Installation Guide: NexBot Robotics ABS141-001 Absolute Encoder 24-Bit Single-Turn

SKU: NXB-SNS-ABS141-001 | Revision: 1.0 | Category: Drive Systems > Encoders > Absolute 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 for M12 connector pins
- Small flathead screwdriver for terminals
- Safety glasses
- Lint-free cloths
- Lockout/Tagout (LOTO) kit

2. Pre-Installation Checks

1. Verify the received product SKU matches NXB-SNS-ABS141-001 on the order.
2. Visually inspect the encoder housing, shaft, and connector for any signs of shipping damage.
3. Confirm the machine's power source is off and secured using LOTO procedures.
4. Ensure the mounting surface is clean, flat, and free of burrs or debris.
5. Verify the drive shaft and coupling are compatible with the encoder's shaft dimensions.
6. Confirm the control system is equipped with a BiSS-C master interface.

3. Installation Procedure

Step 1: Step 1: Power Down and Lockout

Ensure all power to the machine and control cabinet is completely shut off. Apply appropriate lockout/tagout (LOTO) devices to prevent accidental startup during installation.

> **Warning:** Failure to de-energize equipment can result in severe electrical shock or unexpected machine movement.

Step 2: Step 2: Prepare Mounting Surface

Clean the designated mounting face on the machine to ensure a solid, flush fit. Check for any imperfections that could cause misalignment of the encoder.

Step 3: Step 3: Mechanical Coupling

Carefully attach a suitable flexible or bellows coupling to the drive shaft. Slide the encoder onto the coupling, ensuring there is no axial pre-load or significant radial misalignment, which can damage the encoder's bearings over time.

> **Warning:** Do not hammer or apply excessive force to the encoder shaft. This will cause permanent damage to the internal components.

Step 4: Step 4: Secure Encoder Body

Align the encoder's mounting holes with the mounting bracket. Insert and hand-tighten the mounting screws, then use a torque wrench to tighten them evenly to the specification provided by the machine manufacturer.

Step 5: Step 5: Connect Power Supply

Connect the 10-30VDC power and ground wires to the appropriate pins on the connector. Use a multimeter to verify voltage and polarity before connecting to the encoder.

> **Warning:** Applying incorrect voltage or reverse polarity can permanently damage the encoder's electronics.

Step 6: Step 6: Connect BiSS-C Data Lines

Connect the BiSS-C Clock (CLK) and Data (DATA) lines to the controller. Ensure the cable shield is properly terminated according to your system's grounding scheme to minimize electrical noise.

Step 7: Step 7: Cable Management

Secure the encoder cable, leaving enough slack for any intended machine movement. Use cable ties or routing channels to prevent the cable from chafing, kinking, or being stretched during operation.

4. Post-Installation Verification

1. Double-check that all mounting screws are properly tightened.
2. Verify all electrical connections are secure and that the connector is fully seated.
3. Remove all tools from the work area and safely remove LOTO devices.
4. Power on the machine and controller, and verify the encoder is receiving power.
5. Establish communication with the encoder in the controller software and check for error flags.
6. Slowly rotate the drive shaft by hand and confirm that the position data updates smoothly and logically in the software.

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