

ORBIT SG Series

ORBIT SG1 (VAC 6.8)

Outrunner BLDC starter-generator

Overview

The **ORBIT SG1** is part of our family of super rugged outrunner BLDC starter-generators. Designed specifically for uncrewed systems, aerospace and mission critical applications, the ORBIT SG series features an ultra-weight optimized housing design.

Features

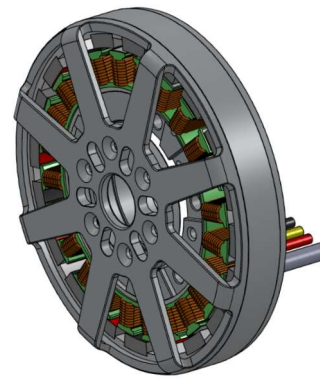
- Rated output power of 1,000 watts
- Ruggedized for use in extreme environments
- Designed for high shock and vibration loads
- Qualified to MIL-STD 810H
- Wear-free position and temperature sensors included
- Class leading power-to-weight-to-robustness ratio
- Attachment kit without bearing for direct integration on crank shaft for additional weight saving

Specifications

Part number stator	44-10000781	
Part number rotor	44-10000782	
Rated output power ⁽¹⁾	1,000	W
Peak output power ⁽²⁾	1,500	W
Max. speed	8,000	rpm
No-load voltage constant	6.8	VAC(RMS) / 1000 rpm
Engine size range ⁽³⁾	20 to 80 cc	
Engine integration	Direct rotor mounting on crank shaft	
Peak starting torque ⁽⁴⁾	7	Nm
Starter kV (no-load)	109	rpm/V _{DC}
Diameter	100	mm
Length	26	mm
Weight ⁽⁵⁾	425	g
Weight incl. bearing kit ⁽⁶⁾	475	g
Phase cable length	500	mm
Sensor cable length	500	mm
Recommended cross-section for phase cable extension	1.5	mm ²
	16	AWG
Cooling	Air cooled	
Ambient temperature range	-20 to +60 °C	
Max. temperature ⁽⁷⁾		
Measured by sensor	+120	°C
Winding	+180	
Rotor	+180	
Position sensor types	Hall effect sensor with UVW-commutation signals	
Temperature sensor	PT1000	
Number of poles	20	
Winding type	3-phase, delta	
Phase Resistance ⁽⁸⁾	150	mΩ
Phase Inductance ⁽⁸⁾	110	μH

Notes:

- (1) At >7,500 rpm based on max. 60°C ambient temperature and 2 m/s airflow at MSL.
- (2) At >7,500 rpm for short duration until max. sensor temperature level is reached.
- (3) For orientation only and may not apply to all engine types.
- (4) Peak torque for max. 1 second, with sensor-guided ESC/starter.
- (5) Excluding cable and bearing kit.
- (6) Excluding cable but including bearing kit (bearing, adapter and snap ring).
- (7) Absolute maximum temperature levels, which must not be exceeded.
- (8) Line to line excluding cable extension.



Options & Customization

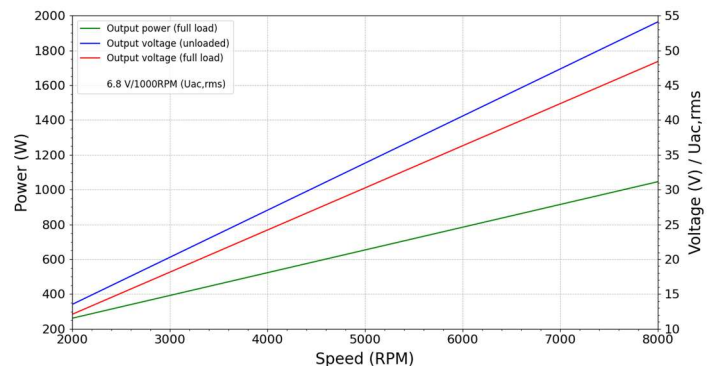
- Optional version with integrated ball bearing
- Custom mounting brackets and couplings
- Custom winding
- MIL-STD 810H test and MTBF/S reports

Complementary Products

- Starter-Generator-Control Unit ("SGCU")
- Bearing kit
- Plettenberg gold connectors: GC6-00 / GC6-90
- Cable extension kit
- Propeller coupling
- Custom mounting brackets

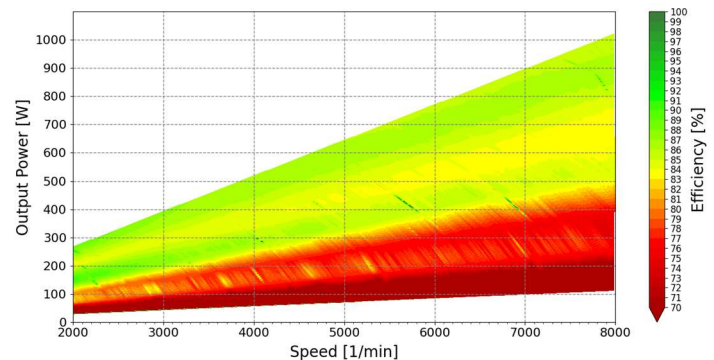
Performance

Speed vs. Voltage AC(RMS) vs. Power



Note: Continuous operation at max. 60°C ambient temperature and 2 m/s airflow at MSL.

