User Manual: NexBot Robotics DC112-005 DC Servo Motor 5.0 Nm

SKU: NXB-SRV-DC112-005 | 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 DC112-005 DC Servo Motor 5.0 Nm; stored electrical or mechanical energy may remain present after shutdown.

WARNING: Operate NXB-SRV-DC112-005 only within its intended Drive Systems > Servo Motors > DC 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 DC112-005 is a high-torque, brushless DC servo motor engineered for precision and durability in industrial automation and robotics. This

motor is specifically designed to provide dynamic and accurate motion for robot axes requiring consistent performance under continuous load. Its compact, high-power-density design makes it an ideal solution for applications where space and weight are critical factors, without compromising on power or responsiveness. Key features include a brushless design that minimizes maintenance requirements and extends operational life by eliminating wear-prone components like brushes. The motor's low-inertia rotor enables rapid acceleration and deceleration, which is crucial for high-speed pick-and-place, assembly, and material handling tasks. With a continuous torque rating of 5.0 Nm, the DC112-005 provides ample power for smaller robot joints or auxiliary axes on larger systems. The motor operates on a standard 48VDC power supply, simplifying system integration with common industrial power sources. Constructed with a rugged anodized aluminum housing, this servo motor is built to withstand challenging industrial environments. It features an IP65 rating, ensuring protection against dust ingress and low-pressure water jets from any direction, making it suitable for use in facilities with moderate washdown requirements. The standard mounting flange and shaft configuration ensure straightforward mechanical installation, reducing downtime during integration or replacement. For optimal performance, this motor should be paired with a compatible digital servo drive to achieve precise control over position, velocity, and torque. The DC112-005 motor is a reliable component for achieving high-precision motion control in a variety of robotic systems.

3. Getting Started

1. Confirm product identity

Verify the installed item is NexBot Robotics DC112-005 DC Servo Motor 5.0 Nm with SKU NXB-SRV-DC112-005. 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 > DC 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 48VDC operating setup.

4. Operation

Normal operation

Run NexBot Robotics DC112-005 DC 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 DC112-005 DC 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 48VDC 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 interface mismatch on PROFINET.	Inspect physical connections, confirm interface settings, and replace damaged cables or connectors as needed.
	Mechanical loading, contamination,	Inspect the installation, restore proper alignment

Symptom	Possible Cause	Solution
Unexpected wear, vibration, or overheating	misalignment, or duty cycle exceeds the intended application conditions.	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 (C-5, C-10, S-3).	Validate the configuration, confirm compatibility, and rerun the functional verification procedure after any corrections.

7. Technical Specifications

Parameter	Value	Unit
Weight	3.8	kg
Material	Anodized Aluminum	
Voltage	48VDC	
IP Rating	IP65	
Country of Origin	KR	
Protocol	PROFINET	
Dimensions	185 x 86 x 86 mm	
Torque	5.0 Nm	