

User Manual: NexBot Safety

PWR511-008 Motor Power Cable

SKU: NXB-SRV-PWR511-008 | 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: RISK OF ELECTROCUTION. This cable carries hazardous voltage up to 600VAC. Always disconnect, lock out, and tag out all power sources before inspection, installation, or service. Failure to do so will result in death or serious injury.

WARNING: Improper installation, such as incorrect torque or inadequate strain relief, can lead to premature cable failure, resulting in unexpected machine movement and potential equipment damage or injury.

CAUTION: Do not exceed the minimum bend radius of the cable. Forcing the cable into tight bends can damage the internal conductors and shielding, leading to intermittent faults and reduced service life.

CAUTION: The Polyurethane (PUR) jacket is resistant to many industrial oils and chemicals, but contact with aggressive solvents should be avoided. Consult the material compatibility chart before use in harsh chemical environments.

NOTICE: This cable is designed for use in NexBot robotic systems operating in a PROFINET environment. While it carries motor power, its construction is optimized for the electrical noise and physical requirements of such systems.

2. Product Overview

NexBot Safety PWR511-008 Motor Power Cable (NXB-SRV-PWR511-008) is a motor power cables used in industrial robotics equipment where category-specific fit, electrical or mechanical compatibility, and predictable serviceability are important to buyers. The product should be understood as the exact component named by its category path, not as a complete robot or a generic service item. It supports installation, replacement, and maintenance workflows in robotic production cells by giving procurement and maintenance teams a clearly defined part class, relevant engineering specifications, and application context that matches the actual hardware being purchased.

3. Getting Started

1. Product Identification

The NexBot Safety PWR511-008 is a high-flex motor power cable with an 8-meter length and a 12.5 mm outer diameter. Verify the SKU NXB-SRV-PWR511-008 is printed on the cable jacket and packaging to ensure you have the correct component for your application.

2. Scope of Use

This cable is intended solely for connecting a NexBot servo motor to its corresponding servo drive. It is a specific component designed for predictable performance and serviceability within NexBot automation cells. It is not a generic power cable and should not be used for other purposes.

3. Handling and Storage

Store the cable in a clean, dry environment between -20°C and 60°C. Do not store heavy objects on top of the cable. Keep the protective caps on the connectors until the moment of installation to prevent contamination or pin damage.

4. Operation

Electrical Characteristics

The PWR511-008 is rated for continuous operation at voltages up to 600VAC. Its conductors are sized to handle the current demands of compatible NexBot servo motors under full load. The robust shielding ensures high noise immunity, which is critical for reliable operation in industrial environments.

Tip: To maintain signal integrity in the overall system, always route power cables like the PWR511-008 separately from sensitive data or encoder cables whenever possible.

Environmental Resilience

With an IP67 rating when properly installed, this cable is protected against dust ingress and temporary immersion in water. The tough Polyurethane (PUR) jacket provides excellent resistance to abrasion, oils, and coolants commonly found in manufacturing facilities.

Mechanical Durability

This cable is designed for dynamic applications within energy chains or on articulating robot arms. Proper installation with correct strain relief and adherence to the minimum bend radius is essential to achieving maximum service life. The 2.6 kg weight should be considered when calculating dynamic loads on the robot arm.

System Integration

As part of the NexBot ecosystem, this cable ensures seamless electrical and mechanical compatibility. Although it is a power delivery component, its design is validated for use in PROFINET-controlled cells, guaranteeing it will not introduce electrical noise that could disrupt network communications.

Tip: Always use genuine NexBot cables to ensure predictable system performance and maintain warranty coverage.

5. Maintenance Schedule

Interval	Task	Notes
Weekly	Visually inspect the cable jacket for signs of chafing, cuts, or abrasion, especially at points of movement or contact with other surfaces.	Pay close attention to the cable's entry and exit points from energy chains or cable carriers.
Monthly	Check the security of the connectors at both the motor and drive. Ensure they have not loosened due to vibration.	A visual and tactile check is sufficient; re-torquing is only necessary if looseness is detected.
Quarterly	Inspect the cable for signs of discoloration or swelling, which could indicate chemical exposure or overheating.	This check should be performed after the system has been running at typical production loads.
Annually	During a scheduled shutdown, disconnect the cable and inspect the connector pins and sockets for signs of corrosion, pitting, or contamination.	Clean with a contact cleaner approved for electrical connectors if necessary.
Annually	Perform an insulation resistance test (megger test) between conductors and from conductors to ground. Compare readings to baseline values to detect insulation degradation.	This test must be performed by a qualified technician with power fully de-energized.

6. Troubleshooting

Symptom	Possible Cause	Solution
Drive displays 'Motor Power'	A loose connection at either end of the cable,	De-energize the system. Verify both connectors are tightened to the 8 Nm specification. If the fault persists, test cable

Symptom	Possible Cause	Solution
Phase Loss' or similar fault.	or an internal break in one of the conductors.	continuity with a multimeter and replace if a conductor is open.
Intermittent motor operation or jerky movements.	A partially broken conductor inside the cable, often at a stress point or sharp bend.	De-energize the system. Carefully inspect the cable along its entire length for physical damage. Flex the cable near the connectors while checking continuity to identify intermittent breaks. Replace the NXB-SRV-PWR511-008 cable.
Visible damage to the outer Polyurethane (PUR) jacket.	Mechanical abrasion, pinching, or contact with a sharp edge.	If the damage is superficial and has not penetrated to the shielding, re-route the cable to eliminate the source of abrasion. If the shielding or inner conductors are exposed, the cable must be replaced immediately to prevent electrical hazards.
Overheating at one of the connectors.	Poor connection due to under-torquing, contamination on pins, or a damaged pin/ socket.	Immediately de-energize the system. Allow the connector to cool. Disconnect and inspect for contamination or damage. If clean and undamaged, reconnect and tighten to the correct 8 Nm torque. If the problem persists, replace the cable.
Ground fault errors on the drive.	A breakdown in the cable's insulation, allowing a power conductor to short to the ground wire or shielding, often due to moisture ingress or physical damage.	De-energize the system. Perform an insulation resistance test between each power conductor and the ground pin. If resistance is below the manufacturer's specification, the cable is faulty and must be replaced.
The connector will not fully seat or thread.	Misaligned keyway, debris in the connector, or damaged threads.	Do not use force. Remove the connector and inspect both halves. Clean out any debris using compressed air. Check for bent pins or damaged threads. Re-align and attempt to connect again. If it still fails, the cable or the device's connector may be damaged.

7. Technical Specifications

Parameter	Value	Unit
Weight	2.6	kg

Parameter	Value	Unit
Material	Polyurethane (PUR)	
Voltage	600VAC	
IP Rating	IP67	
Country of Origin	KR	
Protocol	PROFINET	
Dimensions	8 m length, 12.5 mm outer diameter	
Torque	8 Nm	