

Installation Guide: NexBot Drives INC142-014 Incremental Encoder

SKU: NXB-SNS-INC142-014 | 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)
- Precision screwdriver set (Phillips and flathead)
- Digital multimeter
- Wire stripper and crimping tool
- Torque wrench (low range, Nm)
- Safety glasses
- Anti-static wrist strap
- PROFINET M12 connector tool

2. Pre-Installation Checks

1. Verify that the product SKU on the packaging matches NXB-SNS-INC142-014.
2. Visually inspect the encoder's anodized aluminum housing for any signs of shipping damage.
3. Confirm the motor shaft diameter is compatible with the encoder's bore.
4. Ensure the system's power supply output is stable and within the 5-24VDC range specified for the encoder.
5. Review the robot controller's wiring diagram and PROFINET network configuration settings.
6. Discharge any static electricity by using an anti-static wrist strap before handling the component.

3. Installation Procedure

Step 1: Power Down and Lockout Machinery

Ensure the main power to the robotic system is completely shut off. Follow standard lockout/tagout (LOTO) procedures to prevent accidental startup during installation.

Warning: Failure to de-energize the system can result in severe electrical shock or unexpected machine movement.

Step 2: Prepare Motor Shaft

Clean the motor shaft of any grease, oil, or debris to ensure a secure fit. Check the shaft for any burrs or damage that could interfere with mounting.

Step 3: Mount Encoder onto Shaft

Carefully slide the INC142-014 encoder onto the prepared motor shaft. Ensure the encoder body is flush against the motor face and properly aligned.

Warning: Do not use a hammer or apply excessive force to mount the encoder, as this can damage the internal bearings and optics.

Step 4: Secure Mounting Clamp

Tighten the set screws on the shaft collar evenly to secure the encoder. Use a torque wrench to apply the recommended torque setting to avoid shaft slippage or damage.

Step 5: Connect Power and Signal Wires

Connect the power supply wires according to the pinout diagram, ensuring correct polarity for the 5-24VDC input. Miswiring can permanently damage the encoder.

Warning: Verify voltage and polarity with a multimeter before connecting power to the encoder.

Step 6: Connect PROFINET Cable

Attach the shielded PROFINET communication cable to the encoder's M12 connector. Ensure the connection is tight to maintain the IP65 rating and reliable communication.

Step 7: Secure and Route Cabling

Route all cables away from moving parts, sharp edges, and sources of high electrical noise. Use cable ties or conduit to secure the wiring and prevent strain on the connectors.

Step 8: Final Mechanical Inspection

Gently rotate the motor shaft by hand to ensure there is no binding or mechanical interference. Verify that the encoder body does not move or wobble during rotation.

4. Post-Installation Verification

1. Remove LOTO devices and carefully restore power to the system.
2. Check the robot controller's network diagnostics to confirm the INC142-014 encoder is detected on the PROFINET network.
3. Slowly jog the robot joint and verify that the position and speed values from the encoder are being received and are logical.
4. Check for any new fault codes on the robot controller related to the encoder or axis position.
5. Monitor the encoder for any unusual noise or vibration during initial test movements.
6. Confirm that all covers and seals are properly reinstalled to maintain the system's overall IP rating.

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

