CONTROL TECHNIQUES
DYNAMICS

SERVO MOTOR SERIES

UNIMOTOR HD

High Dynamic AC brushless servo motor

060 to 190 Frames

0.40 to 12.25kW
0.64 to 85 Nm

(255 Nm Peak)

200-240 / 380-480Vrms

Nidec
All for dreams

Unimotor hd

Unimotor hd is a high dynamic brushless AC servo motor range designed for use in pulse duty applications where rapid acceleration and deceleration are required. The motors are available in frame sizes from 060 to 190.

Reliability and innovation

Unimotor hd is designed using a proven development process that prioritises innovation and reliability. This process has resulted in a market leading reputation for both performance and quality.

Matched motor and drive combinations

Drives and motors from Control Techniques are designed to function as an optimized system. Unimotor hd is the perfect partner for Digitax and Unidrive.

Accuracy and resolution to suit your application requirements

Choosing the right feedback device for your application is critical in getting optimum performance. Unimotor hd has a range of feedback options that offer different levels of accuracy and resolution to suit most applications::

- Resolver: robust for extreme applications and conditions – low accuracy, medium resolution
- Incremental encoder: for cost-sensitive applications - low accuracy, medium resolution
- Inductive, SinCos/Absolute: medium accuracy, high resolution
- Optical/SinCos/Absolute: high accuracy, high resolution
- Single turn and multi-turn: Hiperface and EnDat protocols supported

The ultimate motor and drive combination

Control Techniques offer drive and motor combinations that provide an optimized system in terms of ratings, performance, cost and ease of use.

Unimotor hd motors fitted with high resolution EnDat encoders are pre-loaded with the motor "electronic nameplate" data during the manufacturing process. This data can be read by any of our servo drives and used to automatically optimize the drive settings.

This feature simplifies commissioning and maintenance, ensures consistent performance and saves time.

Features

Unimotor hd is suitable for a wide range of industrial applications, due to it's extensive range of features:

- Torque range: from 0.64 Nm to 85 Nm
- High torque to inertia ration for high dynamic performance
- Compact but powerful
- High energy dissipation parking brakes
- IP65 conformance; sealed against water spray and dust when mounted and connected
- Segmented stator design
- World class performance
- Supported by rigorous testing for performance and reliability
- Winding voltage for inverter supply of 400 V and 220 V
- Rated speeds from 1,000 to 6,000 rpm
- Larger shafts to increase torsional rigidity
- Thermal protection by PTC thermistor/optional KTY84.130 sensor

CONTROL TECHNIQUES

DRIVE OBSESSED SINCE 1973

Drives: they're what we do. Whether you're designing a new machine or installing a replacement, we know you need quick delivery and an easy set up, with the confidence that your drive's going to keep on performing with accurate control.

So leave it to the specialists. We've dedicated ourselves to designing and manufacturing variable speed drives since 1973. This means quick set up, high reliability, maximum motor control and fast, efficient service.

1,000+
OEM CUSTOMERS

5M+
INSTALLED DRIVES

1,400+
EMPLOYEES

70
COUNTRIES

Outstanding performance

The outstanding performance of our drives is the fruit of over 45 years of engineering experience in drive design..

Technology you can rely on

Robust design and the highest build quality ensure the enduring reliability of the millions of drives installed around the world.

Open design architecture

Based on open design architecture, our drives integrate with all primary communication protocols.

Global reach, local support

Highly experienced, locally based Application Engineers design and support drive technology to provide maximum value, wherever you are in the world.

Embedded intelligence

Precision motor control is combined with high performance embedded intelligence, ensuring maximum productivity and efficiency of your machinery.

A part of the Nidec Group

Unimotor hd and Digitax HD

Quick reference table

Frame size (mm)	PCD (mm)	Stall (Nm)	Inertia (kg.cm2) Standard	Inertia (kg.cm2) Medium*	Inertia (kg.cm2) High*
060	070	0.64 1.92	0.18 0.48	n/a	n/a
067	075	1.44 4.72	0.3 0.94	0.33 1.12	1.15 1.96
089	100	3.2 10.3	0.87 3.2	1.15 4.16	3.2 6.25
115	130	5.8 18.8	2.4 8.38	3.38 12.17	7.8 16.6
142	165	10.1 38.0	5.6 27.2	15.28 48.7	23.4 56.8
190	215	18.5 85.0	22.0 103.5	33.03 171.33	89.6 227.9

* Medium inertia and extended length High inertia versions - refer to factory.

Conformance and standards

Ordering information

Use the information below in the illustration to create an order code for a Unimotor hd.

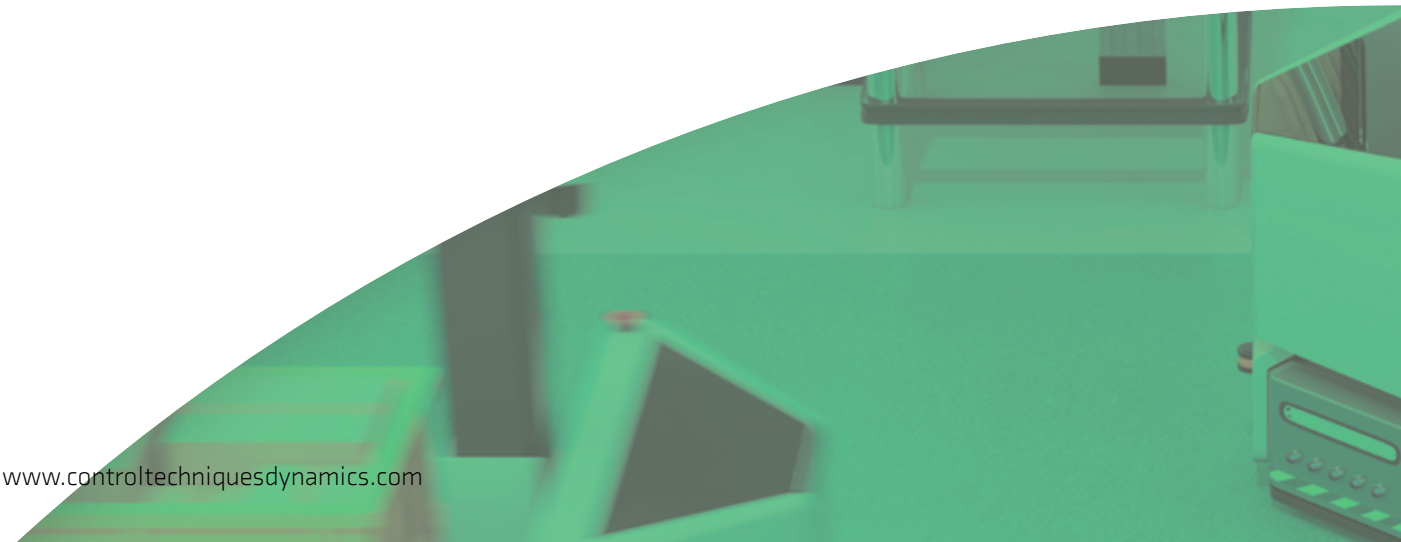
060	UD	B	60	0	T
Frame size	**Motor voltage**	**Stator length**	**Rated speed***	**Brake**	**Connection type****
	060 - 190 frame	**060 frame**	**060 frame**	**060 – 190 frame**	**060 frame**
060	**ED** = 220V	**A to C**	**60** = 6000 rpm	**0** = Not fitted (Std)	**S** = Single cable, power & signal combined
067	**UD** = 400V	**067 - 115 frame**	**067 frame**	**060 frame**	
089		**A to D**	**30** = 3000 rpm	**5** = Parking brake	**T** = YTEC type connector (std)
115		**142 frame**	**60** = 6000 rpm	**067 – 142B frame**	
142		**A to E**	**089 frame**	**6** = Parking brake	**Size 1**
190		**190 frame**	**30** = 3000 rpm	**142C – 190 frame**	**B** = Power and signal 90° rotatable
		A to F	**40** = 4000 rpm	**5** = Parking brake	
			60 = 6000 rpm		**D** = Single cable, power & signal combined, 90° rotatable
			115 - 142 frame		
			20 = 2000 rpm		**R** = Power 8-way, Signal 90° rotatable
			30 = 3000 rpm		
			40 = 4000 rpm		**Size 1.5**
			60 = 6000 rpm		**J** = Power and signal 90° rotatable
			190 frame		
			10 = 1000 rpm		**E** = Single cable, power & signal combined, 90° rotatable
			15 = 1500 rpm		
			20 = 2000 rpm		**Z** = Power 8-way, Signal 90° rotatable
			30 = 3000 rpm		

*Not all speeds are available on all motors. Please refer to performance pages 8-19.

