

Installation Guide: NexBot Drives

ENC521-006 Encoder Cable

SKU: NXB-SNS-ENC521-006 | Revision: 1.0 | Category: Cables & Connectors > Signal Cables > Encoder Cables

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

1. Required Tools & Materials

- Torque wrench with appropriate connector head
- Cable tie gun and nylon cable ties
- Side cutters for trimming cable ties
- Digital multimeter for continuity verification
- Lint-free cloths and isopropyl alcohol for cleaning connectors
- Personal Protective Equipment (PPE): safety glasses, gloves
- Cable routing tools (e.g., fish tape)
- Label maker for identification

2. Pre-Installation Checks

1. Verify the SKU on the packaging (NXB-SNS-ENC521-006) matches the part required for the application.
2. Visually inspect the entire length of the NexBot Drives ENC521-006 Encoder Cable for any shipping damage, such as cuts, abrasions, or crushed sections.
3. Confirm the cable length is sufficient for the intended path between the motor encoder and the drive, allowing for service loops and motion.
4. Inspect the connectors on both the drive and the motor to ensure they are clean, dry, and free of debris or bent pins.
5. Power down and implement lock-out/tag-out (LOTO) procedures on the robotic cell or machine before beginning installation.
6. Review the planned cable route to ensure it avoids high-temperature sources, sharp edges, and high-voltage power cables to prevent interference.

3. Installation Procedure

Step 1: Step 1: System De-energization

Ensure all power to the robotic system is completely shut off and locked out according to standard safety procedures. Verify zero energy state at the drive terminal before proceeding. This is a critical safety step to prevent electrical shock and unexpected machine movement.

Warning: Failure to de-energize and lock out the system can result in severe injury or death from electric shock or unexpected machine motion.

Step 2: Step 2: Route the Cable

Carefully route the ENC521-006 cable from the drive location to the motor encoder. Place the cable in the designated cable trays or conduits, ensuring it does not become twisted or kinked. Maintain a bend radius appropriate for the cable diameter to prevent internal damage.

Step 3: Step 3: Connect to the Motor Encoder

Align the keying on the cable's motor-side connector with the socket on the motor encoder. Gently push the connector into place until it is fully seated, then engage the locking mechanism. Do not force the connection.

Warning: Forcing a misaligned connector can permanently damage the pins on both the cable and the encoder.

Step 4: Step 4: Connect to the Drive

Align and connect the drive-side connector to the corresponding encoder port on the servo drive. Secure the connector's locking mechanism firmly to ensure a reliable connection and maintain the IP67 rating.

Step 5: Step 5: Secure Connectors

Using a torque wrench, tighten both connectors to the manufacturer's specified value to ensure a secure, vibration-resistant seal. Proper torque is essential for maintaining the IP67 ingress protection against dust and

moisture. If a specific value is unavailable, tighten until snug then apply a one-quarter turn.

Warning: Over-tightening can damage the connector housing or seal, while under-tightening can lead to intermittent connections or failure of the IP67 seal.

Step 6: Step 6: Secure the Cable Run

Using nylon cable ties, secure the cable along its route at regular intervals. Ensure the cable is supported and not subject to excessive strain, especially near the moving axes of the robot. Trim all cable tie tails flush to prevent snagging.

Step 7: Step 7: Apply Identification Labels

Apply clear, durable labels to both ends of the ENC521-006 cable. The labels should identify the associated axis or motor for simplified maintenance and troubleshooting in the future.

4. Post-Installation Verification

1. Visually inspect the entire installed cable path, ensuring it is secure and not pinched, stretched, or rubbing against any abrasive surfaces.
2. Double-check that both the motor-side and drive-side connectors are fully seated and securely locked.
3. Remove LOTO devices and restore power to the system in accordance with established procedures.
4. In the drive's software interface, verify that the encoder is detected and that there are no communication faults related to the PROFINET connection.
5. Carefully jog the associated motor/axis at a low speed, monitoring the position feedback to confirm the encoder signal is stable and accurate.
6. Check the system's event log for any new warnings or errors related to encoder signal quality or communication after installation.

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