



Dynamic Motor Motion
Technology Corporation

DHT / DST SERIES
AC SERVO MOTOR
SPECIFICATION MANUAL

Manual Code: DMMACSMTR-GS1-0115A1
Revision: A1 [January 2015 - First Copy]

Disclaimer

All specified data subject to change without notice to reflect updates and improvements made to product. DMM Technology Corp. assumes no responsibility for damages resulting from user related errors or improper use of product. Safety precautions should be considered for all applications. The DHT Series AC Servo Motor product line is not designed or certified to ensure safety of personnel or machinery, and should not be used for such tasks. Always design a higher-level safety feedback to reduce the risks of product and bodily harm.

Products from DMM Technology Corp. are supported by the following warranty:

- 1 year from the date of purchase or 14 months from the month of original date shipment from factory.

Within the warranty period, DMM Technology Corp. will replace or repair any defective product free of charge given that the cause of the defect is caused by a manufacturing problem. This warranty does not cover cases involving the following conditions:

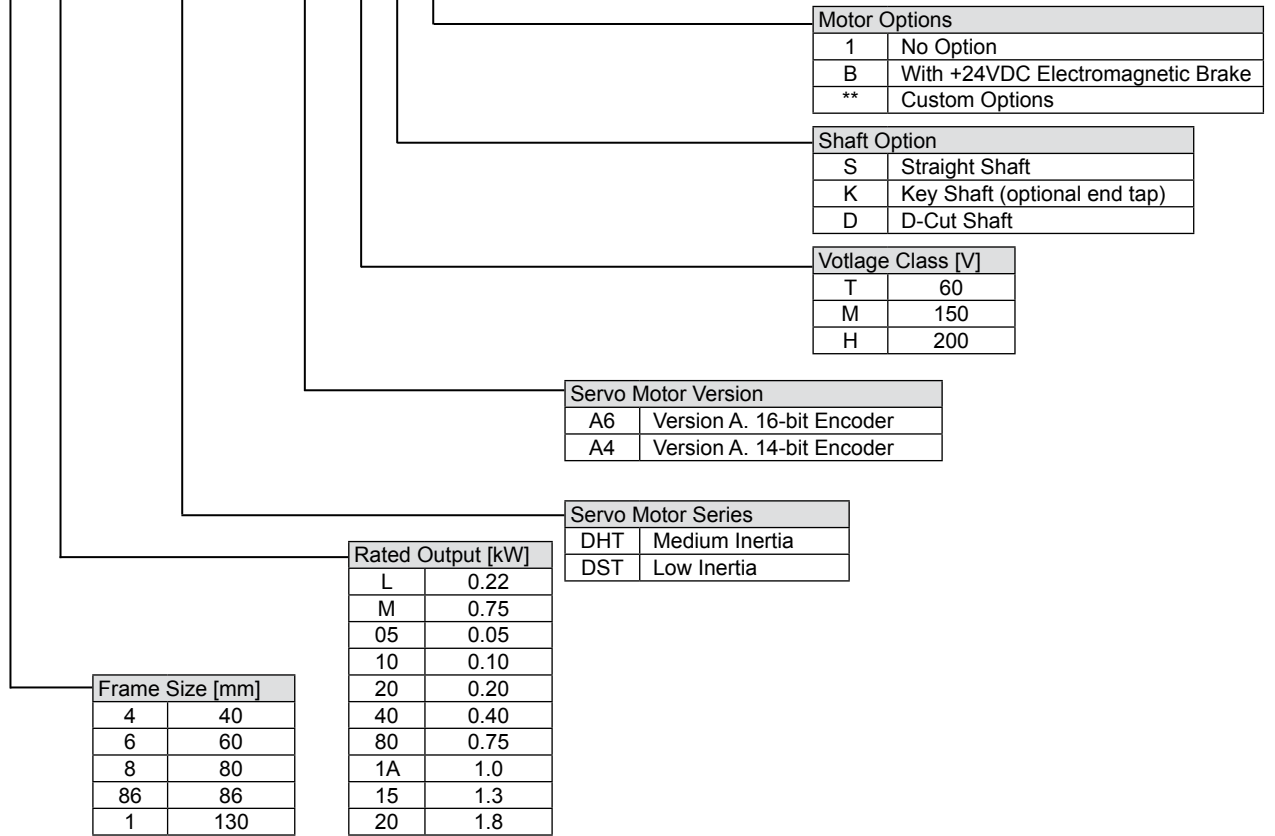
- The product is used in an unsuitable or hazardous environment, resulting in damages to the product.
- Improperly handling resulting in physical damage to the product. Including falling, heavy impact, or shock.
- Damages resulting from transportation or shipping after the original factory delivery.
- Unauthorized alterations or modifications made to the product, resulting in damages to the product.
- The encoder has been modified or removed from the factory mounted position.
- Alterations have been made to the Name Plate of the product
- Damages resulting in usage of the product not specified by this manual.
- Damages to the product resulting from natural disasters
- Modifications have been made to the servo motor-end connectors (receptacle for 1.5kW and 2.0kW motors).
- The product has been altered either cosmetically or electronically
- Alterations have been made to the Name Plate of the product.