**Single cable option must be fitted with KTY thermistor and is only available with certain feedback options. Please refer to page 23.

For recommended connector sizes please refer to performance pages 8-19.

Additonal options are available upon request but may require a longer lead time to complete, please check with the Drive Centre.



A	CT		A
Output shaft	**Feedback device**		**Thermistor**
060 – 190 frame	**060 frame**	**Single Cable**	**060 – 190 frame**
A = Key	**AR** = Resolver	No	**A** = PTC Thermistor (DIN44082)
F = Key and half key supplied seperately	**CT** = Incremental Encoder	No	**C** = KTY Thermistor (KTY84.130)
067 – 190 frame	**EG** = Inductive EnDat Multi-turn	Yes	
B = Plain Shaft	**FG** = Inductive EnDat Single-turn	Yes	
	067 frame		
	AR = Resolver	No	
	CR = Incremental Encoder	No	
	CT = Incremental Encoder	No	
	EM = Inductive EnDat SinCos Multi-turn	No	
	FM = Inductive EnDat SinCos Single-turn	No	
	EG = Inductive EnDat Multi-turn	Yes	
	FG = Inductive EnDat Single-turn	Yes	
	089 – 190 frame		
	AE = Resolver	No	
	CA = Incremental Encoder	No	
	CT = Incremental Encoder	No	
	EC = Inductive EnDat SinCos Multi-turn	No	
	FC = Inductive EnDat SinCos Single-turn	No	
	EF = Inductive EnDat Multi-turn FS	Yes	
	FF = Inductive EnDat Single-turn FS	Yes	
	GB = ROHS EnDat Multi-turn Size 58	Yes	
	HB = ROHS EnDat Single-turn Size 58	Yes	

Ratings

3 Phase VPWM drives 200 - 240Vrms - Δt= 100°C winding 40°C maximum ambient.
All data subject to +/-10% tolerance

Motor Frame Size (mm)	060ED			067ED				089ED				115ED			
Frame length	A	B	C	A	B	C	D	A	B	C	D	A	B	C	D
Continuous stall torque (Nm)	0.64	1.28	1.92	1.44	2.55	3.70	4.72	3.20	5.50	8.00	10.30	5.80	10.20	14.60	18.80
Peak torque (Nm)	2.24	4.48	6.72	4.35	7.65	11.10	14.16	9.60	16.50	24.00	30.90	17.40	30.60	43.80	56.40
Standard inertia (kg cm²)	0.18	0.33	0.48	0.30	0.53	0.75	0.94	0.87	1.61	2.34	3.20	2.40	4.41	6.39	8.38
Winding thermal time constant (sec)	48	55	61	54	61	65	68	85	93	98	103	161	164	168	175
Standard motor weight (kg)	1.6	2.0	2.2	1.96	2.56	3.16	3.80	3.18	4.28	5.38	6.48	5.20	6.95	8.72	10.49
Number of poles	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Speed 2000 (rpm)	Kt(Nm/A) = 1.4 Ke(V/Krpm) = 85.5														
Rated torque (Nm)	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	11.9	15.6
Stall current (A)	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	10.43	13.43
Rated power (kW)	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	2.49	3.27
R (ph-ph) (Ohms)	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	0.77	0.61
L (ph-ph) (mH)	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	7.9	6.6
Recommended power conn' size	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	1	1
Speed 3000 (rpm)	Kt(Nm/A) = 0.93 Ke(V/Krpm) = 57														
Rated Torque (Nm)	♦	♦	♦	1.40	2.45	3.50	4.60	3.00	4.85	6.90	8.50	4.80	7.70	10.50	♦
Stall Current (A)	♦	♦	♦	1.55	2.74	3.98	5.08	3.44	5.91	8.60	11.08	6.24	10.97	15.70	♦
Rated Power (kW)	♦	♦	♦	0.44	0.77	1.10	1.45	0.94	1.52	2.17	2.67	1.51	2.42	3.30	♦
R (ph-ph) (Ohms)	♦	♦	♦	15.16	5.85	3.33	2.17	4.10	1.64	0.93	0.45	1.59	0.58	0.39	♦
L (ph-ph) (mH)	♦	♦	♦	46.7	20.6	12.7	8.13	25.0	11.8	7.1	13.7	12.8	5.4	4.0	♦
Recommended power conn' size	♦	♦	♦	1	1	1	1	1	1	1	1	1	1	1	♦
Speed 4000 (rpm)	Kt(Nm/A) = 0.7 Ke(V/Krpm) = 42.75														
Rated Torque (Nm)	♦	♦	♦	♦	♦	♦	♦	♦	4.55	6.35	♦	♦	♦	8.70	♦
Stall Current (A)	♦	♦	♦	♦	♦	♦	♦	♦	7.86	11.43	♦	♦	♦	20.86	♦
Rated Power (kW)	♦	♦	♦	♦	♦	♦	♦	♦	1.91	2.66	♦	♦	♦	3.64	♦
R (ph-ph) (Ohms)	♦	♦	♦	♦	♦	♦	♦	♦	0.82	0.56	♦	♦	♦	0.12	♦
L (ph-ph) (mH)	♦	♦	♦	♦	♦	♦	♦	♦	6.0	4.3	♦	♦	♦	4.0	♦
Recommended power conn' size	♦	♦	♦	♦	♦	♦	♦	♦	1	1	♦	♦	♦	1	♦
Speed 6000 (rpm)	Kt(Nm/A) = 0.47 Ke(V/Krpm) = 28.5														
Rated Torque (Nm)	0.64	1.28	1.92	1.30	2.20	3.10	4.00	2.65	3.80	5.00	♦	3.60	4.80	♦	♦
Stall Current (A)	1.36	2.72	4.09	3.06	5.43	7.87	10.04	6.93	11.70	17.02	♦	12.34	21.70	♦	♦
Rated Power (kW)	0.40	0.80	1.20	0.82	1.38	1.95	2.51	1.67	2.39	3.14	♦	2.26	3.02	♦	♦
R (ph-ph) (Ohms)	6.04	2.52	1.56	3.79	1.46	0.76	0.54	1.03	0.41	0.24	♦	0.40	0.09	♦	♦
L (ph-ph) (mH)	15.27	11.30	8.04	11.70	5.20	3.60	2.03	6.20	2.96	1.77	♦	3.20	2.80	♦	♦
Recommended power conn' size	Y-TEC			1	1	1	1	1	1	1	♦	1	1	♦	♦

♦ *not available*

Stall torque, rated torque and power relate to maximum continuous operation tested in a 20°C ambient at **12kHz drive switching frequency**
All other figures relate to a 20°C motor temperature.
Maximum intermittent winding temperature is 140°C

