Product datasheet

Version: 10/02/2026

SiAECOSYS - SIA155-64 - 96V PMSM motor

Reference : SIA-SIA155-64-96V-29KW

Brand : EVEA

Options :

No variants

3D Model : Not available

EAN-13 : 8468495329445

Manufacturer Part Number (MPN) : SIA155-64 | **Brand:** SiAECOSYS

The **SIA155-64** is a permanent magnet synchronous motor (**PMSM**) with an **IPM** (interior permanent magnet) topology, designed for high power density **mid-drive** architectures in electric mobility platforms. Its rated output (**12 kW**) and peak capability (**29 kW**) target compact traction systems where torque dynamics matter: lightweight e-motorcycles, dirt bikes, go-karts and small electrified vehicles.

The **hairpin** winding technology supports an efficiency- and thermal-oriented stator design, consistent with high-current operation. System integration is typically based on a **FOC (field-oriented control)** inverter, using an **encoder feedback** and a **PWM** command interface on the control side (throttle/torque request depending on the inverter architecture). The integrated **KTY84/130 temperature sensor** enables a structured thermal derating and protection strategy within the power electronics.

Designation: Traction **PMSM (IPM) mid-drive** motor with **hairpin winding**, **12 kW rated / 29 kW peak**, **96 V**, **spline** shaft, **encoder**, **IP67**, **surface air cooling**.

Key benefits

- **PMSM (IPM) topology**: suitable for FOC drives, enabling accurate torque and speed control for traction.
- **Hairpin winding**: design approach optimized for power density and winding thermal conduction.
- **96 V voltage window**: facilitates integration on high-performance low-voltage battery architectures (recommended range 86–113 V).
- **85 N·m peak torque / 7500 rpm max speed**: balanced torque-speed envelope for primary transmission (chain, belt, gearbox).

- **IP67 + surface air cooling**: suitable for exposed environments, provided the mechanical integration and airflow are consistent.
- **KTY84/130 temperature sensor**: robust basis for derating, diagnostics and stator thermal protection.
- **Spline shaft**: mechanical interface suited to traction constraints (impulse torque and cycling).

Technical specifications

Technology	PMSM (IPM)
Use / type	**Mid-drive** traction motor
Rated operating voltage	96 V
Recommended voltage range	86 to 113 V
Recommended min / max nominal voltage	60 V / 120 V
Rated power	12,000 W
Peak power	29,000 W
Recommended rated current	125 A (continuous)
Recommended peak current	302 A (burst)
Rated torque	20.0 N·m
Peak torque	85.0 N·m
Rated speed	4000 rpm
Max speed	7500 rpm
Number of pole pairs	4
Winding configuration	Star (Y)
Cogging torque	1.4 N·m
Radial runout	≤ 0.035 mm
Axial play	≤ 0.3 mm
Active geometry	Core diameter 155 mm; magnet height 64 mm
Shaft	Spline
Cooling	Surface air cooling (convection/air over surface)
Temperature sensor	KTY84/130
Operating temperature	70 to 120 °C (peak 150 °C)
Ingress protection	IP67
Power connection	13 mm^2 phase conductors (without insulation); M8 lugs
Phase cable length	Yellow 230 ±20 mm; Blue 280 ±20 mm; Green 330 ±20 mm
Phase identification	U=Blue; V=Green; W=Yellow
Mass	12.8 kg

Typical applications

- **E-motorcycle** (light road / enduro) with primary transmission and an encoder-based FOC inverter.
- **Electric dirt bike**: dynamic use with high transient loads (burst current).

- **Electric go-kart / buggy** focused on performance (repeated acceleration, wide speed variation).
- **Small electrified vehicles** (light platforms) in a ~96 V architecture with tight packaging and mass constraints.

Recommended integration

- **System compatibility (electrical/control)**
  - Select an inverter supporting **PMSM IPM** in **FOC**, capable of **125 A continuous** and handling peaks consistent with **302 A burst**, according to the mission profile and thermal design.
  - Use the **encoder feedback** for commutation and the speed/torque control loop; implement clean signal routing and sensor supply according to the inverter architecture.
  - Integrate the **KTY84/130 sensor** into the protection logic: warning thresholds, torque reduction, shutdown on overtemperature.
- **Parameterization and configuration**
  - Calibrate voltage/current limits in line with the **86–113 V** range and the rated/peak targets; set burst current according to allowable duration and repetition at system level.
  - Define rotation direction and phase mapping (U/V/W) during commissioning, then freeze the configuration (wiring documentation + production control).
- **Mechanical layout and ventilation**
  - Design the mechanical interface around the **spline shaft** with strict control of alignment and loads (transmission, chain/belt tension, vibration).
  - With **surface air cooling**, place the motor in a ventilated area, leverage heat exchange surfaces, and implement derating in hot ambient or low airflow conditions.
- **Cable sizing and routing**
  - Size the phase links from the **13 mm²** conductors and **M8** lugs; minimize lengths, avoid loops, and secure the cable exits mechanically (anti-vibration/strain relief).
- **Electrical protections and safety chain**
  - Structure the DC chain: DC bus fuse(s), main contactor, precharge, emergency stop, and a cut-off strategy compatible with traction/regeneration (depending on the inverter).
  - Implement fault supervision: overcurrent, overtemperature, encoder loss, DC bus over/undervoltage, speed/torque inconsistencies.
- **EMC, diagnostics and maintenance**
  - Physically separate power and signals, control return paths/grounds, and protect/filter encoder and PWM inputs according to inverter recommendations.
  - Plan for maintenance access: connector inspection, lug torque checks, temperature monitoring, fault event tracking and inverter parameter traceability.

Operating conditions

- Power and torque levels require a properly sized **battery + inverter + cabling + cooling** system for the target currents (up to **125 A continuous** and **302 A burst** recommended).
- Thermal performance depends directly on air cooling and the environment (ambient temperature, enclosure, airflow velocity).
- **IP67** must be evaluated at the integrated system level: effective sealing depends on the mechanical architecture, cable exits and interface management.

- Final compliance (EMC, electrical safety, environmental robustness) results from the complete integration and remains the integrator's responsibility.

The information above is provided for **technical and indicative** purposes to support design and integration work.

Performance, robustness and compliance depend on real operating conditions, inverter parameterization, and the electrical/mechanical/thermal integration of the complete system. Final validation (functional, thermal, EMC and safety) is required before commissioning.
