Installation Guide: NexBot Drives INC142-006 Incremental Encoder

SKU: NXB-SNS-INC142-006 | Revision: 1.0 | Category: Drive Systems > Encoders > Incremental Encoders

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

1. Required Tools & Materials

- Hex key set (metric)
- Digital multimeter
- Torque wrench (low range, Nm)
- Wire stripper and crimping tool
- Precision screwdriver set
- Shaft coupling alignment tool
- Laptop with NexBot PROFINET configuration utility
- ESD wrist strap

2. Pre-Installation Checks

1. Verify the product SKU is NXB-SNS-INC142-006 and check for any shipping damage.
2. Ensure the drive shaft diameter is compatible with the encoder's bore.
3. Confirm the mounting surface is clean, flat, and free of burrs or debris.
4. Verify a stable, regulated 24VDC power source is available and within specification.
5. Inspect the PROFINET network cable for damage and ensure it has the correct connectors.
6. Confirm the ambient operating environment meets the IP65 rating requirements.

3. Installation Procedure

Step 1: Step 1: De-energize and Lockout Machine

Before beginning installation, completely de-energize the host machine and apply appropriate lockout/tagout procedures. Verify zero energy state using a multimeter to prevent unexpected machine movement or electrical shock.

Warning: Failure to de-energize equipment can result in severe injury or death from electrical shock or uncontrolled machine motion.

Step 2: Step 2: Prepare Mounting Surface

Clean the designated mounting surface on the motor or machine frame. Ensure it is perfectly flat to prevent stress on the encoder's anodized aluminum housing when tightened.

Step 3: Step 3: Couple Encoder to Shaft

Carefully slide a suitable flexible coupling onto the motor shaft, then gently slide the INC142-006 encoder onto the other end of the coupling. Ensure there is no axial or radial pre-load on the encoder shaft to prevent premature bearing wear.

Warning: Do not hammer or apply excessive force to the encoder shaft or housing. This can permanently damage the internal optical disc and bearings.

Step 4: Step 4: Secure Encoder Housing

Align the encoder's mounting holes with the tapped holes on the machine frame. Insert and hand-tighten the mounting screws, then use a torque wrench to tighten them to the recommended specification in a star pattern to ensure even pressure.

Step 5: Step 5: Connect Power and Signal Wiring

Connect the 24VDC power supply wires to the designated terminals on the M12 connector. Ensure correct polarity is observed. Improper voltage or reversed polarity can permanently damage the encoder.

Step 6: Step 6: Connect PROFINET Network Cable

Attach the PROFINET communication cable to the designated M12 Ethernet port. Ensure the connector is fully seated and the locking ring is tightened to maintain the IP65 seal.

Step 7: Step 7: Implement Cable Strain Relief

Secure all cables approximately 15-20 cm from the encoder body using appropriate cable clamps. This prevents operational vibrations or snags from putting stress on the connectors and internal solder joints.

Step 8: Step 8: Final Configuration

Using the NexBot PROFINET configuration utility, assign the device a unique name and IP address on the network. Download the configuration to the device and verify it appears as a node in your PLC or robot controller's hardware tree.

4. Post-Installation Verification

1. After re-energizing the machine, verify the encoder's status LEDs indicate normal power and network link status.
2. Establish communication between the PLC/controller and the INC142-006 encoder over PROFINET.
3. Slowly rotate the drive shaft by hand or in jog mode and confirm that position counts are changing logically in the controller.
4. Check for any unusual noise or vibration originating from the encoder or coupling during operation.
5. Verify all mounting hardware is secure and has not loosened after initial rotation.
6. Perform a system homing or zeroing procedure as required by your application's logic.

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