Installation and Operation

- Install and mount the servo motor in an environment free of hazardous substances such as flammable fluids or gases, corrosive chemical fluids or gases, or water.
- Ensure that the servo motor will not be subject to large amounts of cooling fluid, oil, or residual metal chips from the machinery.
- Do not subject the motor shaft and cables to large amounts of stress. Including tension, bending, or twisting. Never subject the motor shaft or encoder cover to large impact, such as from a hammer.
- The low voltage servo motor class can experience line voltage drops for longer cable lengths. Contact DMM Technology Corp. if the application experiences such effect and require remedy.
- Do not perform unauthorized modifications to the servo motor body or cables.
- Ensure that the servo motor is not in direct contact with any heat sensitive objects. The motor may generate large amounts of heat after prolonged use and can damage nearby objects.
- In general, the servo motor should be installed and mounted in a well ventilated, low humidity area that will not be subject to significant vibration or shock.
- The motor mounted absolute encoder is tuned and calibrated from the factory. Do not make unauthorized modifications or changes to the encoder.

Servo Motor Model Designation

640-DST-A6TS1



Applicable Servo Drive Pair

Servo Motor Series	Model Name Prefix	Features	Frame Size	Voltage Class	Applicable Servo Drive
DHT	86L	Medium inertia for low reduction, high load capacity, high rigidity applications	86mm NEMA34	60V	DYN2
	86M			150V	
DST	405	Low inertia for high response, dynamic acceleration rates, high frequency, low rigidity applications	40mm	60V/200V	DYN2/ DYN4
	410				
	620				
	640		80mm	200V	DYN4
	880				
	11A				
	115				
120	130mm				

Consolidated Specifications

Servo Motor Series	Features	Model Name Prefix	Rated Output Capacity [kW]	Frame Size	Voltage Class	Rated Current/ (Peak Current) [A]	Rated Speed/ (Max Speed) [r/min]	Rated Torque/ (Peak Torque) [Nm]	Rotor Inertia [kg-cm ²]	Torque Coefficient	Holding Brake	Applicable Servo Drive					
DHT	Medium inertia for low reduction, high load capacity, high rigidity applications	86L	0.22	86mm NEMA34	60V	6.25 (19.8)	3000 (3,000)	0.7 (2.1)	0.65	0.112	X	DYN2					
		86M	0.75		150V	7.2 (21.5)	3,000 (5,000)	2.4 (7.1)	2.45	0.33		DYN2/ DYN4					
DST	Low inertia for high response, dynamic acceleration rates, high frequency, low rigidity applications	405	0.05	40mm	60V	2.0 (6.0)	3,000 (5,000)	0.16 (0.48)	0.036	0.08	24VDC	DYN2					
					200V	0.8 (2.4)						0.225	DYN4				
					410	0.10						60V	3.0 (9.0)	0.318 (0.955)	0.063	0.106	DYN2
												200V	0.99 (3.0)			0.384	DYN4
		620	0.20	60mm	60V	4.5 (11.3)	0.637 (1.91)	0.232	0.169	DYN2							
					200V	2.1 (6.5)			0.312	DYN4							
		640	0.40	60mm	60V	8.4 (21.0)	1.27 (3.1)	0.426	0.181	DYN2							
					200V	2.8 (8.5)			0.455								
		880	0.75	80mm	4.4 (13.4)	2.39 (7.16)	1.4	0.547									
		11A	1.0	130mm	200V	8.2 (24.6)	1,500 (3,000)	4.77 (14.3)	8.5	0.774		DYN4					
		115	1.3			10.7 (29.5)		8.27 (23.3)	18.9	0.929							
		120	1.8			16.7 (36.3)		11.5 (28.7)	20.4	0.74							

