Installation Guide: NexBot Robotics AC111-004 AC Servo Motor 400W 1.27 Nm

SKU: NXB-SRV-AC111-004 | Revision: 1.0 | Category: Drive Systems > Servo Motors > AC Servo Motors

> **DANGER:** Disconnect all power sources before beginning installation. Follow lockout/tagout (LOTO) procedures per OSHA 1910.147.

1. Required Tools & Materials

- Metric Allen/Hex Key Set (sizes 3mm-6mm)
- Torque Wrench (with a range up to 25 Nm)
- Wire Stripper and Crimping Tool for power connectors
- Digital Multimeter
- Small Flathead and Phillips Head Screwdrivers
- PROFINET Cable with RJ45 or M12 connectors
- Safety Glasses
- Anti-static Wrist Strap

2. Pre-Installation Checks

1. Verify the product SKU on the motor nameplate matches NXB-SRV-AC111-004.
2. Inspect the motor housing and shaft for any signs of damage incurred during shipping.
3. Confirm the servo drive output voltage is compatible with the motor's 220VAC rating.
4. Ensure the mounting surface is flat, clean, and rigid enough to support the motor's 1.8 kg weight and operational torque.
5. Verify that the main power source to the servo drive is de-energized and locked-out/tagged-out.
6. Check that you have the correct mating connectors for the motor's power and encoder ports.

3. Installation Procedure

Step 1: Mechanical Mounting

Securely mount the AC111-004 motor using four M5 bolts on its 60 x 60 mm flange. Tighten the bolts in a star pattern to the manufacturer-specified torque for your machine frame to ensure even pressure and proper alignment.

> **Warning:** Ensure the mounting surface is perfectly planar to prevent stress on the motor frame and bearings. The motor weighs 1.8 kg; use proper lifting techniques.

Step 2: Shaft Coupling

Connect the motor shaft to the load using a high-quality, zero-backlash coupling. Ensure precise alignment between the motor shaft and the load shaft to prevent premature bearing wear and vibration.

> **Warning:** Never hammer a coupling onto the motor shaft. Use a proper press-fit tool or a coupling with a clamp or keyway design.

Step 3: Connecting the Power Cable

Connect the U, V, and W phase wires from the servo drive to the corresponding terminals on the motor's power connector. Ensure the wire gauge is sufficient for the motor's rated current at 220VAC.

> **Warning:** Incorrect phase wiring (e.g., swapping two phases) will result in the motor rotating in the reverse direction. Ensure connections are secure to prevent arcing.

Step 4: Connecting the Encoder Cable

Carefully connect the encoder feedback cable from the servo drive to the motor's encoder port. The pins are delicate; align the connector properly before applying pressure and secure the locking mechanism.

> **Warning:** Do not force the connector. Bending or breaking encoder pins will cause motor faults and require factory repair.

Step 5: Grounding the Motor

Connect the motor's ground (PE) terminal directly to the system's central earth ground point using a low-impedance conductor. Proper grounding is essential for safety and for minimizing electromagnetic interference (EMI).

Step 6: Connecting the PROFINET Cable

Connect a shielded PROFINET-rated Ethernet cable to the communication port on the motor. Ensure the cable is routed away from high-voltage power lines to maintain signal integrity.

> **Warning:** Using standard, unshielded Ethernet cables may lead to communication dropouts and system faults in an industrial environment.

Step 7: Cable Management and Strain Relief

Secure all cables (power, encoder, PROFINET) using cable ties or routing channels. Leave a small service loop to allow for movement but ensure cables are properly supported to prevent stress on the connectors.

Step 8: Configuring the Servo Drive

In the servo drive's configuration software, select the motor profile for 'NexBot AC111-004' or manually enter its parameters, including rated voltage, current, and encoder resolution. This ensures the drive's control loops are optimized for the motor.

> **Warning:** Loading incorrect motor parameters can lead to poor performance, overheating, or damage to the motor or drive.

4. Post-Installation Verification

1. Double-check that all electrical connections are tight and all connectors are fully seated and locked.
2. With the motor shaft disconnected from the load, apply power and perform a low-speed jog command from the drive to verify the direction of rotation.
3. Listen for any abnormal noises such as grinding or scraping during the jog test.

4. Check for excessive heat or vibration after running the motor unloaded for a few minutes.
5. Verify that the servo drive is communicating with the motor over PROFINET and receiving valid encoder feedback.
6. Confirm that no fault codes are present on the servo drive's display.

> **Note:** For technical support, contact your authorized service provider or visit *https://robotics.barca.group/support*.
