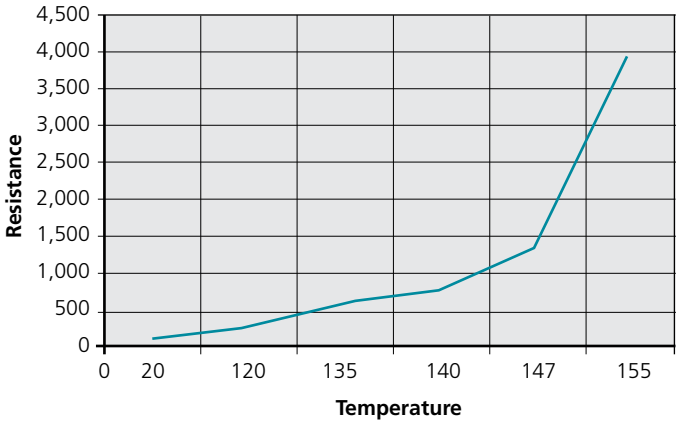
The installer must connect the motor thermistor to the drive to cause motor power shutdown in the event of overheating.

It is the installer's responsibility to ensure that this protection facility is properly connected and set at the drive.

Failure to ensure the correct operation of the protection facility invalidates the warranty in respect of a burnt out winding.

The ambient temperature of the environment into which the Unimotor is mounted must be considered.

Unimotor PTC 145 °C

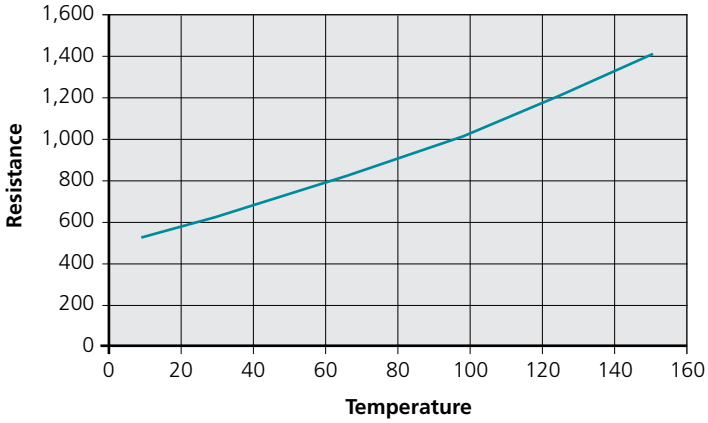


Standard Thermistor protection

A PTC thermistor rated to 145 C, is built into the motor windings and is used to protect the motor against overheating problems.

The device remains a low resistance until a critical temperature is reached, where it will then switch to a very high resistance.

Unimotor KTY 84 -130 °C



Optional KTY protection

A KTY 84-130 linear temperature sensor is built into the motor windings and is used to protect the motor against overheating problems. This device returns a resistance proportional to the winding temperature.

Environmental Conditions

Any liquids or gases that may come into contact with the motor must be confirmed to ensure compliance with the correct international standards.

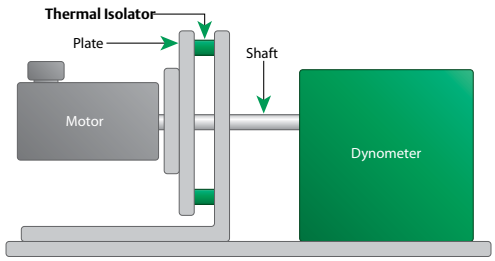
Brake Operation

Do not apply the brake while the motor shaft is rotating.
The brake can only take a limited number of emergency braking operations and must not be used for repeated dynamic braking.

Thermal Test Conditions

The performance data shown was recorded with an ambient temperature of 68 °F (20 °C) and the motor mounted on a thermally-isolated aluminum plate.

Thermal motor mounting arrangement test example:



Motor Type/Frame	Aluminum Heatsink Plate	
	(in)	(mm)
055	4.3 x 4.3 x 1.06	110 x 110 x 27
067, 089	9.8 x 9.8 x 0.6	250 x 250 x 15
115 to 142	13.8 x 13.8 x 0.8	350 x 350 x 20
190	19.7 x 19.7 x 0.8	500 x 500 x 20