142ED					190ED						Motor Frame Size (mm)
A	B	C	D	E	A	B	C	D	E	F	Frame length
10.10	17.40	25.00	31.50	38.00	18.50	32.70	52.00	62.00	73.50	85.00	Continuous stall torque (Nm)
30.30	52.20	75.00	94.50	114.00	55.50	98.10	156.00	186.00	220.50	255.00	Peak torque (Nm)
5.60	11.00	17.00	22.10	27.20	22.00	38.30	54.60	70.90	87.20	103.50	Standard inertia (kg cm²)
235	240	245	251	256	286	313	311	316	292	324	Winding thermal time constant (sec)
7.40	10.10	12.74	15.39	18.04	14.60	21.20	27.74	34.30	40.90	47.42	Standard motor weight (kg)
10	10	10	10	10	10	10	10	10	10	10	Number of poles
Kt(Nm/A) = 1.4 Ke(V/Krpm) = 85.5					Kt(Nm/A) = 2.8 Ke(V/Krpm) = 171						190 frame Speed 1000 (rpm)
8.6	15.3	21.4	♦	♦	17.6	♦	49.0	56.5	♦	77.5	Rated torque (Nm)
7.21	12.43	17.86	♦	♦	6.61	♦	18.57	22.14	♦	30.36	Stall current (A)
1.80	3.20	4.48	♦	♦	1.84	♦	5.13	5.92	♦	8.12	Rated power (kW)
0.85	0.34	0.24	♦	♦	1.23	♦	0.30	0.27	♦	0.15	R (ph-ph) (Ohms)
14.3	5.9	3.7	♦	♦	34.1	♦	10.0	7.1	♦	4.8	L (ph-ph) (mH)
1	1	1.5	♦	♦	1.5	♦	1.5	1.5	♦	1.5	Recommended power conn' size
Kt(Nm/A) = 0.93 Ke(V/Krpm) = 57					Kt(Nm/A) = 1.86 Ke(V/Krpm) = 114						190 frame Speed 1500 (rpm)
8.20	14.00	18.40	20.90	♦	♦	♦	32.80	♦	♦	♦	Rated Torque (Nm)
10.86	18.71	26.88	33.87	♦	♦	♦	55.91	♦	♦	♦	Stall Current (A)
2.58	4.40	5.78	6.57	♦	♦	♦	10.30	♦	♦	♦	Rated Power (kW)
0.38	0.22	0.12	0.09	♦	♦	♦	0.03	♦	♦	♦	R (ph-ph) (Ohms)
6.3	2.8	1.9	1.6	♦	♦	♦	1.2	♦	♦	♦	L (ph-ph) (mH)
1	1.5	1.5	1.5	♦	♦	♦	1.5	♦	♦	♦	Recommended power conn' size
Kt(Nm/A) = 0.7 Ke(V/Krpm) = 42.75					Kt(Nm/A) = 1.4 Ke(V/Krpm) = 85.5						190 frame Speed 2000 (rpm)
♦	11.70	♦	♦	♦	♦	♦	42.50	♦	♦	♦	Rated Torque (Nm)
♦	24.86	♦	♦	♦	♦	♦	37.14	♦	♦	♦	Stall Current (A)
♦	4.90	♦	♦	♦	♦	♦	8.90	♦	♦	♦	Rated Power (kW)
♦	0.08	♦	♦	♦	♦	♦	0.09	♦	♦	♦	R (ph-ph) (Ohms)
♦	4.5	♦	♦	♦	♦	♦	2.5	♦	♦	♦	L (ph-ph) (mH)
♦	1.5	♦	♦	♦	♦	♦	1.5	♦	♦	♦	Recommended power conn' size
Kt(Nm/A) = 0.47 Ke(V/Krpm) = 28.5					Kt(Nm/A) = 0.93 Ke(V/Krpm) = 57						190 frame Speed 3000 (rpm)
♦	♦	♦	♦	♦	15.50	25.00	32.80	♦	♦	♦	Rated Torque (Nm)
♦	♦	♦	♦	♦	19.89	35.16	55.91	♦	♦	♦	Stall Current (A)
♦	♦	♦	♦	♦	4.87	7.85	10.30	♦	♦	♦	Rated Power (kW)
♦	♦	♦	♦	♦	0.20	0.05	0.03	♦	♦	♦	R (ph-ph) (Ohms)
♦	♦	♦	♦	♦	3.1	1.6	1.2	♦	♦	♦	L (ph-ph) (mH)
♦	♦	♦	♦	♦	1.5	1.5	1.5	♦	♦	♦	Recommended power conn' size

♦ *not available*

Stall torque, rated torque and power relate to maximum continuous operation tested in a 20°C ambient at **12kHz drive switching frequency**
All other figures relate to a 20°C motor temperature.
Maximum intermittent winding temperature is 140°C

Ratings

3 Phase VPWM drives 380 - 480Vrms - Δt= 100°C winding 40°C maximum ambient.
All data subject to +/-10% tolerance

Motor Frame Size (mm)	060UD			067UD				089UD				115UD			
Frame length	A	B	C	A	B	C	D	A	B	C	D	A	B	C	D
Continuous stall torque (Nm)	0.64	1.28	1.92	1.44	2.55	3.70	4.72	3.20	5.50	8.00	10.30	5.80	10.20	14.60	18.80
Peak torque (Nm)	2.24	4.48	6.72	4.35	7.65	11.10	14.16	9.60	16.50	24.00	30.90	17.40	30.60	43.80	56.40
Standard inertia (kg cm²)	0.18	0.33	0.48	0.30	0.53	0.75	0.94	0.87	1.61	2.34	3.20	2.40	4.41	6.39	8.38
Winding thermal time constant (sec)	48	55	61	54	61	65	68	85	93	98	103	161	164	168	175
Standard motor weight (kg)	1.6	2.0	2.2	1.96	2.56	3.16	3.80	3.18	4.28	5.38	6.48	5.20	6.95	8.72	10.49
Number of poles	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Speed 2000 (rpm)	Kt(Nm/A) = 2.4 Ke(V/Krpm) = 147														
Rated torque (Nm)	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	11.90	15.60
Stall current (A)	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	6.08	7.83
Rated power (kW)	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	2.49	3.27
R (ph-ph) (Ohms)	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	2.41	1.80
L (ph-ph) (mH)	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	24.7	19.5
Recommended power conn' size	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	1	1
Speed 3000 (rpm)	Kt(Nm/A) = 0.8 Ke(V/Krpm) = 49			Kt(Nm/A) = 1.6 Ke(V/Krpm) = 98											
Rated Torque (Nm)	♦	♦	♦	1.40	2.45	3.50	4.60	3.00	4.85	6.90	8.50	4.80	7.70	10.50	13.60
Stall Current (A)	♦	♦	♦	1.80	1.59	2.31	2.95	2.00	3.44	5.00	6.44	3.63	6.38	9.13	11.75
Rated Power (kW)	♦	♦	♦	0.44	0.77	1.10	1.45	0.94	1.52	2.17	2.67	1.51	2.42	3.30	4.27
R (ph-ph) (Ohms)	♦	♦	♦	11.69	18.55	10.70	6.42	10.80	5.18	2.79	1.89	5.00	1.90	1.21	0.78
L (ph-ph) (mH)	♦	♦	♦	35.2	65.6	40.8	31.2	66.8	36.7	21.7	15.3	40.3	18.0	12.7	8.7
Recommended power conn' size	♦	♦	♦	1	1	1	1	1	1	1	1	1	1	1	1
Speed 4000 (rpm)	Kt(Nm/A) = 1.2 Ke(V/Krpm) = 73.5														
Rated Torque (Nm)	♦	♦	♦	♦	♦	♦	♦	♦	4.55	6.35	♦	♦	♦	8.70	♦
Stall Current (A)	♦	♦	♦	♦	♦	♦	♦	♦	4.58	6.67	♦	♦	♦	12.17	♦
Rated Power (kW)	♦	♦	♦	♦	♦	♦	♦	♦	1.91	2.66	♦	♦	♦	3.64	♦
R (ph-ph) (Ohms)	♦	♦	♦	♦	♦	♦	♦	♦	2.60	1.80	♦	♦	♦	0.60	♦
L (ph-ph) (mH)	♦	♦	♦	♦	♦	♦	♦	♦	18.8	13.4	♦	♦	♦	6.6	♦
Recommended power conn' size	♦	♦	♦	♦	♦	♦	♦	♦	1	1	♦	♦	♦	1	♦
Speed 6000 (rpm)	Kt(Nm/A) = 0.8 Ke(V/Krpm) = 49														
Rated Torque (Nm)	0.64	1.28	1.92	1.30	2.20	3.10	4.00	2.65	3.80	5.00	♦	3.60	4.80	♦	♦
Stall Current (A)	0.80	1.60	2.40	1.80	3.19	4.63	5.90	4.00	6.88	10.00	♦	7.25	12.75	♦	♦
Rated Power (kW)	0.40	0.80	1.21	0.82	1.38	1.95	2.51	1.67	2.39	3.14	♦	2.26	3.02	♦	♦
R (ph-ph) (Ohms)	24.00	10.10	5.90	11.69	4.64	2.73	1.60	2.70	1.30	0.67	♦	1.25	0.47	♦	♦
L (ph-ph) (mH)	91.5	46.8	32.6	35.2	16.4	10.2	7.8	16.7	9.2	5.4	♦	10.1	4.5	♦	♦
Recommended power conn' size	Y-TEC			1	1	1	1	1	1	1	♦	1	1	♦	♦

