Installation Guide: NexBot Robotics DC112-001 DC Servo Motor 48VDC 1.5 Nm

SKU: NXB-SRV-DC112-001 | Revision: 1.0 | Category: Drive Systems > Servo Motors > DC Servo Motors

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

1. Required Tools & Materials

- M6 Allen key set
- Torque wrench with a range up to 25 Nm
- Digital multimeter
- Wire stripper and crimping tool for 16-18 AWG wire
- PROFINET certified RJ45 crimping tool and connectors
- Small flat-head screwdriver for terminal blocks
- Anti-static wrist strap
- Mounting hardware: M6 bolts and washers

2. Pre-Installation Checks

1. Verify the product SKU on the motor label matches NXB-SRV-DC112-001 as specified in the project bill of materials.
2. Inspect the Anodized Aluminum 6061-T6 housing and motor shaft for any signs of physical damage that may have occurred during shipping.
3. Confirm the mounting surface is flat, rigid, and prepared with the appropriate bolt pattern for the 90 x 90 mm motor frame.
4. Ensure the designated DC power source is disabled and locked out, and verify it is rated for a stable 48VDC output.
5. Check that the servo drive and controller are compatible with the PROFINET communication protocol.
6. Confirm that all cables (power, encoder, and network) are the correct type and length for the installation.

3. Installation Procedure

Step 1: Mechanical Mounting

Secure the NexBot Robotics DC112-001 motor to the designated mounting surface using four M6 bolts. Tighten the bolts in a star pattern to ensure even pressure and prevent frame distortion.

> **Warning:** Ensure the mounting surface can safely support the motor's 2.8 kg weight and operational torque. Use a torque wrench to tighten bolts to the specification listed in your system's mechanical drawings.

Step 2: Connecting the Mechanical Load

Align the motor shaft with the load's shaft and connect them using a high-quality, zero-backlash coupling. Proper alignment is critical to prevent premature wear on the bearings and ensure accurate motion.

> **Warning:** Never hammer a coupling or other component onto the motor shaft. This can damage the motor's sensitive internal bearings and encoder assembly.

Step 3: Connecting Power Cable

With the power supply off, connect the 48VDC power leads to the motor's power connector. Ensure correct polarity is observed (+ to +, - to -) to prevent damage to the motor electronics.

> **Warning:** Incorrect voltage or reverse polarity will cause permanent damage to the motor. Verify voltage with a multimeter before connecting.

Step 4: Connecting Encoder Cable

Connect the encoder feedback cable from the motor to the corresponding input on the servo drive. Ensure the connector is fully seated and secured to maintain signal integrity.

Step 5: Connecting PROFINET Network

Plug a shielded PROFINET cable into the motor's RJ45 communication port and the other end into the network switch or controller. Ensure the IP65-rated connector cap is properly tightened to protect against dust and moisture ingress.

Step 6: Chassis Grounding

Connect a dedicated grounding wire from the motor's chassis ground point to the main system earth ground. This is a critical step for operator safety and for minimizing electrical noise that can affect performance.

> **Warning:** Failure to properly ground the motor can create a serious electrical shock hazard and may lead to unreliable communication.

Step 7: Cable Management

Secure all cables using appropriate strain relief and routing channels. Ensure cables have enough slack to accommodate the full range of motion without being pinched, stretched, or abraded.

4. Post-Installation Verification

1. Visually re-inspect all electrical connections to ensure they are secure and correctly terminated.
2. Power on the control system and servo drive, but keep the motor disabled.
3. Using the controller software, verify that the DC112-001 motor is detected on the PROFINET network.
4. Perform a low-speed, no-load jog test to confirm the motor spins freely and in the expected direction.
5. Check for any abnormal noises, vibrations, or temperature increases during the initial test run.
6. Verify that all IP65-rated connectors and seals are correctly installed and tightened.

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