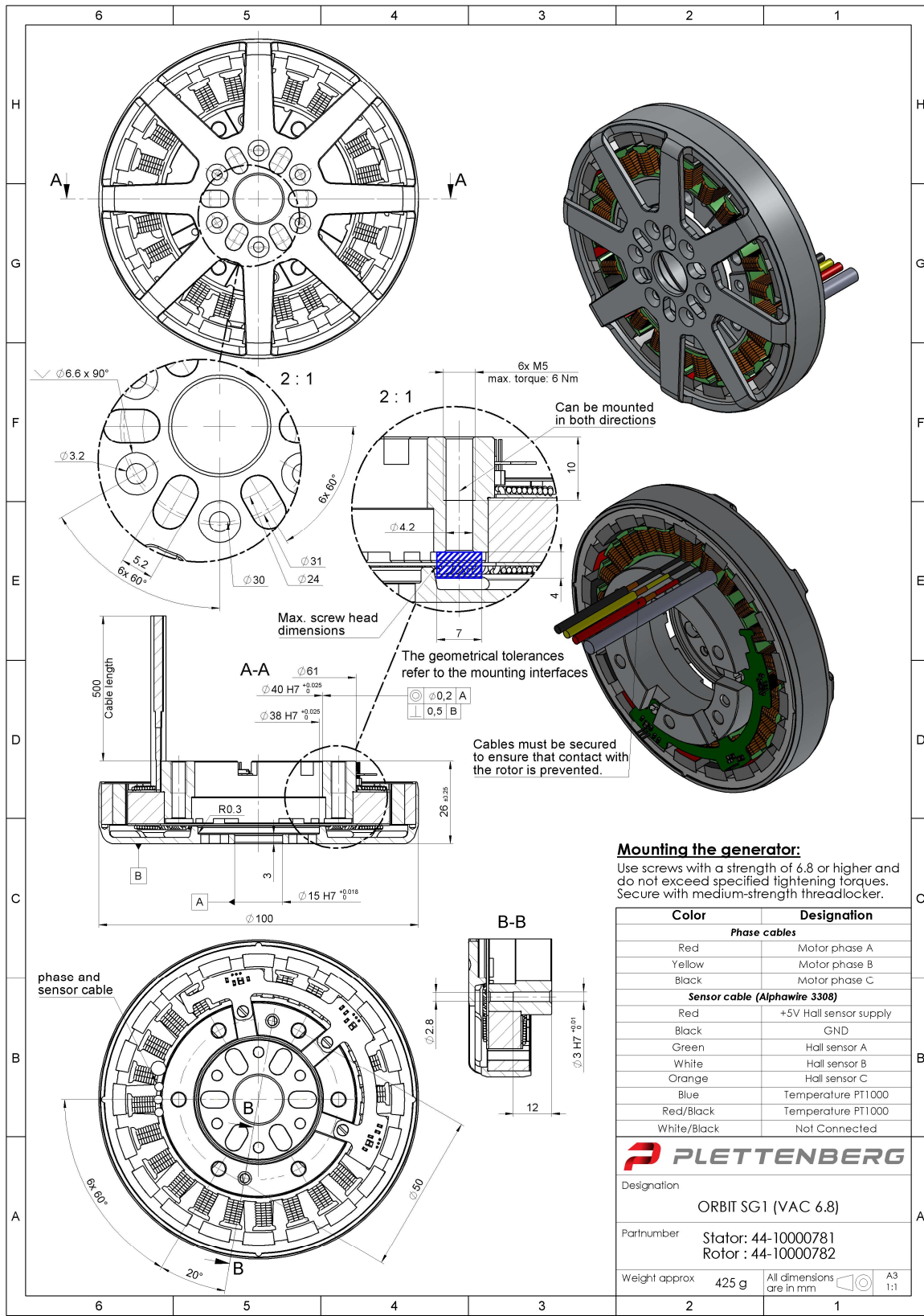
Efficiency Map



Note: Including bearing, excluding rectification losses.

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Plettentberg Elektromotoren GmbH & Co. KG
Rostocker Straße 30
34225 Baunatal, Germany
T: +49 (0) 56 01 97 96-0
www.plettentbergmotors.com / sales@plettentbergmotors.com
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