

# Propulsion Motor PM100L



## Key Features



Superior quality insulation provides long life and high reliability of windings



Designed to be lightweight with outstanding power density



Built for industrial-strength, longevity, and safety



100% tested with individual performance reports



Self-cooling by design

## Fly Higher. Fly Longer. Fly Smarter.

ePropelled propulsion motors are built on years of experience in magnetic engineering and materials science. We combine electric motors that boast an outstanding thrust-to-weight ratio with the smartest motor controllers.

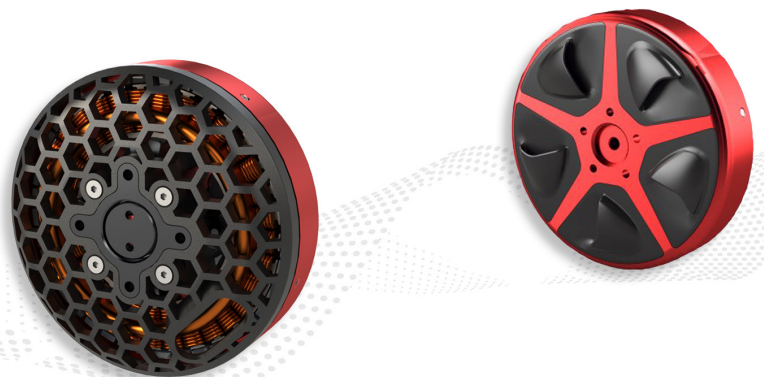
Our electric propulsion motors are designed and manufactured for commercial and industrial UAV applications including, but not limited to, military intelligence, law enforcement, border management, disaster management, search and rescue, traffic monitoring, remote sensing, inspection monitoring, surveying and mapping, and scientific research.

## Propulsion Motors

Frameless stators and rotors are ideal for applications requiring high power in a compact form factor and are engineered to provide the high performance, long life, and simple installation that today's users demand.

Our brushless systems provide better performance and efficiency in a variety of operating conditions while ensuring improved heat dissipation.

Overall, superior cooling and efficiency allow our electric motors to operate longer, in thinner air, and at higher altitudes.



## PM100L TECHNICAL SPECIFICATIONS

### T/L - PEAK PERFORMANCE DURING 3 MINUTES OF TAKEOFF OR LANDING

| Battery Input Voltage (MC Input)*              | With ePropelled Air Motor Controller |         |         | Without ePropelled Air Motor Controller |         |         |
|--|--------------------------------------|---------|---------|---|---------|---------|
|  | 48 VDC                               | 60 VDC  | 72 VDC  | 48 VDC                                  | 60 VDC  | 72 VDC  |
| Battery Input Current (AMC Input)* at 4000 RPM | 39.7 A                               | 33.5 A  | 27.0 A  | 39.7 A                                  | 33.5 A  | 27.0 A  |
| Battery Input Current (AMC Input)* at 6000 RPM | 38.3 A                               | 39.8 A  | 36.2 A  | 38.3 A                                  | 39.8 A  | 36.2 A  |
| Peak Output Power <sup>Δ</sup> at 4000 RPM     | 1,575 W                              | 1,628 W | 1,632 W | 1,196 W                                 | 1,620 W | 1,626 W |
| Peak Output Power <sup>Δ</sup> at 6000 RPM     | 1,558 W                              | 2,072 W | 2,213 W | N/A                                     | 664 W   | 1,971 W |
| Peak Torque at 4000 RPM**                      | 3.76 Nm                              | 3.89 Nm | 3.90 Nm | 2.86 Nm                                 | 3.87 Nm | 3.88 Nm |
| Peak Torque at 6000 RPM**                      | 2.47 Nm                              | 3.30 Nm | 3.52 Nm | N/A                                     | 1.06 Nm | 3.14 Nm |
| Peak T/L Efficiency at 4000 RPM**              | 89%                                  | 88%     | 88%     | 90%                                     | 88%     | 88%     |
| Peak T/L Efficiency at 6000 RPM**              | 89%                                  | 91%     | 91%     | N/A                                     | 88%     | 91%     |
| Airflow Required up to 1000 m at 4000 RPM      | 2 m/s                                |         |         | 2 m/s                                   |         |         |
| Airflow Required up to 1000 m at 6000 RPM      | 2 m/s                                |         |         | 2 m/s                                   |         |         |