♦ *not available*

Stall torque, rated torque and power relate to maximum continuous operation tested in a 20°C ambient at **12kHz drive switching frequency**
All other figures relate to a 20°C motor temperature.
Maximum intermittent winding temperature is 140°C

142UD					190UD						Motor Frame Size (mm)
A	B	C	D	E	A	B	C	D	E	F	Frame length
10.10	17.40	25.00	31.50	38.00	18.50	32.70	52.00	62.00	73.50	85.00	Continuous stall torque (Nm)
30.30	52.20	75.00	94.50	114.00	55.50	98.10	156.00	186.00	220.50	255.00	Peak torque (Nm)
5.60	11.00	17.00	22.10	27.20	22.00	38.30	54.60	70.90	87.20	103.50	Standard inertia (kg cm^2)
235	240	245	251	256	286	292	300	308	316	324	Winding thermal time constant (sec)
7.40	10.10	12.74	15.39	18.04	14.60	21.20	27.74	34.30	40.90	47.42	Standard motor weight (kg)
10	10	10	10	10	10	10	10	10	10	10	Number of poles
Kt(Nm/A) = 2.4 Ke(V/Krpm) = 147					Kt(Nm/A) = 4.8 Ke(V/Krpm) = 296						190 frame Speed 1000 (rpm)
8.60	15.30	21.40	♦	♦	17.60	♦	♦	♦	♦	78.30	Rated torque (Nm)
4.21	7.25	10.42	♦	♦	3.83	♦	♦	♦	♦	17.61	Stall current (A)
1.80	3.20	4.48	♦	♦	1.83	♦	♦	♦	♦	8.12	Rated power (kW)
3.90	1.53	0.79	♦	♦	3.70	♦	♦	♦	♦	0.53	R (ph-ph) (Ohms)
46.28	20.97	12.15	♦	♦	101.40	♦	♦	♦	♦	15.80	L (ph-ph) (mH)
1	1	1	♦	♦	1.5	♦	♦	♦	♦	1.5	Recommended power conn' size
Kt(Nm/A) = 1.6 Ke(V/Krpm) = 98					Kt(Nm/A) = 3.2 Ke(V/Krpm) = 196						190 frame Speed 1500 (rpm)
8.20	14.00	18.40	20.90	23.00	♦	♦	46.20	♦	♦	68.50	Rated Torque (Nm)
6.31	10.88	15.63	19.69	23.75	♦	♦	16.25	♦	♦	26.56	Stall Current (A)
2.58	4.40	5.78	6.57	7.23	♦	♦	7.26	♦	♦	10.76	Rated Power (kW)
1.50	0.63	0.34	0.24	0.18	♦	♦	0.55	♦	♦	0.23	R (ph-ph) (Ohms)
18.1	8.6	5.3	3.8	2.9	♦	♦	14.2	♦	♦	6.8	L (ph-ph) (mH)
1	1	1	1.5	1.5	♦	♦	1.5	♦	♦	1.5	Recommended power conn' size
Kt(Nm/A) = 1.2 Ke(V/Krpm) = 74					Kt(Nm/A) = 2.4 Ke(V/Krpm) = 147						190 frame Speed 2000 (rpm)
♦	11.70	♦	14.90	♦	♦	♦	42.50	45.30	52.90	56.00	Rated Torque (Nm)
♦	14.50	♦	26.25	♦	♦	♦	21.67	25.83	30.63	35.42	Stall Current (A)
♦	4.90	♦	6.24	♦	♦	♦	8.90	9.49	11.08	11.73	Rated Power (kW)
♦	0.36	♦	0.16	♦	♦	♦	0.32	0.17	0.16	0.14	R (ph-ph) (Ohms)
♦	7.1	♦	2.4	♦	♦	♦	8.2	5.1	4.6	4.3	L (ph-ph) (mH)
♦	1	♦	1.5	♦	♦	♦	1.5	1.5	1.5	1.5	Recommended power conn' size
Kt(Nm/A) = 0.8 Ke(V/Krpm) = 49					Kt(Nm/A) = 1.6 Ke(V/Krpm) = 98						190 frame Speed 3000 (rpm)
♦	7.00	♦	♦	♦	15.50	25.00	32.80	39.00	♦	♦	Rated Torque (Nm)
♦	21.75	♦	♦	♦	11.56	20.44	32.50	38.75	♦	♦	Stall Current (A)
♦	4.40	♦	♦	♦	4.87	7.85	10.30	12.25	♦	♦	Rated Power (kW)
♦	0.17	♦	♦	♦	0.57	0.23	0.11	0.11	♦	♦	R (ph-ph) (Ohms)
♦	3.2	♦	♦	♦	11.6	5.7	3.1	2.7	♦	♦	L (ph-ph) (mH)
♦	1.5	♦	♦	♦	1.5	1.5	1.5	1.5	♦	♦	Recommended power conn' size

♦ *not available*

Stall torque, rated torque and power relate to maximum continuous operation tested in a 20°C ambient at **12kHz drive switching frequency**
All other figures relate to a 20°C motor temperature.
Maximum intermittent winding temperature is 140°C

Dimensions

Motor dimensions (all measurements shown are in mm)

060	Feedback AR, CT *				Flange thickness	Register length	Register diameter	Overall height	Flange square	Fixing hole diameter	Fixing hole PCD	Motor housing	Mounting bolts
	Unbraked length		Braked length										
	LB (± 0.9)	LC (± 1.0)	LB (± 0.9)	LC (± 1.0)	LA (± 0.5)	T (± 0.1)	N (j6)	LD (± 0.3)	P (± 0.3)	S (H14)	M (± 0.5)	PH (± 0.5)	
A	82.5	66.5	119.5	103.5	7.5	3.0	50.0	80.0	60.0	5.5	70.0	60.0	M5
B	102.5	86.5	139.5	123.5									
C	122.5	106.5	159.5	143.5									

067	Unbraked length		Braked length		Flange thickness	Register length	Register diameter	Overall height	Flange square	Fixing hole diameter	Fixing hole PCD	Motor housing	Mounting bolts
	LB (± 0.9)	LC (± 1.0)	LB (± 0.9)	LC (± 1.0)	LA (± 0.5)	T (± 0.1)	N (j6)	LD (± 0.3)	P (± 0.3)	S (H14)	M (± 0.5)	PH (± 0.5)	
A	142.9	109.0	177.9	144.0	7.7	2.5	60.0	111.5	70.0	5.8	75.0	67.0	M5
B	172.9	139.0	207.9	174.0									
C	202.9	169.0	237.9	204.0									
D	232.9	199.0	267.9	234.0									

