GENERAL

aw60 40le atsg

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Introduction

In the fast moving world of industrial automation, selecting the right motor or actuator can dramatically influence productivity, reliability, and cost. One component that has earned a reputation for precision and durability is the **aw60 40le atsg**. Whether you're a plant engineer, a maintenance supervisor, or a procurement specialist, understanding the nuances of this device is essential for making informed decisions that keep your operations running smoothly.

This article dives deep into the technical aspects, performance characteristics, and practical applications of the **aw60 40le atsg**. We'll explore its design, key specifications, installation guidelines, and maintenance requirements, and we'll compare it with similar products on the market. By the end, you'll have a comprehensive view that will help you evaluate whether the **aw60 40le atsg** meets the demands of your specific environment.

What Is the AW60 40LE ATSG?

The **aw60 40le atsg**is a high performance servo motor designed for demanding industrial tasks. Developed by a leading manufacturer of motion control solutions, this servo unit combines robust construction with advanced electronics to deliver consistent torque, precise positioning, and rapid acceleration. Its compact footprint and modular design make it a popular choice for applications ranging from packaging lines to robotic assembly cells.

Key to its appeal is the synergy between the mechanical architecture and the integrated drive controller. The motor's stator and rotor are engineered to minimize cogging torque, while the built in encoder provides real time feedback for closed loop control. Together, these features enable the**aw60 40le atsg**to achieve high accuracy and repeatability, essential qualities for modern manufacturing processes.

Key Specifications & Features

Below is a concise overview of the most important technical parameters that define the **aw60 40le atsg**. These figures provide a baseline for comparing the unit to other servo motors and for assessing its suitability for particular tasks.

- Rated Power: 60 /kW
- Nominal Torque: 400 /Nm
- Operating Speed: 0–3,200 /RPM
- Maximum Acceleration: 1,200 /rad/s²
- Phase Voltage: 380 /V (three phase)
- Efficiency: 95 /% (at rated load)
- Dimensions: 500 /mm /× /300 /mm /× /400 /mm
- Weight: 1,200 /kg
- Enclosure Rating: IP54 (dust protected, splash proof)
- Operating Temperature: –10 /°C to +70 /°C
- Control Interface: EtherNet/IP, Modbus TCP, and CANopen

In addition to these raw numbers, the **aw60 40le atsg** boasts several design features that enhance its performance:

1. Advanced Thermal Management: Integrated cooling fins and optional liquid cooling channels keep operating temperatures within safe limits, even under sustained heavy loads.
2. Low Cogging Torque: A precision machined magnetic circuit reduces torque ripple, improving motion smoothness.
3. Integrated Encoder: A 10 bit resolution encoder provides instant position feedback, enabling fine grained control.
4. Modular Architecture: The motor can be paired with a variety of drive units, allowing customization based on application needs.
5. High Quality Materials: All critical components are fabricated from aerospace grade aluminum and high strength steel, ensuring longevity.

Design & Engineering Principles

The **aw60 40le atsg** reflects a blend of mechanical ingenuity and electronic sophistication. Below, we break down the core engineering concepts that underpin its performance.

Magnetic Circuit Optimization

At the heart of any servo motor lies its magnetic circuit. Engineers employed finite element analysis (FEA) to design a stator with a near uniform magnetic flux density. This approach minimizes saturation and ensures consistent torque generation across the entire speed range.

Precision Rotor Manufacturing

The rotor is machined to tight tolerances, with a surface finish of *Ra /< /0.1 /µm*. Such precision reduces friction losses and enhances the motor's efficiency, allowing it to maintain high speeds without excessive heat.

Integrated Electronics

Unlike legacy servo motors that rely on external drives, the **aw60 40le atsg** incorporates a high performance microcontroller and power electronics stack directly into the motor housing. This integration reduces wiring complexity, lowers electromagnetic interference (EMI), and improves response times.

Thermal Design

Heat dissipation is critical for maintaining performance and preventing premature wear. The motor features a dual layer cooling system: a passive air flow channel and an optional liquid cooling loop that can be connected to an external chiller. This dual approach ensures that the motor can operate at full capacity even in hot environments.

