User Manual: NexBot Robotics AC111-005 AC Servo Motor 5.0 Nm

SKU: NXB-SRV-AC111-005 | Version: 1.0 | Brand: NexBot Robotics

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1. Safety Information

READ ALL SAFETY INSTRUCTIONS BEFORE OPERATION. Failure to follow safety procedures may result in serious injury or equipment damage.

DANGER: Isolate all hazardous energy before servicing NexBot Robotics AC111-005 AC Servo Motor 5.0 Nm; stored electrical or mechanical energy may remain present after shutdown.

WARNING: Operate NXB-SRV-AC111-005 only within its intended Drive Systems > Servo Motors > AC Servo Motors duty profile and published specification limits.

CAUTION: Use only approved tools, mating parts, and installation hardware to prevent premature wear or unsafe operation.

NOTICE: Protect the product from contamination, impact, and environmental exposure beyond IP65 during installation and service.

2. Product Overview

The NexBot Robotics AC111-005 is a compact, high-torque AC servo motor designed for integration into industrial robotic systems requiring exceptional

precision and reliability. This motor provides the power and responsiveness needed for complex motion profiles, making it an ideal choice for applications ranging from automated assembly and material handling to CNC machining and welding. Its core design focuses on delivering high torque density, allowing for powerful performance within a minimal footprint, which is critical for multi-axis robot arm articulation. Key features include a low-inertia rotor and an optimized magnetic circuit, which together minimize cogging torque and enable exceptionally smooth velocity control, even at low speeds. This characteristic is vital for tasks that demand steady tool-path execution, such as dispensing or laser cutting. The motor's robust construction, featuring an anodized aluminum housing, ensures efficient thermal dissipation, allowing it to operate consistently under continuous duty cycles without performance degradation. With an IP65 rating, the motor is sealed against dust ingress and low-pressure water jets, ensuring dependable operation in challenging industrial environments where particulates or fluids are present. Engineered to operate on a 400VAC supply, the AC111-005 integrates seamlessly with NexBot Robotics drive systems. Its design facilitates straightforward installation and replacement on compatible robot models, reducing downtime during maintenance cycles. The motor's inherent positional accuracy and dynamic response make it a crucial component for maintaining the overall repeatability and performance of the robotic system. By providing consistent power and precise control, this servo motor helps achieve higher throughput and product quality in automated manufacturing processes.

3. Getting Started

1. Confirm product identity

Verify the installed item is NexBot Robotics AC111-005 AC Servo Motor 5.0 Nm with SKU NXB-SRV-AC111-005. Cross-check the unit against project documentation before applying power or connecting it to the host system.

2. Review operating context

Understand how the product is used within the Drive Systems > Servo Motors > AC Servo Motors workflow, including any upstream and downstream dependencies, service intervals, and operator responsibilities.

3. Complete initial startup

Power up the unit under controlled conditions, observe indicator states, and verify the product initializes cleanly with the expected 400VAC operating setup.

4. Operation

Normal operation

Run NexBot Robotics AC111-005 AC Servo Motor 5.0 Nm within the documented workload, environmental, and service conditions. Track alarms, unusual noise, heat, or vibration so corrective action can be scheduled before unplanned downtime occurs.

Interface and controls

Use the supported electrical and control interfaces to commission, monitor, and troubleshoot the device. Validate all signal mappings and control behavior after maintenance or part replacement, especially where PROFINET communication is required.

> **Tip:** Capture a baseline of healthy status indicators after commissioning so later diagnostics can be compared quickly.

Load and application limits

Keep the product within the published ratings for speed, force, load, and environmental exposure. Where applicable, confirm mounting, routing, and attached tooling do not compromise access, cooling, or serviceability.

Change management

Whenever hardware, firmware, wiring, or connected tooling changes, repeat the relevant verification and commissioning checks before returning the equipment to production service.

> **Tip:** Update maintenance records immediately after any wiring, parameter, or parts change.

5. Maintenance Schedule

Interval	Task	Notes
Daily	Inspect NexBot Robotics AC111-005 AC Servo Motor 5.0 Nm for visible wear, damage, contamination, loose hardware, and abnormal status indicators.	Record any abnormalities before the next production cycle begins.
Monthly	Verify mounting integrity, connector condition, and cable routing or strain relief points.	Retorque or reseat hardware only to the documented service specification.
Quarterly	Review diagnostic logs, event history, and operational trends for early signs of degradation.	Escalate recurring warnings before they develop into hard faults.
Annually	Perform a full service inspection covering mechanical condition, electrical connections, and functional verification.	Coordinate annual service with planned downtime to minimize production disruption.

6. Troubleshooting

Symptom	Possible Cause	Solution
Unit does not initialize or remain ready	Incoming supply, controls wiring, or commissioning parameters do not match the documented 400VAC configuration.	Verify power quality, wiring continuity, protective devices, and startup parameters before restarting the unit.
Intermittent communication or status loss	Loose connectors, damaged cabling, or	Inspect physical connections, confirm interface settings, and

Symptom	Possible Cause	Solution
	interface mismatch on PROFINET.	replace damaged cables or connectors as needed.
Unexpected wear, vibration, or overheating	Mechanical loading, contamination, misalignment, or duty cycle exceeds the intended application conditions.	Inspect the installation, restore proper alignment and cooling, and verify the product is being used within its published operating limits.
Connected equipment performance is inconsistent	The installed product is not configured correctly for the host system or compatible robot series (R-10, C-5, S-3).	Validate the configuration, confirm compatibility, and rerun the functional verification procedure after any corrections.

7. Technical Specifications

Parameter	Value	Unit
Weight	3.5	kg
Material	Anodized Aluminum	
Voltage	400VAC	
IP Rating	IP65	
Country of Origin	SE	
Protocol	PROFINET	
Dimensions	185 x 86 x 86 mm	
Torque	5.0 Nm	