DHT Series AC Servo Motor

Features

- Standard NEMA34 frame sizing for universal applications
- Factory mounted and tuned ABS-16-00 Absolute Encoder - 16 bits [65,536 ppr]
- High speed serial absolute encoder with 4-wire feedback
- Medium inertia high rigidity applications
- Low cogging, smooth coil response
- Robust against shock and vibration - Robust magnetic encoder
- Low maintenance

Application Examples

- Machine Tooling / CNC
- Y X table
- Lighting / Camera Automation
- Printing / Textile Automation
- Medical Machine
- Light Industry Automation
- Roller / Conveyor Machines
- Battery Powered Machines

Motor Option

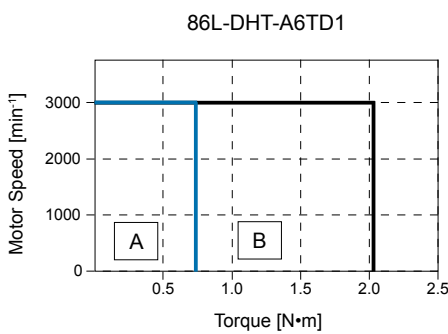
- +24VDC electromagnetic holding brake
- Straight shaft, key shaft, D-cut shaft options
- Custom voltage class options

Motor Specification

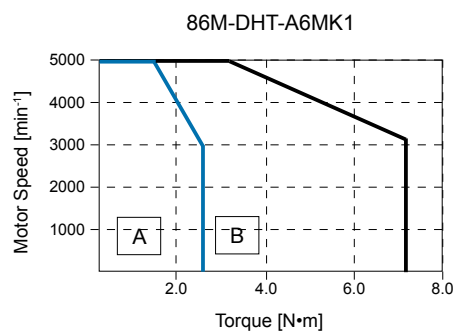
Motor Model		86L-DHT-A6TD1	86M-DHT-A6MK1
Rated Output	W	220	750
Rated Speed	min ⁻¹	3,000 ¹	3,000 ³
Maximum Speed	min ⁻¹	3,000	5,000 ³
Rated Torque ⁴	N•m	0.7	2.4
Peak Torque	N•m	2.1	7.1
Voltage Class	V	48	150
Rated Current ⁵	Arms	6.25	7.2
Peak Current	Arms	19.8	21.5
Rotor Moment of Inertia	kg•cm ²	0.650	2.45
Torque Constant	N•m/Arms	0.112	0.33
Line Resistance	Ohm	0.39	0.7
Encoder ²		16-Bit Absolute (65,536 ppr)	
Flange Size		86mm NEMA34	86mm NEMA34
Shaft Length	mm	25	45
Shaft Diameter	mm	12.7	14
Mass	kg	1.4	3.1
Ingress Protection		IP55	IP65
Environment	Temperature	0~40°C Ambient temperature -20~50°C Storage	
	Humidity	85% Max. humidity. no condensation	

- Note: 1. The 86L-DHT-□□□□ servo motor rates the torque at the same rated and maximum speeds. The torque profile is consistent throughout the speed range. Mechanically permissible speed is higher than rated maximum speed. Maximum speed depends on motor voltage-speed gradient and servo drive input voltage.
2. All encoders are single-turn absolute. Magnetic sensor with high speed serial feedback. Consult DMM Technology Corp. for detailed encoder specifications.
3. The 86M-DHT-A6MK1 750W capacity servo motor has a rated and peak speed of 2,000min⁻¹ when paired with DYN2 AC servo drive.
4. Rated torque measured as continuous allowable torque at 40°C with 6mmx□200mm aluminum heat sink.
5. The armature current of servo motor depends on voltage input and power capacity. Lower voltage input at same power capacity yields higher current draw.

Torque-Speed Curve

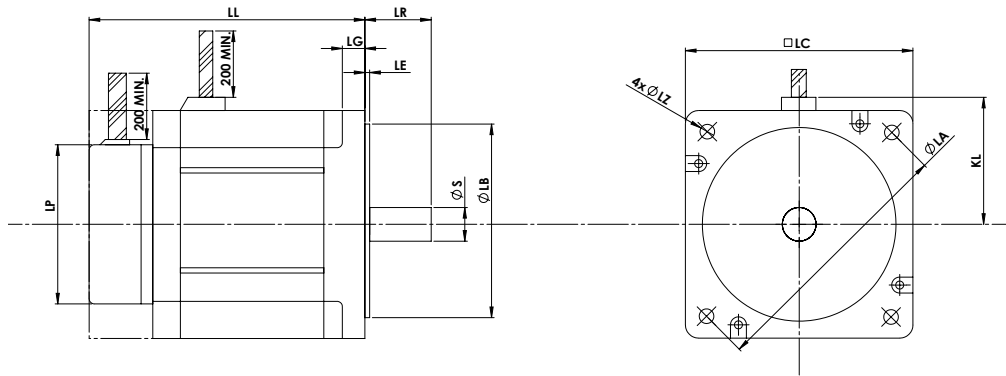


A: Continuous Duty Zone
B: Intermittent Duty Zone



A: Continuous Duty Zone
B: Intermittent Duty Zone

External Dimensions



Motor Model	LL	LG	KL ¹	LA	LB	LP	LE	LC	LZ	LR	S ²
86L-DHT-A6TD1	91	8.5	44	98.4	73 ⁰ _{-0.04}	42	1.8	86	5.5	25	12.7 ⁰ _{-0.011}
86M-DHT-A6MK1	149	8	47	100	80 ⁰ _{-0.03}	80	3	86	8	45	14 ⁰ _{-0.011}

Note: 1. The 86M-DHT-A6MK1 motor model does not have an extruding cable plug. The motor power and encoder cables run from the same location near the back of the motor.
 2. Refer to the Shaft section for shaft dimension and type.
 3. The Motor Power Cable and Encoder Feedback Cable are Leadwire type from the motor and encoder body. The factory length for both leadwire cables is at least 200mm long.

Shaft Specifications

Motor Model	Shaft Type	Dimensions [mm]
86L-DHT-A6TD1	D-cut with two flat seats No Tap	
86M-DHT-A6MK1	With key No tap	

Motor Power Connection

	86L-DHT-A6TD1	86M-DHT-A6MK1
Phase A	Red	Blue/Green
Phase B	Yellow	Red
Phase C	Blue	Black
Gnd/Frame	Green/Yellow	

Motor Power Connector

Part	Part No.	Manufacturer
Connector Assembly Plug Housing	VLP-04V	J.S.T.
Socket Contact	SVF-61T-P2.0	J.S.T.
Cable Retainer	VLS-02V	J.S.T.



Pin Layout	Color	Data
1	-	Phase A
2	-	Phase B
3	-	Phase C
4	Yellow/Green	Frame Ground

Encoder Connector

Part	Part No.	Manufacturer
Connector Assembly Plug Housing	HILP-04V-1-S	J.S.T.
Pin Contact	SHIF-01T-P0.5	J.S.T.



Pin Layout	Color	Data
1	Black	Gnd
2	Blue	S-
3	Green	S+
4	Red	+5VDC

DST Series AC Servo Motor

Features

- Low inertia for high response applications
- Standard servo frame sizing for universal applications
- Factory mounted and tuned ABS-16-00 Absolute Encoder - 16 bits [65,536 ppr]
- High speed serial absolute encoder with 4-wire feedback
- Extremely low vibration, consistent winding density
- Low voltage 60V and high voltage 200V options
- Robust against shock and vibration - Robust magnetic encoder
- IP65 enclosure

Application Examples

- Machine Tooling / CNC
- Y X table
- Textile / Embroidery Automation
- Printing / Packaging
- Medical Machine
- Roller / Conveyor Machines
- Battery Powered / EV / Transport

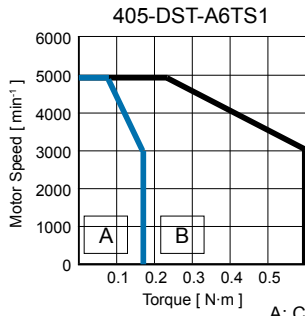
Motor Option

- +24VDC electromagnetic holding brake
- Straight shaft, key shaft, D-cut shaft options
- Shorter frame option with ultra-thin ABS-16-00 encoder
- Custom voltage class options

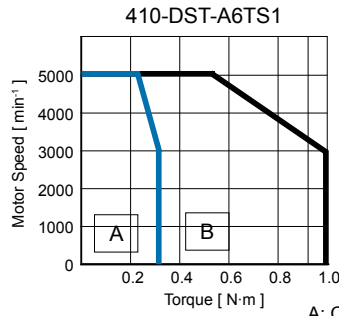
Motor Specification

Motor Model □□□-DST		405		410		620		640		880	11A	115	120
Rated Voltage	V	60V	200V	60V	200V	60V	200V	60V	200V	200V			
Rated Output	kW	0.05		0.1		0.2		0.4		0.75	1.0	1.3	1.8
Rated Torque	N·m	0.16		0.318		0.637		1.27		2.39	4.77	8.27	11.5
Instantaneous Max. Torque	N·m	0.48		0.955		1.91		3.82		7.16	14.3	23.3	28.7
Rated Current	A	2.0	0.8	3.0	0.99	4.5	2.1	8.4	2.8	4.4	8.2	10.7	16.7
Max. Current	A	6.0	2.4	9.0	3	11.3	6.5	21.0	8.5	13.4	24.6	29.5	36.3
Rated Speed	r/min	3000		3000		3000		3000		3000	1500	1500	1500
Max. Speed	r/min	6000		5000		5000		5000		5000	3000	3000	3000
Rotor Inertia	kg·cm ²	0.036		0.063		0.232		0.426		0.73	8.5	18.9	23.8
Torque Coefficient	N·m/A	0.08	0.225	0.106	0.384	0.169	0.312	0.181	0.455	0.547	0.774	0.929	0.74
Mass	kg	0.47		0.5		1		1.65		2.69	8.95	9.33	9.38
Ratings	Time Rating: Continuous Thermal Class: F Excitation Method: Permanent Magnet Insulation Resistance: DC500V, >20MΩ Noise: ≤60dB; No Special Noise												
Environment	Ambient Temperature: 0~40 °C Storage: -20~50°C Ambient Humidity: 20~80% No Condensation												
Enclosure	IP65												
Shock	98m/s ² Max. (10G)												
Applicable Servo Drive		DYN2	DYN4	DYN2	DYN4	DYN2	DYN4	DYN2		DYN4			

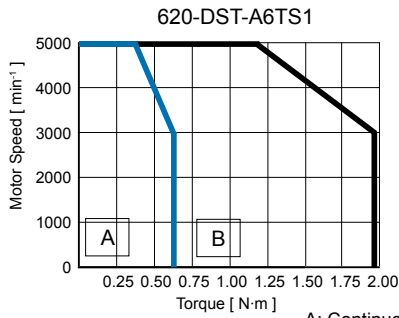
Torque-Speed Curve



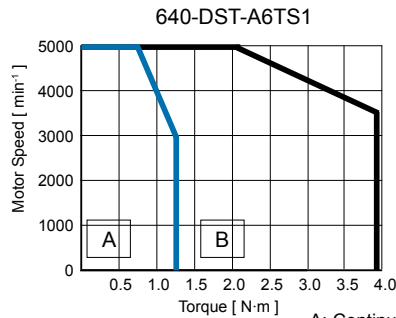
A: Continuous Duty Zone
B: Intermittent Duty Zone



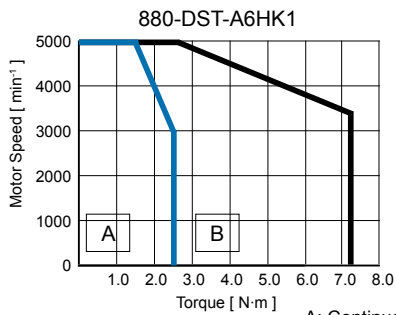
A: Continuous Duty Zone
B: Intermittent Duty Zone



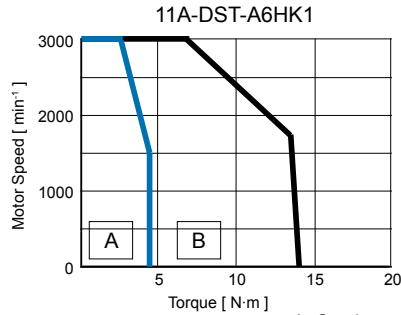
A: Continuous Duty Zone
B: Intermittent Duty Zone



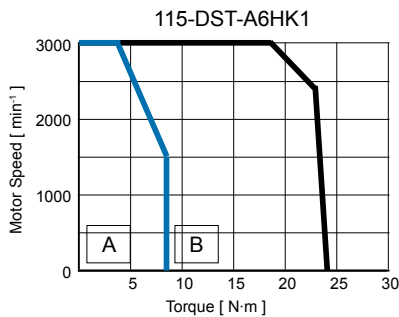
A: Continuous Duty Zone
B: Intermittent Duty Zone



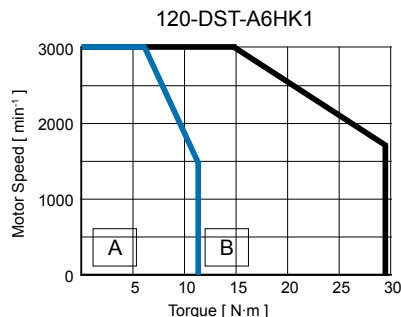
A: Continuous Duty Zone
B: Intermittent Duty Zone



A: Continuous Duty Zone
B: Intermittent Duty Zone



A: Continuous Duty Zone
B: Intermittent Duty Zone



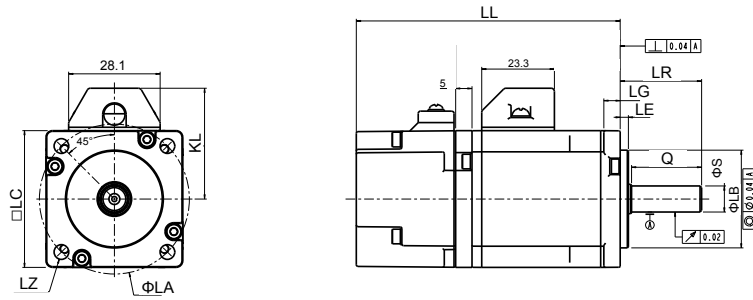
A: Continuous Duty Zone
B: Intermittent Duty Zone

Notes:

1. Data measured at 40 °C warm-boot conditions.
2. Torque - Speed characteristic depends on exact supply voltage to servo drive.