### TFL - 3 MINUTES TAKEOFF, 30 MINUTES FLYING, AND 3 MINUTES LANDING

| Battery Input Voltage (MC Input)*                | With ePropelled Air Motor Controller |         |         | Without ePropelled Air Motor Controller |         |         |
|--|--------------------------------------|---------|---------|---|---------|---------|
|  | 48 VDC                               | 60 VDC  | 72 VDC  | 48 VDC                                  | 60 VDC  | 72 VDC  |
| Battery Input Current (AMC Input)* at 4000 RPM   | 33.9 A                               | 28.1 A  | 23.6 A  | 33.9 A                                  | 28.1 A  | 23.6 A  |
| Battery Input Current (AMC Input)* at 6000 RPM   | 35.9 A                               | 37.0 A  | 34.5 A  | 35.9 A                                  | 37.0 A  | 34.5 A  |
| Continuous Output Power <sup>Δ</sup> at 4000 RPM | 1,040 W                              | 1,045 W | 1,045 W | 1,016 W                                 | 1,042 W | 1,042 W |
| Continuous Output Power <sup>Δ</sup> at 6000 RPM | 957 W                                | 1,368 W | 1,549 W | N/A                                     | 770 W   | 1,513 W |
| Continuous Torque at 4000 RPM**                  | 2.48 Nm                              | 2.49 Nm | 2.49 Nm | 2.43 Nm                                 | 2.49 Nm | 2.49 Nm |
| Continuous Torque at 6000 RPM**                  | 1.53 Nm                              | 2.18 Nm | 2.46 Nm | N/A                                     | 1.23 Nm | 2.41 Nm |
| Maximum Output Power <sup>Δ</sup> at 4000 RPM**  | 1,366 W                              | 1,398 W | 1,401 W | 1,150 W                                 | 1,424 W | 1,421 W |
| Maximum Output Power <sup>Δ</sup> at 6000 RPM**  | 1,441 W                              | 1,856 W | 2,068 W | N/A                                     | 751 W   | 1,992 W |
| Maximum Torque at 4000 RPM**                     | 3.26 Nm                              | 3.34 Nm | 3.34 Nm | 2.7 Nm                                  | 3.4 Nm  | 3.4 Nm  |
| Maximum Torque at 6000 RPM**                     | 2.30 Nm                              | 2.96 Nm | 3.29 Nm | N/A                                     | 1.2 Nm  | 3.2 Nm  |
| Airflow Required up to 1000 m at 4000 RPM        | 2 m/s                                | 2 m/s   | 3 m/s   | 2 m/s                                   | 2 m/s   | 3 m/s   |
| Airflow Required up to 1000 m at 6000 RPM        | 4 m/s                                | 4 m/s   | 5 m/s   | 4 m/s                                   | 4 m/s   | 5 m/s   |

\* For optimum performance 12S to 18S LiPo battery pack is recommended

\*\* Performance possible with ePropelled motor controllers only

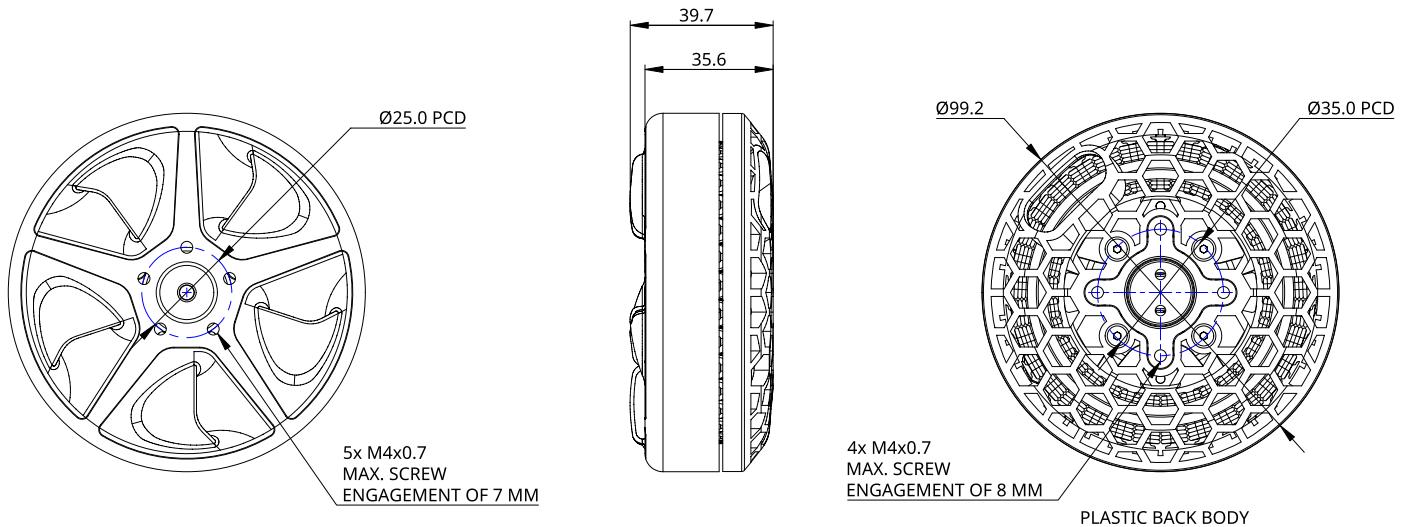
<sup>Δ</sup> Output power at different airflow is available upon request