Unimotor hd Holding Brake Specifications

Motor Frame Size	Power Supply	Power	Static Torque		Release Time	Added Inertia		Backlash	Added Weight	
(mm)	(Vdc)	(W)	(lb-in)	(Nm)	(ms) nom.	(lb-in-sec²)	(kgcm²)	Degrees*	(lbs)	(kg)
055	24	6.3	15.9	1.8	22	0.00003	0.03	0.73	0.88	0.4
067	24	10.2	35.4	4	<50	0.00006	0.073	0.75	1.1	0.5
089	24	23.4	88.5	10	<50	0.00010	0.115	0.75	1.3	0.6
115	24	19.5	117	20	120	0.00029	0.327	0.75	2.6	1.2
142	24	25	371	42	95	0.00225	2.54	0.77	6.2	2.8
190 C-D	24	25	592	67	120	0.00404	4.57	0.77	11.7	5.3
190 F	24	54.5	885	100	CF	0.00683	7.72	0.75	11.7	5.3

NOTES:
Figures shown in individual motor sections are at 68 °F (20 °C) ambient
Apply a derate factor of 0.7 to standard brake torque figures if motor temperature is above 212 °F (100 °C)
*Backlash will increase over time

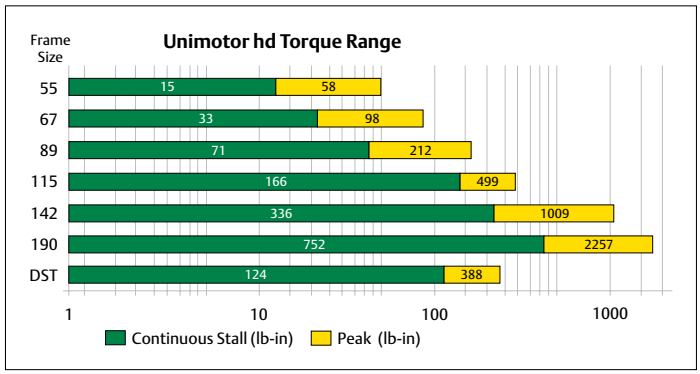


Unimotor hd 230 V | 460 V

The Unimotor hd is a high-dynamic servo motor range designed for maximum torque density. This brushless AC servo motor range provides an exceptionally compact, low-inertia solution for applications where very high torque is required during rapid acceleration and deceleration profiles.

The Unimotor sd torque profile is ideally matched to Digitax ST servo drives providing up to 300% peak overload for maximum dynamic performance. Unimotor hd incorporates a number of unique performance-enhancing design features.

- High torque-to-inertia ratio for high-dynamic performance
- High-energy dissipation brakes
- Compact and powerful
- IP65, rating, UL, CE and RoHS compliant
- Supported by rigorous testing for performance and reliability



Sample Motor and Drive Combinations

Digitax ST and Unimotor hd – 230 V, 3Ø															
Drive Model	Drive Switching Frequency	Motor Model	Cont. Stall Torque		Peak Torque		Rated Torque		Rated Power		Rated Operating Speed	Inertia		Kt	
	kHz		lb-in	Nm	lb-in	Nm	lb-in	Nm	HP	kW	rpm	lb-in-sec²	kgm²	lb-in/ Arms	Nm/ Arms
DST1202	12	055EDC300	14.60	1.65	58.41	6.60	13.10	1.48	0.60	0.46	3000	0.0003186	0.000036	8.05	0.91
DST1203	12	055EDC600	14.60	1.65	58.41	6.60	10.62	1.20	1.00	0.75	6000	0.0003186	0.000036	4.25	0.48
DST1204	12	067EDB600	22.57	2.55	67.70	7.65	19.47	2.20	1.81	1.38	6000	0.0004691	0.000053	4.16	0.47
DST1204	12	089EDB300	48.68	5.50	146.03	16.50	42.93	4.85	1.81	1.52	3000	0.0014249	0.000161	8.23	0.93
Digitax ST and Unimotor hd – 460 V, 3Ø															
Drive Model	Drive Switching Frequency	Motor Model	Cont. Stall Torque		Peak Torque		Rated Torque		Rated Power		Rated Operating Speed	Inertia		Kt	
	kHz		lb-in	Nm	lb-in	Nm	lb-in	Nm	HP	kW	rpm	lb-in-sec²	kgm²	lb-in/ Arms	Nm/ Arms
DST1402	12	055UDC300	14.60	1.65	58.41	6.60	13.10	1.48	0.60	0.46	3000	0.0003186	0.000036	14.60	1.65
DST1403	12	067UDB300	22.57	2.55	67.70	7.65	21.68	2.45	1.03	0.77	3000	0.0004691	0.000053	14.16	1.60
DST1404	8	089UDB300	46.91	5.30	146.03	16.50	41.60	4.70	1.98	1.48	3000	0.0014249	0.000161	14.16	1.60
DST1405	6	115UDC200	123.90	14.00	387.63	43.80	100.89	11.40	1.98	2.39	2000	0.0014868	0.000168	21.24	2.40

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP