



LS SERIES FRAMELESS MOTOR KIT

HIGH TORQUE-TO-WEIGHT RATIO | LIGHT-WEIGHT AND LOW-INERTIA | HIGHLY EFFICIENT
RING ARCHITECTURE | ZERO COGGING FOR PRECISION MOVEMENT | SCALABLE IN SIZE AND POWER

Data Sheet Model Number:

LSI 146-16

ThinGap's LS Line includes numerous high performance brushless permanent magnet motors. The LS line targets lower speed, high precision applications such as gimbals, optics, and precision robotics. The highest torque density with high power capability and low thermal resistance.

Winding Independent Parameter Table

Continuous Parameters	Units	Value
Continuous Torque @ Max Speed	N-m	1.48
Max Continuous Speed	RPM	1,600
Max Continuous Power	W	248
Peak Parameters @ Max Speed	Units	Value
Peak Torque (1 sec)	N-m	18.1
Peak Power (1 sec)	W	3,033
Peak Torque (3 sec)	N-m	10.5
Peak Power (3 sec)	W	1,759
Mechanical Parameters	Units	Value
Number of Magnetic Poles	ea	32
Outer Diameter	mm	146
Through Hole Diameter	mm	115
Axial Height	mm	16
Rotor Inertia	kg-m ²	1.22E-03
Rotor Mass	kg	0.310
Stator Mass	kg	0.197
Part Set Mass	kg	0.507
Temperature Parameters	Units	Value
Max Stator Temperature	°C	130
Max Rotor Temperature	°C	85
Thermal Resistance	°C/W	2.641



ThinGap's LS Line of Brushless Motors
For low speed, high precision applications such as gimbals, optics, and precision robotics. Highest torque density with high power capability.
Available in sizes 25mm to 267mm.

Torque and Mechanical Speed

Continuous rated torque of up to 1.48 N-m and a rated speed of up to 1600 RPM.

Motor Controller Recommendation

Standard 3-Phase Controller
High Frequency PWM power input

Resources for Integration

Space-claim CAD files at:
www.thingap.com

Complete Mechanical drawings available upon request

Winding dependent Parameter Table

		WYE SERIES	WYE PARALLEL*	DELTA PARALLEL*
Electrical Parameters	Units	Value	Value	Value
Required Motor Voltage @ Max Speed	V _{pkl-l}	100.6	50.3	29.0
Max Continuous Phase Current	A _{RMS}	2.3	4.7	8.1
Peak Phase Current (1 sec)	A _{RMS}	27.7	55.4	96.0
Peak Phase Current (3 sec)	A _{RMS}	16.1	32.2	55.8
Motor Resistance @ 20°C	Ω	3.74	0.94	0.31
Motor Resistance @ Max Temperature	Ω	5.25	1.31	0.44
Terminal Inductance	μH	267 ± 20%	66.8 ± 20%	22.3 ± 20%
Electrical Frequency @ Max Speed	Hz	427	427	427
Motor Constants	Units	Value	Value	Value
Voltage Constant (l-l)	V _{pkl-l} /rad/s	0.536	0.268	0.155
Voltage Constant (l-l)	V _{pkl-l} /kRPM	56.1	28.1	16.2
Torque Constant	N-m/A _{RMS}	0.656	0.328	0.189
Motor Constant	N-m/√W	0.277	0.277	0.277

*WYE Parallel and Delta Parallel winding option not available off-the-shelf; may be ordered as a special configuration.