External Dimensions

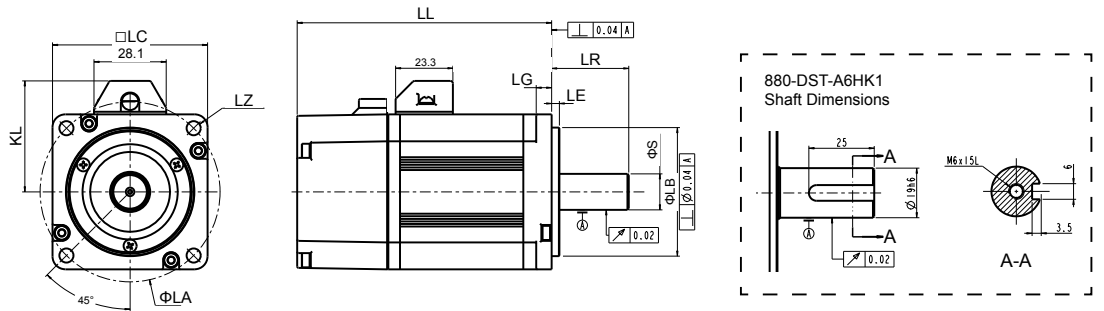
40mm Frame
0.05kW, 0.10kW



[Unit: mm]

Motor Model	LL	LG	KL	LA	LB	LE	LC	LZ	LR	S	Q
405-DST-A6TS1	81	5	34	Φ46	Φ30h7	2.5	42	4-Φ4.5	25	Φ8h6	21.5
410-DST-A6TS1	98.5	5	34	Φ46	Φ30h7	2.5	42	4-Φ4.5	25	Φ8h6	21.5

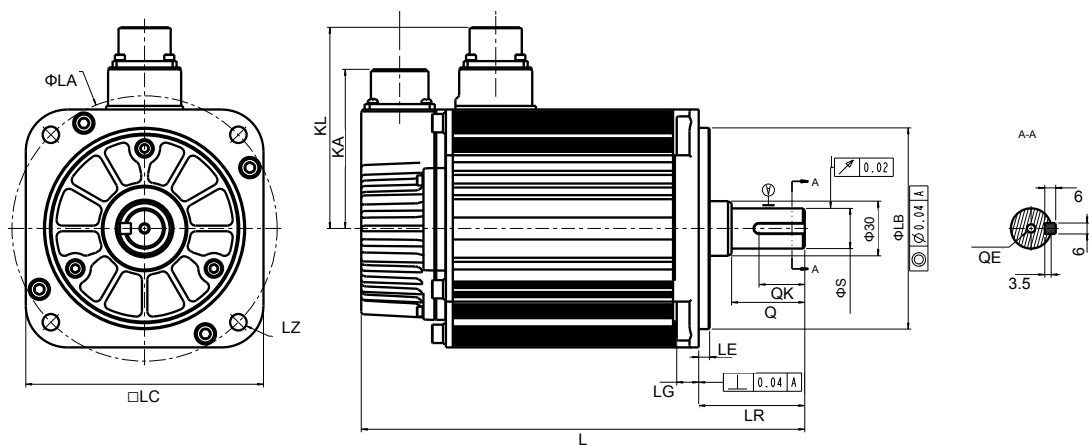
60mm Frame,
80mm Frame
0.20kW, 0.40kW,
0.75kW



[Unit: mm]

Motor Model	LL	LG	KL	LA	LB	LE	LC	LZ	LR	S	Q
620-DST-A6TS1	99	6	43	Φ70	Φ50h7	3	60	4-Φ5.5	30	Φ14h6	-
640-DST-A6TS1	127	6	43	Φ70	Φ50h7	3	60	4-Φ5.5	30	Φ14h6	-
880-DST-A6HK1	132	8	93	Φ90	Φ70h7	3	80	4-Φ7	40	Φ19h6	-