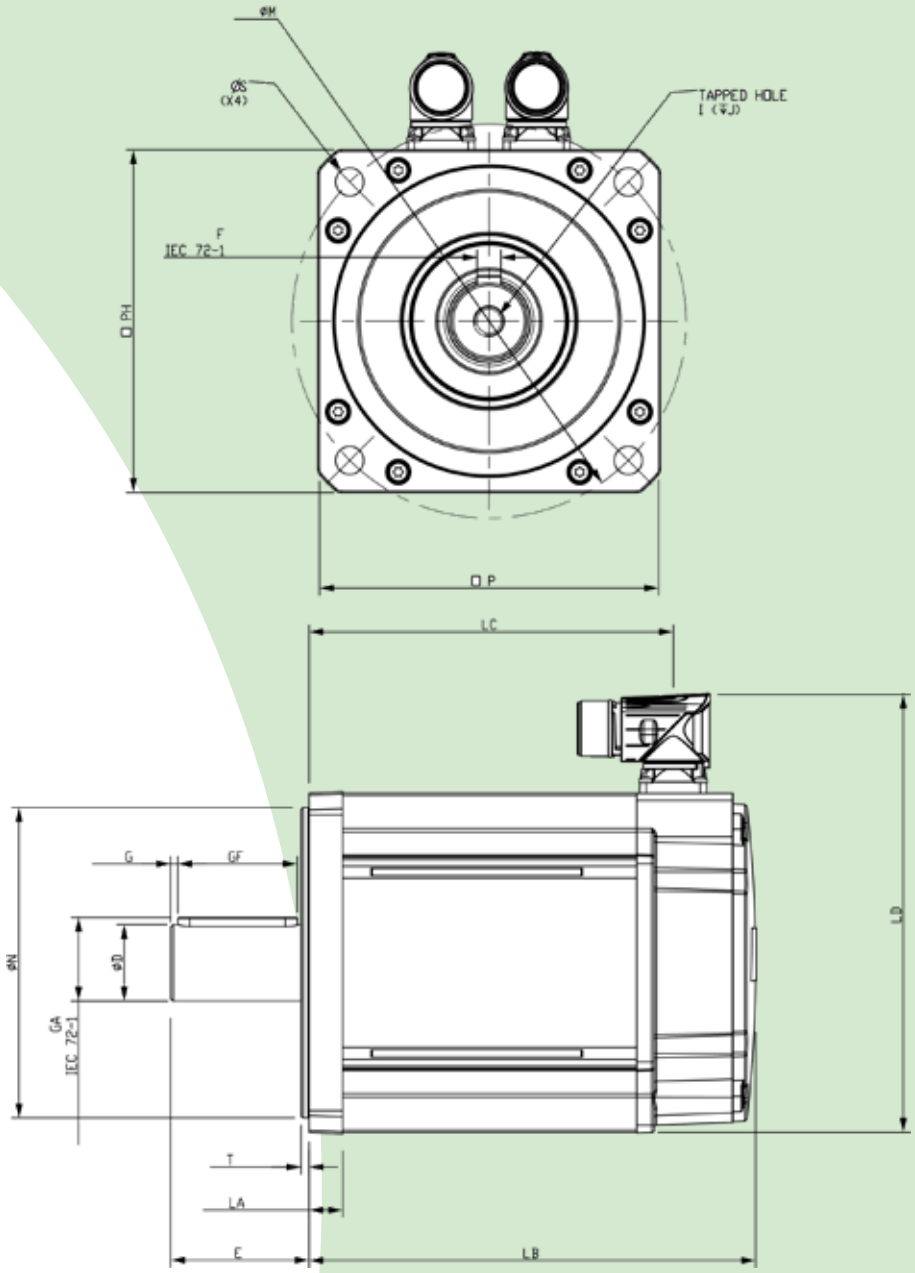
089	Feedback EC, FC, EF, FF				Flange thickness	Register length	Register diameter	Overall height	Flange square	Fixing hole diameter	Fixing hole PCD	Motor housing	Mounting bolts
	Unbraked length		Braked length										
	LB (± 0.9)	LC (± 1.0)	LB (± 0.9)	LC (± 1.0)	LA (± 0.5)	T (± 0.1)	N (j6)	LD (± 0.3)	P (± 0.3)	S (H14)	M (± 0.5)	PH (± 0.5)	
A	147.8	110.5	187.9	150.6	10.3	2.2	80.0	130.5	91.0	7.0	100.0	89.0	M6
B	177.8	140.5	217.9	180.6									
C	207.8	170.5	247.9	210.6									
D	207.8	200.5	277.9	240.6									
	CA, CT, GB, HB		AE		Flange thickness	Register length	Register diameter	Overall height	Flange square	Fixing hole diameter	Fixing hole PCD	Motor housing	Mounting bolts
	Unbraked	Braked	Unbraked	Braked									
	LB (± 0.9)	LB (± 0.9)	LB (± 0.9)	LB (± 0.9)	LA (± 0.5)	T (± 0.1)	N (j6)	LD (± 0.3)	P (± 0.3)	S (H14)	M (± 0.5)	PH (± 0.5)	
A	160.8	200.9	137.8	177.9	10.3	2.2	80.0	130.5	91.0	7.0	100.0	89.0	M6
B	190.8	230.9	167.8	207.9									
C	220.8	260.9	197.8	237.9									
D	250.8	290.9	227.8	267.9									

115	Feedback EC, FC, EF, FF				Flange thickness	Register length	Register diameter	Overall height	Flange square	Fixing hole diameter	Fixing hole PCD	Motor housing	Mounting bolts
	Unbraked length		Braked length										
	LB (± 0.9)	LC (± 1.0)	LB (± 0.9)	LC (± 1.0)	LA (± 0.5)	T (± 0.1)	N (j6)	LD (± 0.3)	P (± 0.3)	S (H14)	M (± 0.5)	PH (± 0.5)	
A	163.8	124.0	200.9	161.1	13.2	2.7	110.0	156.5	116.0	10.0	130.0	115.0	M8
B	193.8	154.0	230.9	191.1									
C	223.8	184.0	260.9	221.1									
D	253.8	214.0	290.9	251.1									
	CA, CT, GB, HB		AE		Flange thickness	Register length	Register diameter	Overall height	Flange square	Fixing hole diameter	Fixing hole PCD	Motor housing	Mounting bolts
	Unbraked	Braked	Unbraked	Braked									
	LB (± 0.9)	LB (± 0.9)	LB (± 0.9)	LB (± 0.9)	LA (± 0.5)	T (± 0.1)	N (j6)	LD (± 0.3)	P (± 0.3)	S (H14)	M (± 0.5)	PH (± 0.5)	
A	176.8	213.9	153.8	190.9	13.2	2.7	110.0	156.5	116.0	10.0	130.0	115.0	M8
B	206.8	243.9	183.8	220.9									
C	236.8	273.9	213.8	250.9									
D	266.8	303.9	243.8	280.9									

142	Unbraked length		Braked length		Flange thickness	Register length	Register diameter	Overall height	Flange square	Fixing hole diameter	Fixing hole PCD	Motor housing	Mounting bolts
	LB (± 0.9)	LC (± 1.0)	LB (± 0.9)	LC (± 1.0)	LA (± 0.5)	T (± 0.1)	N (j6)	LD (± 0.3)	P (± 0.3)	S (H14)	M (± 0.5)	PH (± 0.5)	
A	157.0	122.5	222.5	188.0	14.0	3.4	130.0	183.5 (Size 1) 204.5 (Size 1.5)	142.0	12.0	165.0	142.0	M10
B	187.0	152.5	252.5	218.0									
C	217.0	182.5	282.5	248.0									
D	247.0	212.5	312.5	278.0									
E	277.0	242.5	342.5	308.0									

190	Unbraked length		Braked length		Flange thickness	Register length	Register diameter	Overall height	Flange square	Fixing hole diameter	Fixing hole PCD	Motor housing	Mounting bolts
	LB (± 0.9)	LC (± 1.0)	LB (± 0.9)	LC (± 1.0)	LA (± 0.5)	T (± 0.1)	N (j6)	LD (± 0.3)	P (± 0.3)	S (H14)	M (± 0.5)	PH (± 0.5)	
A	160.6	131.1	259.1	229.6	18.5	3.9	180.0	252.5	190.3	14.5	215.0	190.0	M12
B	190.6	161.1	289.1	259.6									
C	220.6	191.1	319.1	289.6									
D	250.6	221.1	349.1	319.6									
E	280.6	251.1	379.1	349.6									
F	310.6	281.1	409.1	379.6									

* For 060 frame motor with EG/FG feedback add +17.5mm to LB dimension.