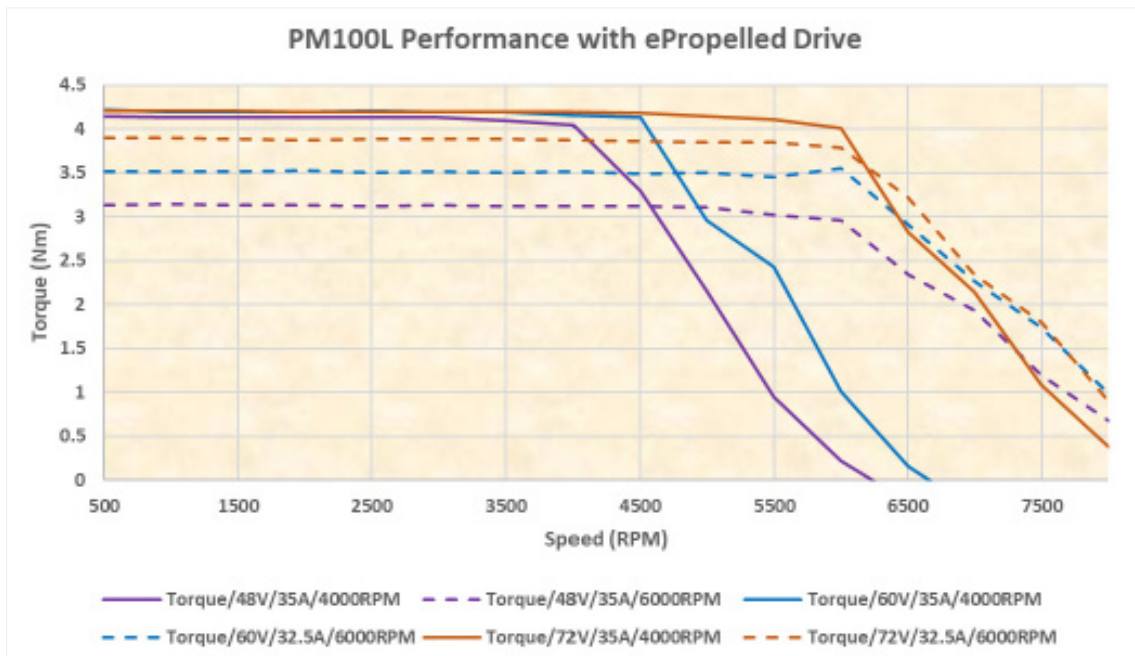
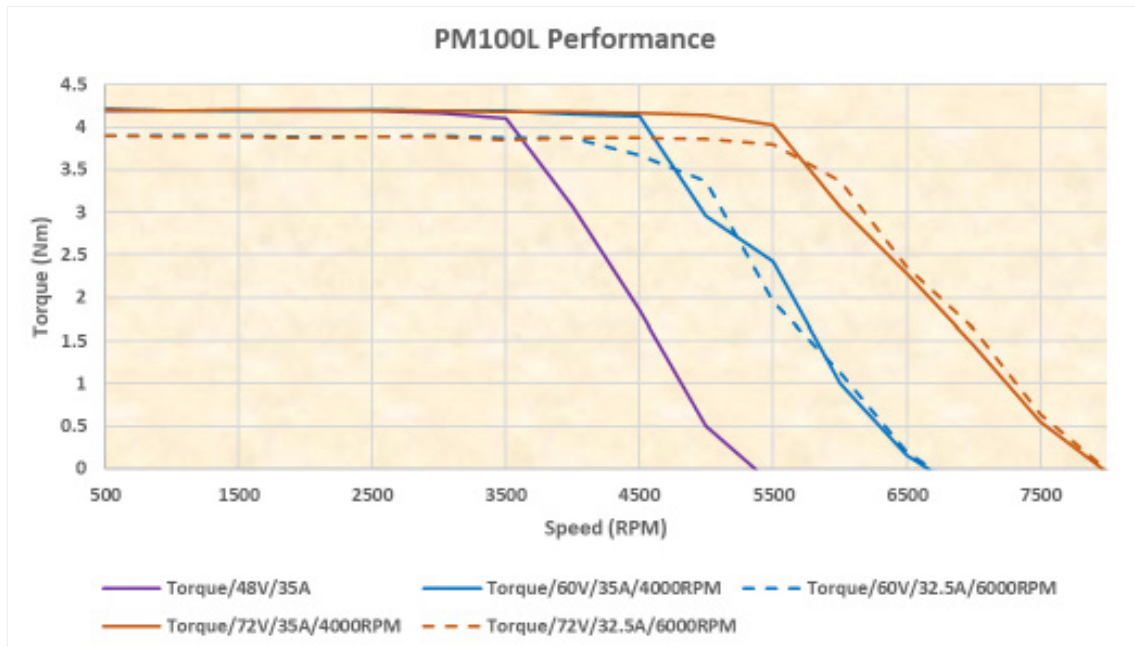
## MOTOR PARAMETERS