130mm Frame
1.0kW, 1.3kW, 1.8kW



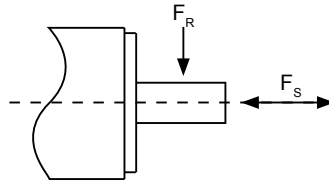
[Unit: mm]

Motor Model	LL	LG	KL	KA	LA	LB	LE	LC	LZ	LR	S	Q	QK	QE
11A-DST-A6HK1	223	12	110	87	Φ145	Φ110 ⁰ _{0.035}	6	130	4-Φ9	57	Φ22 ⁰ _{0.013}	-	42	-
115-DST-A6HK1	242.5	12	110	87	Φ145	Φ110 ⁰ _{0.035}	6	130	4-Φ9	58	Φ22 ⁰ _{0.013}	40	25	M5×12
120-DST-A6HK1	251.3	12	110	87	Φ145	Φ110 ⁰ _{0.035}	6	130	4-Φ9	58	Φ24 ⁰ _{0.013}	40	25	M5×12

Permissible Radial / Thrust Loads

During testing, installation, mounting or operation, the servo motor shaft should never experience radial or thrust loads exceeding the below specifications. The servo motor shaft must be at least ±0.1mm concentric with coupling and mechanical drive shaft. For belt drive systems, ensure the pinion is as close to the servo motor body as possible to reduce unnecessary force on the servo motor shaft.

Motor Model □□□-DST	Radial Load F_R [N]	Thrust Load F_S [N]
405	75	52
410	75	52
620	240	70
640	240	70
880	300	98
11A	600	300
115	680	340
120	980	390

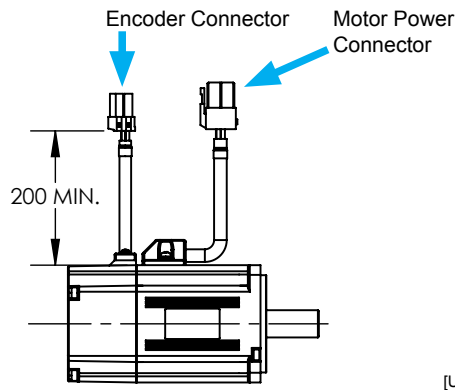


*Permissible radial/thrust load during assembly greater by 10%.

Motor Connector Specifications

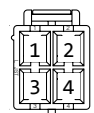
Motor Power Color

Motor Model □□□-DST	405	410	620	640	880
Phase A	Blue				
Phase B	Red				
Phase C	Black				
Frame Ground	Yellow/Green				



Motor Power Connector

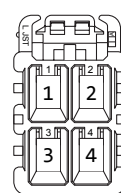
Part	Part No.	Manufacturer
Connector Assembly Plug Housing	VLP-04V	J.S.T.
Socket Contact	SVF-61T-P2.0	J.S.T.
Cable Retainer	VLS-02V	J.S.T.



Pin Layout	Color	Data
1	Blue	Phase A
2	Red	Phase B
3	Black	Phase C
4	Yellow/Green	Frame Ground

Encoder Connector

Part	Part No.	Manufacturer
Connector Assembly Plug Housing	HILP-04V-1-S	J.S.T.
Pin Contact	SHIF-01T-P0.5	J.S.T.



Pin Layout	Color	Data
1	Black	Gnd
2	Blue	S-
3	Green	S+
4	Red	+5VDC

DHT / DST SERIES
AC SERVO MOTOR
SPECIFICATION MANUAL

Manual Code: DMMACSMTR-GS1-0115A1
Revision: A1 [January 2015 - First Copy]
Electronic Version

Copyright © 2015 DMM Technology Corp.
Published In Canada

DMM TECHNOLOGY CORP.

3125 - 21331 Gordon Way Richmond, British Columbia V6W1J9 Canada

PHONE: +1 604-370-4168

WEB: <http://www.dmm-tech.com>

SALES: sales@dmm-tech.com

INFO: info@dmm-tech.com



DMM TECHNOLOGY CORP.