Shaft dimensions (all measurements shown are in mm)

	Shaft diameter	Shaft length	Key height	Key length	Key to shaft end	Key width	Tapped hole thread size	Tapped hole depth
	D (j6)	E	GA	GF	G	F (h9)	I	J (± 1)
060	14.0	30.0	16.0	22.0	1.5	5.0	M5 x 0.8	10.0
067	14.0	30.0	16.0	25.0	1.5	5.0	M5 x 0.8	13.5
089	19.0	40.0	21.5	32.0	3.7	6.0	M6 x 1.0	17.0
115	24.0	50.0	27.0	40.0	5.3	8.0	M8 x 1.25	20.0
142	32.0	58.0	35.0	50.0	3.0	10.0	M12 x 1.75	29.0
190	38.0	80.0	41.0	70.0	4.6	10.0	M12 x 1.75	29.0

NOTE: motor drawing is for dimensional purposes only, motors will differ in appearance.

Performance definitions

Stall torque

This is the maximum torque within the continuous zone at zero speed. Maximum continuous torque ratings may be intermittently exceeded for short periods provided that the winding Δt max temperature is not exceeded.

Δt max = 100 °C over a maximum ambient of 40 °C for Unimotor fm and Unimotor hd.

Stall current

Stall current = Stall torque / kt

Motor label and performance tables quote stall current when motor is at full power in a maximum ambient of 40 °C.

Rated speed

This is the maximum speed of the motor within the continuous zone. The motor speed can be controlled to any speed subject to the voltage limits and drive constraints as shown by the intermittent zone on a motor performance graph.

Ke voltage constant

This is the phase to phase rms voltage generated at the stator when the shaft is back driven at 1,000 rpm with the rotor at 20 °C.

Kt torque constant

A brushless motor delivers torque proportional to the current, such that torque = Kt x current.

Where Kt = 0.0165 x Ke (at 20 °C).

Magnets used on all motors are affected by temperature such that Ke and Kt reduce with increasing temperatures of the magnets. The reductions depends upon the magnet type and material grade used.

Winding thermal time constant

The thermal time constant of the winding with respect to the stator temperature as a reference in the exponential temperature rise given by the formula:

Winding temperature at time t seconds = T0+T1(1-e-t/tc)

Where T0 is the initial temperature,T1 is the final winding temperature and tc = thermal time constant (seconds)

Note that temperature = 63.2 % of T1 when t=tc

A thermal protection trip is provided by the drive, based upon calculations using elapsed time, current measurement, and the parameter settings set by the user or directly from the motor map.

Unimotor hd windings are ultimately protected by thermistor devices in the winding overhangs. These must be connected to the appropriate drive inputs via the motor feedback signal connector.

Rated power

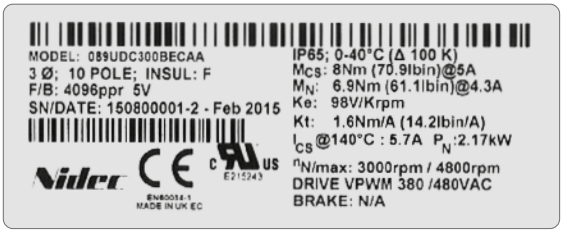
This is the product of the rated speed (radian/sec) and the rated torque (Nm) expressed in Watts (W).

Δt temperature

Δt temperature is the temperature difference between the copper wires of the motor winding and the ambient air temperature surrounding the motor.

The maximum Δt temperature permitted is 100 °C over a maximum ambient of 40 °C.
(i.e. a maximum winding temperature of 140 °C)

Nameplate definitions



Model Full part number of the motor

3Ø Indicates this is a 3 phase motor

POLE Number of poles:
060-190 – 10 poles – 5 pole pairs

Insul Windings are built to class F (155 °C)

F/B This gives the feedback device, count and working voltage or the feedback type

S/N/DATE The serial number and date the motor was manufactured

IP Ingress protection rating IP 65S

Mcs The stall torque at stall current

Mn The rated torque of the motor

Ke This is the AC Volts per 1,000 rpm with the motor at 20 °C

Kt Value shown is for the magnet's temperature at 20 °C

Ics The constant stall current at the maximum winding temperature of 140 °C

Pn The rated power of the motor

nN/max The rated speed/ this is the maximum speed allowed when taking into account these three factors:
1) Max drive voltage
2) Max encoder speed
3) Max mechanical speed

VPWM This indicates that the motor is for use with a voltage pulse width modulated drive with the supply voltage shown

Brake The current, that rated torque and the operation voltage for the brake or N/A if the brake is not fitted

Electronic namplate available.
Refer to factory for more information.

Motor derating

Any adverse operating conditions require that the motor performance be derated. These conditions include: ambient temperature above 40 °C, motor mounting position, drive switching frequency or the drive being oversized for the motor.

Ambient temperatures

The ambient temperature around the motor must be taken into account. For ambient temperatures above 40 °C the torque must be derated using the following formula as a guideline. (Note: Only applies to 2,000/3,000 rpm motors and assumes copper losses dominate.)

New derated torque
= Specified torque x $\sqrt{[1-((\text{Ambient temperature} - 40°C) / 100)]}$

For example with an ambient temperature of 76 °C the new derated torque will be 0.8 x specified value

Thermal test conditions

The performance data shown has been recorded under the following conditions. Ambient temperature 20 °C, with the motor mounted on a thermally isolated aluminium plate as shown below.

Mounting arrangements

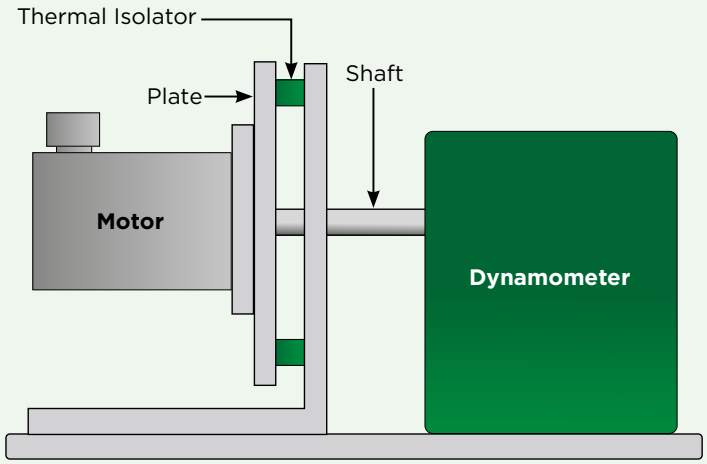
The motor torque must be derated if:

- The motor mounting surface is heated from an external source, such as a gearbox.
- The motor is connected to a poor thermal conductor.
- The motor is in a confined space with restricted air flow.

Drive switching frequency

Most Unidrive M and Digitax HD nominal current ratings are reduced for the higher switching frequencies.
See the appropriate drive manual for details.

See the table below for the motor derate factors.
These figures are for guidance only.



Motor type/frame	Aluminium heatsink plate
060 mm	110 x 110 x 15mm
067-089 mm	250 x 250 x 15mm
115-142 mm	350 x 350 x 20mm
190 mm	500 x 500 x 20mm

UNIMOTOR HD DERATE FACTORS

Switching frequency	060	067	089	115	142	190
3kHz	n/a	0.93	0.89	0.89	0.83	0.9
4kHz	n/a	0.94	0.91	0.92	0.85	0.95
6kHz	n/a	0.95	0.95	0.96	0.88	1
8kHz	0.99	0.98	0.97	0.98	0.91	1
12/16kHz	1	1	1	1	1	1

NOTE: Only applies to motors up to 3,000 rpm (rms) or lower. Assumes copper losses dominate on all frame sizes.
Derate factor is applied to stall torque, rated torque, stall current and rated power.

Brake specification

Unimotor hd may be ordered with an internal rear mounted spring applied parking brake. The brake works on a failsafe principle. The brake is active when the supply voltage is switched off, and the brake is released when the supply voltage is switched on.

If a motor is fitted with a failsafe brake, take care not to subject the motor shaft to excessive torsional shocks or resonance when the brake is engaged or disengaged. Doing so can damage the brake.

Safety note

The failsafe brake is for use as a holding brake with the motor shaft stationary.

Do NOT use it as a dynamic brake. Using it in this manner will cause brake wear and eventual failure. Emergency Stop situations can contribute to brake wear and failure.

