Installation Guide: NexBot Robotics PWR511-016 Motor Power Cable

SKU: NXB-SRV-PWR511-016 | Revision: 1.0 | Category: Cables & Connectors > Power Cables > Motor Power Cables

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

1. Required Tools & Materials

- Calibrated torque wrench with appropriate socket/head for connectors
- Cable ties or appropriate cable clamps
- Wire cutters/strippers (for custom terminations if applicable)
- Safety glasses
- Insulated gloves rated for 480VAC
- Digital Multimeter (DMM)
- Cable routing tools (e.g., fish tape)
- Connector cleaning swabs and contact cleaner

2. Pre-Installation Checks

1. Verify the part number on the cable packaging matches NXB-SRV-PWR511-016.
2. Inspect the entire 16-meter length of the cable for any shipping damage, such as cuts or abrasions to the PUR jacket.
3. Ensure the work area is de-energized and proper Lockout/Tagout (LOTO) procedures are in effect for the motor and drive.
4. Confirm the cable connectors are clean, dry, and free of debris or bent pins.
5. Check that the cable path is clear of sharp edges, sources of extreme heat, or potential crushing hazards.
6. Verify that the motor and drive connection points are compatible with the PWR511-016 cable connectors.

3. Installation Procedure

Step 1: De-energize Equipment

Confirm that all power to the robotic cell, servo drive, and motor is disconnected at the source. Apply Lockout/Tagout (LOTO) devices as per site safety procedures before proceeding.

> **Warning:** Failure to de-energize equipment can result in severe electrical shock, injury, or death. Always verify zero energy state with a DMM.

Step 2: Route the Cable

Carefully route the 16-meter cable from the servo drive to the motor. Use existing cable trays where possible and avoid sharp bends; maintain a bend radius of at least 8 times the cable diameter. Secure the cable using appropriate clamps, ensuring it is not under tension.

> **Warning:** Do not pull the cable by its connectors. Excessive force can damage the internal conductors or connector seals.

Step 3: Prepare Drive-End Connector

Remove the protective cap from the drive-end connector. Align the keyway on the cable connector with the corresponding slot on the servo drive's power output port.

Step 4: Connect to Servo Drive

Gently push the connector into the port until it is fully seated. Thread the locking ring clockwise until it is hand-tight.

> **Warning:** Do not force the connection. If it does not seat easily, remove it and check for bent pins or debris.

Step 5: Torque Drive-End Connector

Using a calibrated torque wrench, tighten the connector's locking ring to the specified torque of 16 Nm. This is critical for maintaining the IP67 environmental seal and ensuring a reliable electrical connection.

> **Warning:** Over-torquing can damage the connector threads and housing. Under-torquing can lead to intermittent connections and moisture ingress.

Step 6: Prepare Motor-End Connector

Remove the protective cap from the motor-end connector. Clean the connector face if necessary and align its keyway with the motor's power input port.

Step 7: Connect to Motor

Seat the motor-end connector firmly into the motor port. Hand-tighten the locking ring to secure it in place.

Step 8: Torque Motor-End Connector

Use a calibrated torque wrench to tighten the motor-end connector's locking ring to the specified 16 Nm. A proper torque value ensures vibration resistance and a stable power connection for the motor.

> **Warning:** Ensure the torque wrench is properly calibrated. Incorrect torque values are a common source of connection failure.

Step 9: Secure Strain Relief

Ensure the cable is properly secured near both the motor and drive connections to provide strain relief. There should be no tension on the connectors themselves.

4. Post-Installation Verification

1. Double-check that both connectors are tightened to the specified 16 Nm torque value.
2. Visually inspect the entire cable run to ensure it is not pinched, kinked, or resting on any sharp surfaces.
3. Confirm that the cable's PUR jacket is intact and has not been damaged during installation.
4. With power still off, use a DMM to perform a point-to-point continuity test on the cable pins if required by local standards.
5. Verify that the cable does not obstruct any moving parts of the robot or other machinery.
6. Remove all LOTO devices according to procedure before re-energizing the system.

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