| Parameter  | Measurement                       |
|--|-----------------------------------|
| Maximum Motor Efficiency   | 91%                               |
| Kv (Velocity Constant)   | 96 RPM/V                          |
| Kt (Torque Constant)   | 0.12 Nm/A                         |
| Phase Winding Resistance @ 50°C/122°F                              | 48.1 mΩ                           |
| Static Winding Inductance @ 50°C/122°F (Max Phase Self-Inductance) | 38.3 μH                           |
| Static Winding Inductance @ 50°C/122°F (Max L-L Inductance)        | 77.9 μH                           |
| Nominal Operational Speed***                                       | 0 to 6,000 RPM                    |
| Maximum Speed Limit  | 8,000 RPM                         |
| Stator Winding Temperature Sensor                                  | K-type thermocouple               |
| Magnetic Poles   | 40                                |
| Stator Slots   | 33                                |
| Motor Electrical Frequency at 6000 RPM                             | 2000 Hz                           |
| Maximum Ambient Temperature  | 50°C/122°F                        |
| Winding Operating Temperature Allowed up to                        | 180°C/356°F                       |
| Rotor Operating Temperature Allowed up to                          | 170°C/338°F                       |
| Bearing Operating Temperature Allowed up to                        | 120°C/248°F                       |
| Motor Diameter   | 99.2 mm/3.9 in                    |
| Motor Width (Without Airflow Inserts)                              | 35.6 mm/1.4 in                    |
| Motor Width (With Airflow Inserts)                                 | 39.7 mm/1.6 in                    |
| Motor Weight (Without Airflow Inserts)                             | 515 g/1.14 lb                     |
| Motor Weight (With Airflow Inserts)                                | 525 g/1.16 lb                     |
| Motor Mounting Pitch Circle Diameter (PCD) 4 x M4                  | 35 mm/1.38 in                     |
| Propeller Mounting Pitch Circle Diameter (PCD)****                 | Adapter dependent                 |
| IP Rating (Front Face)   | IP20                              |
| Recommended Propeller Diameter                                     | 431.8 to 774.7 mm / 17 to 30.5 in |

\*\*\* For higher operational speeds, please check with ePropelled

\*\*\*\* Based on propeller size





## Assembled in USA

All specifications subject to change without notice. For more information, including ordering product, please contact us at [info@ePropelled.com](mailto:info@ePropelled.com).



ePropelled © 2021. ePropelled designs intelligent motors, motor controllers, and generators that help reduce energy consumption and improve system efficiency at a lower cost. We are a leader in magnetics engineering, and our patented technology and innovative smart power systems are equally at home in the air, on the road, and under water, defining the future of electric propulsion.