Note: Shunting the brake primary coil with an external diode to avoid switching peaks increases the release time considerably. This is usually required to protect solid state switches, or to reduce arcing at the brake relay contacts (Diode 1N4001 recommended)

"Resin" friction material application & benefits:

- The main feature change to the type 6 brake is the use of an improved Resin friction material compared to its predecessors.
- The type 6 brake has improved overall performance in operation compared to the aluminium cored friction materials containing natural rubber.
- Type 6 brakes can endure higher interface temperatures and pressures.
- Type 6 brake disk are moulded as a one-piece part providing better tensile, compressive & impact qualities compared to other friction materials.

Control Techniques have continuing product improvement projects, the integration of the 'Resin' brake to all frame sizes is included in this. Please check with your drive centre for regular updates.

Unimotor hd

Motor frame	Supply volts	Input power	Static torque @120 °C Parking Brake '5'	Release time	Moment of inertia	Backlash **
Size	Vdc	Watts	Nm	ms nom.	kg.cm²*	Degrees **
060	24	7.2	1.3	50	tbc	0.80
142 (C-E)	24	25	38	95	1.85	0.77
190 (A-D)	24	25	60	120	4.95	0.77
190 (E-F)	24	54.5	90	250	7.72	0.75

Motor frame	Supply volts	Input power @ 20 °C	Static torque @120 °C Parking Brake '6'	Release time	Moment of inertia	Backlash **
Size	Vdc	Watts	Nm	ms nom.	kg.cm²*	Degrees **
067	24	15	2	35.2	0.063	0.62°
089	24	18.5	10	72.8	0.259	0.45°
115	24	17.5	16	64	0.506	0.38°
142 (A-B)	24	17.5	16	64	0.506	0.38°

*Note 1 kg.cm² = 1 x 10 – 4 kg.m² ** Backlash figure will increase with time

- The brake is intended for parking duty and is not for dynamic or safety use.
- Refer to your Automation Center or Distributor if your application requires dynamic braking in emergency conditions.
- To provide protection to the brake control circuit it is recommended that a diode is connected across the output terminals of the solid state or relay contacts devices.
- Larger torque brakes are available as on option. Contact your Automation Center or Distributor for details.
- Unless otherwise stated, all figures are representative at 20 °C brake temperature.
- The brake will engage when power is removed.
- Multiply static torque value by 1.1x for minimum holding torque at 20-100°C

It is recommended to run extensive application validation testing and confirm the motor brake life span when the motor is mounted vertically and the motor runs through high acceleration and deceleration.

Additional motor weights all figures are subject to a tolerance of (±10%)

Motor frame size	060	067	089	115	142	142	190
Frame length	A to C	A to D	A to D	A to D	A to B	C to E	A to F
Braked '5' brake	+0.28kg					+2.8kg	+4.0kg
Braked '6' brake		+0.68kg	+1.4kg	+2.09kg	+2.29kg		
Fan box				+1.65kg	+1.9kg	+1.9kg	+2.6kg
Hybrid box small				+0.5kg	+0.5kg	+0.5kg	
Hybrid box medium					+0.5kg	+0.5kg	+0.5kg
Hybrid box large							+1.5kg

Feedback

Feedback device order code	Feedback type	Manufacturer	Encoder supply voltage	SinCos cycle or incremental pulses per revolution	Resolution available to position loop[2&3]	Absolute multi-turn revolutions	Feedback accuracy[1]	Single cable connector available[4]	Serial communication protocol
060 - 190 motors (refer to order codes page 6)									
CT	Incremental Encoder	NMC	5 Vdc ± 10%	4096	Medium 16384 (14 bits)	-	Low +/- 720"	-	-
060 - 067 motors (refer to order codes page 6)									
AR	Resolver	LTN RE – 15	7 Vdc Excitation 5kHz	1 Transformation ratio 0.5	Medium 16384 (14 bits)	-	Low +/- 600"	-	-
CR	Incremental Encoder	R35i	5 Vdc ± 10%	4096	Medium 16384 (14 bits)	-	Medium +/- 150"	-	-
EM (Multi-turn)	Inductive EnDat SinCos	EQI 1130	4.75 – 10 Vdc	16	High 2.62 x 14^4 (18 bits)	4096 (12 bits)	Medium +/- 280"	-	EnDat 2.1 / EnDat 01
FM (Single-turn)		ECI 1118				-			
EG (Multi-turn)	Inductive EnDat Only *Functional Safety Capable*	EQI 1131	3.6 - 14 Vdc	N/A	High 5.24 x 10^5 (19 bits)	4096 (12 bits)	Medium +/- 120"	6 wire HMC6	EnDat 2.2 / EnDat 22
FG (Single-turn)		ECI 1119				-			
089 – 190 motors									
AE	Resolver	Size 52	6 Vdc Excitation 6kHz	1 Transformation ratio 0.31	Medium 16384 (14 bits)	-	Low +/- 720"	-	-
CA	Incremental Encoder	CFS50	5 Vdc ± 10%	4096	Medium 16384 (14 bits)	-	High +/- 60"	-	-
EC (Multi-turn)	Inductive EnDat SinCos	EQI 1331	4.75 – 10 Vdc	32	High 5.24 x 10^5 (19 bits)	4096 (12 bits)	Medium +/- 380"	-	EnDat 2.1 / EnDat 01
FC (Single-turn)		ECI 1319				-			
EF (Multi-turn)	Inductive EnDat *Functional Safety Capable*	EQI 1331 FS	3.60 – 14 Vdc	Serial Only	High 5.24 x 10^5 (19 bits)	4096 (12 bits)	High +/- 65"	6 wire HMC6	EnDat 2.2 / EnDat 22
FF (Single-turn)		ECI 1319 FS				-			
GB (Multi-turn)	Optical EnDat Only	EQN 1337	3.6 - 14 Vdc	N/A	Very High 3.35 x 10^7 (25 bits)	4096 (12 bits)	Very High +/- 20"	6 wire HMC6	EnDat 2.2 / EnDat 22
HB (Single-turn)		ECN 1325				-			

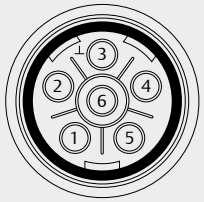
[1] The information is supplied by the feedback device manufacturer and relates to it as a standalone device. The value may change when mounted into the motor and connected to a drive. These values have not been verified by Control Techniques.

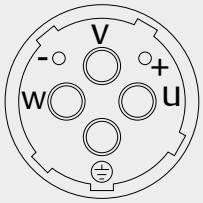
[2] The output from the resolver is an analogue output; the resolution is determined by the analogue to digital converter used; the value shown is when the resolver is used in conjunction with the SM-Resolver

[3] The sin and cosine outputs from the SinCos optical encoders are analogue outputs; with Unidrive M and Digitax ST the resolutions quoted above are when the encoder type is set to either SC Endat or SC Hiperface depending on the encoder.

[4] To be ordered with single cable connector, see connector options. 6 wire HMC6 must be ordered with KTY 84-130 thermistor, see inertia options.

