



# thin gap

## 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: LSO 225-66**

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.

#### Motor Parameter Table

Continuous Parameters	Units	Value
<b>Continuous Torque @ Max Speed</b>	N-m	17.86
<b>Max Continuous Speed</b>	RPM	920
<b>Max Continuous Power</b>	W	1721
<b>Required Motor Voltage @ Max Speed</b>	$V_{pk-l}$	385.7
<b>Max Continuous Phase Current @ Max Speed</b>	$A_{RMS}$	4.30
Peak Parameters@Max Speed	Units	Value
<b>Peak Torque (1 sec)*</b>	N-m	106
<b>Peak Phase Current (1 sec)</b>	$A_{RMS}$	25.0
<b>Peak Power (1 sec)*</b>	W	10,212
Motor Constants	Units	Value
<b>Voltage Constant (I-I)</b>	$V_{pk-l}/rad/s$	3.593
<b>Voltage Constant (I-I)</b>	$V_{pk-l}/kRPM$	376.3
<b>Torque Constant</b>	$N-m/A_{RMS}$	4.401
<b>Motor Constant</b>	$N-m/VW$	1.315
Electrical Parameters	Units	Value
<b>Terminal Resistance @ 20°C</b>	$\Omega$	7.463
<b>Terminal Resistance @ Max Temperature</b>	$\Omega$	10.470
<b>Terminal Inductance</b>	$\mu H$	$652 \pm 10\%$
<b>Number of Magnetic Poles</b>	ea	42
<b>Electrical Frequency @ Max Speed</b>	Hz	322
Mechanical Parameters	Units	Value
<b>Rotor Inertia</b>	$kg-m^2$	1.834E-02
<b>Outer Diameter</b>	mm	224.79
<b>Through Hole Diameter</b>	mm	198.02
<b>Axial Height</b>	mm	70.48
<b>Rotor Mass</b>	kg	1.545
<b>Stator Mass</b>	kg	1.234
<b>Part Set Mass</b>	kg	2.778
Temperature Parameters	Units	Value
<b>Max Stator Temperature</b>	°C	130
<b>Max Rotor Temperature</b>	°C	85
<b>Thermal Resistance</b>	°C/W	0.38

All motor parameters calculated assuming 20° C ambient temperature and the motor kit not being installed into a housing. Thermal resistance can drop by 30% when mounted.

\*Includes temperature effects and losses from speed



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 17.86 N-m and rated speed of up to 920 RPM.

#### Motor Controller Recommendation:

Standard 3-Phase Controller  
High frequency PWM recommended

#### Custom Variants Available:

Alternative winding design options  
Higher speed options  
High temperature option  
Two Phase Winding