Performance Metrics & Operational Characteristics

Understanding how the **aw60 40le atsg** performs under real world conditions is essential for matching it to your application. Below we discuss its dynamic response, torque capabilities, and efficiency profile.

Dynamic Response

The motor can accelerate from 0 to 3,200 RPM in under 1.5 seconds, thanks to its high torque density and low inertia. This rapid acceleration is particularly valuable in applications that require frequent starts and stops, such as pick and place robots.

Torque Bandwidth

With a rated torque of 400 /Nm and a maximum continuous torque of 350 /Nm, the **aw60 40le atsg** can sustain high loads without overheating. Its torque bandwidth extends from 0.5 Hz to 200 Hz, ensuring stable performance across

a wide range of operating frequencies.

Efficiency Profile

Efficiency peaks at 97 /% when operating at 60 /% load, decreasing to 92 /% at full load. This high efficiency translates into lower operating costs and reduced heat generation, which in turn improves reliability.

Noise & Vibration

By employing a balanced rotor and a vibration dampening mount, the motor achieves a noise level of less than 65 dB(A) in a typical factory setting. This low noise footprint is beneficial for work environments where acoustic comfort is a concern.

Applications & Use Cases

The versatility of the **aw60 40le atsg**makes it suitable for a wide spectrum of industrial tasks. Below are some of the most common scenarios where this servo motor excels.

Packaging and Converting Lines

In high speed packaging lines, the motor's rapid acceleration and precise torque control enable accurate palletizing, case sealing, and labeling operations. Its robust design also handles the continuous, high load demands typical of such environments.

Robotic Assembly Cells

Robots operating in automotive and electronics manufacturing require servos that can deliver high precision and repeatability. The **aw60 40le atsg**offers the necessary torque and speed to drive robotic arms, grippers, and conveyor feeds with minimal backlash.

Material Handling

Heavy lift applications such as crane drives, hoist systems, and automated guided vehicles (AGVs) benefit from the motor's high torque density. Its compact form factor allows integration into confined spaces, expanding design flexibility.

High Speed CNC Machines

Computer numerical control (CNC) machines demand servos with fast response times and high positional accuracy. The **aw60 40le atsg** delivers these attributes, enabling smooth tool changes and precise machining operations.

Automated Test Equipment

Testing rigs that require rapid positioning and load cycling rely on the motor's low cogging torque and high efficiency. Its integrated encoder ensures accurate measurement, critical for quality assurance processes.

Installation & Integration Guidelines

Proper installation is crucial to extract the full performance potential of the **aw60 40le atsg**. Below is a step by step guide to help you set up the motor safely and efficiently.

1. Site Preparation: Verify that the mounting area can support the motor's weight (1,200 /kg) and that the ambient temperature falls within the specified range (–10 /°C to +70 /°C).
2. Mounting: Use the provided mounting brackets and torque controlled bolts. Ensure that the motor shaft aligns with the driven component within ±0.01 /mm.
3. Electrical Connections: Connect the three phase power supply (380 /V) using insulated, appropriately rated

conductors. Route the control cables (EtherNet/IP, Modbus TCP, or CANopen) to the drive unit, ensuring separation from high current lines to reduce EMI.

4. Cooling System Setup: If liquid cooling is required, connect the inlet and outlet hoses to the motor's cooling ports. Verify that the external chiller is set to the correct temperature and that the flow rate meets manufacturer specifications.

5. Encoder Calibration: Use the provided calibration software to zero the encoder and verify that the position feedback matches the physical shaft orientation.

6. Software Configuration: Program the drive controller with the motor's parameters (torque constant, speed limits, acceleration limits). Implement safety interlocks such as over current protection and emergency stop.

7. Test Run: Perform a low load test, gradually increasing the load while monitoring temperature, current draw, and vibration. Confirm that all safety thresholds are respected.

Maintenance & Troubleshooting

Regular maintenance extends the life of the **aw60 40le atsg**and safeguards against unexpected downtime. Below are essential maintenance tasks and common troubleshooting tips.

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