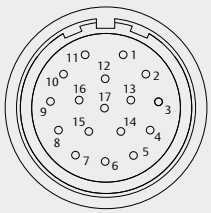
POWER PLUG - Motor end

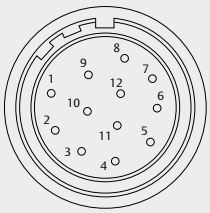




Size 1 - Type B			Size 1.5 - Type J Connector		
	With brake	Without brake		With brake	Without brake
Pin	Function	Function	Pin	Function	Function
1	Phase U (R)	Phase U (R)	U	Phase U (R)	Phase U (R)
2	Phase V (S)	Phase V (S)	V	Phase V (S)	Phase V (S)
3	Ground	Ground	⏚	Ground	Ground
4	Phase W (T)	Phase W (T)	W	Phase W (T)	Phase W (T)
5	Brake		+	Brake	
6	Brake		-	Brake	
Shell	Screen	Screen	Shell	Screen	Screen

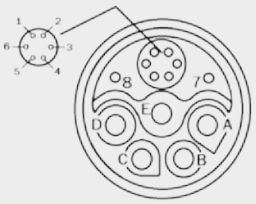
SIGNAL PLUG - Motor end

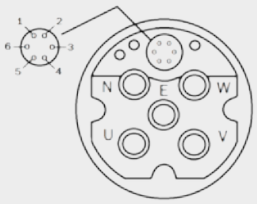




	SI		SE	SR
	Incremental encoder (CA, CT, CR)	Heidenhain Sincos EnDat 2.1 absolute encoders (EM, FM, EC, FC)	Heidenhain EnDat 2.2 only absolute encoders (EF, FF, EG, FG, GB, HB)	Resolver (AE, AR)
Pin	Function	Function	Function	Function
1	Thermistor	Thermistor	Thermistor	Excitation High
2	Thermistor	Thermistor	Thermistor	Excitation Low
3		Screen (Optical only)	Screen (Optical only)	Cos High
4	S1			Cos Low
5	S1 Inverse			Sin High
6	S2			Sin Low
7	S2 Inverse			Thermistor
8	S3	+ Clock	+ Clock	Thermistor
9	S3 Inverse	- Clock	- Clock	
10	Channel A	+ Cos		
11	Index	+ Data	+ Data	
12	Index Inverse	- Data	- Data	
13	Channel A Inverse	- Cos		
14	Channel B	+ Sin		
15	Channel B Inverse	- Sin		
16	+ V	+ V	+ V	
17	0 Volts	0 Volts	0 Volts	
Body	Screen	Screen	Screen	

POWER & SIGNAL COMBINED PLUG - Motor end





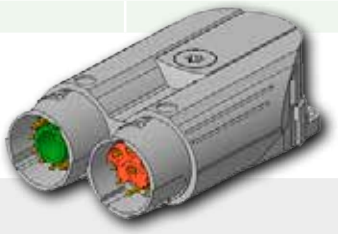
Size 1 - Type D Connector & Type S Connector			Size 1.5 - Type E Connector		
Heidenhain EnDat 2.2 only absolute encoders (EF, FF, EG, FG, GB, HB)			Heidenhain EnDat 2.2 only absolute encoders (EF, FF, GB, HB)		
	With brake	Without brake		With brake	Without brake
Pin	Function	Function	Pin	Function	Function
1	+ Volts	+ Volts	1	+ Volts	+ Volts
2	0 Volts	0 Volts	2	0 Volts	0 Volts
3	+ Data	+ Data	3	+ Data	+ Data
4	- Data	- Data	4	- Data	- Data
5	+ Clock	+ Clock	5	+ Clock	+ Clock
6	- Clock	- Clock	6	- Clock	- Clock
7	- Brake		N	-	-
8	+ Brake		U	Phase U (R)	Phase U (R)
A	Phase U (R)	Phase U (R)	V	Phase V (S)	Phase V (S)
B	Phase V (S)	Phase V (S)	PE	Ground	Ground
C	Phase W (T)	Phase W (T)	W	Phase W (T)	Phase W (T)
D	-	-	+	Brake	
E	Ground	Ground	-	Brake	

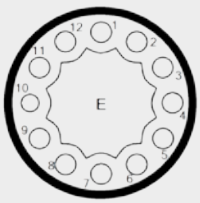
15 WAY PLUG - Drive end

	SI		SE	SR
	Incremental encoders (CA, CT, CR)	SinCos absolute encoders (EM, FM, EC, FC)	EnDat 2.2 only absolute encoders (EF, FF, EG, FG, GB, HB)	Resolvers (AE, AR)
Pin	Function	Function	Function	Function
1	Channel A	+ Cos	+ Data	+ Cos
2	Channel A Inverse	- Cos	- Data	- Cos
3	Channel B	+ SIn	+ Clock	+ Sin
4	Channel B Inverse	-Sin	- Clock	- Sin
5	Index	+ Data		+ Excitation
6	Index Inverse	- Data		- Excitation
7	S1			
8	S1 Inverse			
9	S2			
10	S2 Inverse			
11	S3	+ Clock		
12	S3 Inverse	- Clock		
13	+ V	+ V	+ V	
14	0 Volts	0 Volts	0 Volts	Thermistor
15	Thermistor	Thermistor	Thermistor	Thermistor
Body	Screen	Screen	Screen	Screen

Y-TEC SIGNAL/POWER PLUG - Motor end

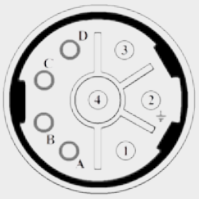
Signal - Type T Connector (CT)		Power - Type T connector		
			With brake	Without brake
Pin	Function	Pin	Function	Function
1	Ground	A	Phase U	Phase U
2	Channel A	B	Phase V	Phase V
3	Channel A Inverse	C	Phase W	Phase W
4	Channel B	1	Thermistor +	Thermistor +
5	Channel B Inverse	2	Thermistor -	Thermistor -
6	+ V	3	+ V	
7	S1	4	0 Volts	
8	S2	⏚	Ground	Ground
9	S3			
10	S1 Inverse			
11	S2 Inverse			
12	S3 Inverse			
A	Index			
B	Index Inverse			
C	-			





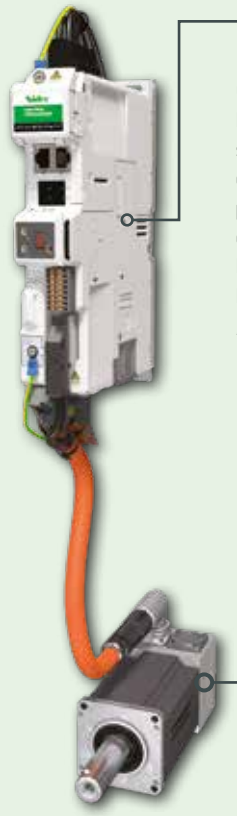
Signal - Type T Connector			
	(EG / FG)	(TL / UL)	Resolver
Pin	Function	Function	Function
1	+ V	+ V	-
2	+ Data	+ Data	-
3	- Data	- Data	-
4	+ Clock	-	-
5	- Clock	-	-
6	-	-	Excitation Low
7	0 Volts	0 Volts	-
8	-	+ Sin	Sin High
9	-	REF Sin	Sin Low
10	-	+ Cos	Cos High
11	-	REF Cos	Cos Low
12	-	-	Excitation High

8 WAY POWER PLUG - Motor end



Size 1 - Type R Connector			Size 1.5 - Type Z Connector		
	With brake	Without brake		With brake	Without brake
Pin	Function	Function	Pin	Function	Function
1	Phase U (R)	Phase U (R)	U	Phase U (R)	Phase U (R)
2	Ground	Ground	V	Phase V (S)	Phase V (S)
3	Phase W (T)	Phase W (T)	⏚	Ground	Ground
4	Phase V (S)	Phase V (S)	W	Phase W (T)	Phase W (T)
A	Thermistor	Thermistor	+	Brake	
B	Thermistor	Thermistor	-	Brake	
C	Brake		1	Thermistor	Thermistor
D	Brake		2	Thermistor	Thermistor
Shell	Screen	Screen	Shell	Screen	Screen

Perfect combinations



Digitax HD

Optimized for high-dynamic applications, Digitax HD provides the flexibility of both standalone and modular configurations. The drive offers full servo control plus open loop permanent magnet and induction motor control across four functionality levels: EtherCAT, MCi machine control, multiprotocol Ethernet and the flexible Base drive.

For motors below 16A continuous stall current.

Unidrive M700

Unidrive M700 series provides high performance motor control and ultimate control flexibility in order to satisfy the requirements of machine builders and high specification industrial and hoisting applications.

For motors above 16A continuous stall current.

Unimotor hd

Unimotor hd is Control Techniques' high dynamic brushless AC servo motor range. With high peak torque, low inertia and the most compact dimensions, Unimotor hd is optimized for applications requiring rapid acceleration and deceleration.

Please refer to the Digitax HD and Unidrive M brochures for more detailed information.

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