Installation Guide: NexBot Drives ABS141-002 Absolute Encoder

SKU: NXB-SNS-ABS141-002 | 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

- Torque wrench (low range, Nm)
- Metric hex key set (2mm - 5mm)
- Precision screwdriver set
- Wire stripper and crimping tool for M12 connectors
- Digital multimeter
- ESD wrist strap
- Lint-free cloths
- Isopropyl alcohol

2. Pre-Installation Checks

1. Verify the machine and control cabinet are de-energized and follow Lockout/Tagout (LOTO) procedures.
2. Inspect the NexBot Drives ABS141-002 encoder for any signs of shipping damage.
3. Confirm the host controller or drive is compatible with the BiSS-C protocol.
4. Ensure the mounting surface on the robot joint or motor is clean, flat, and free of debris.
5. Check that the connecting cable has the correct pinout and is of sufficient length without being excessively long.
6. Verify the power supply provides a stable 24VDC source as required by the encoder specifications.

3. Installation Procedure

Step 1: Step 1: De-energize Equipment

Ensure all power to the robotic system and control cabinet is shut down. Follow standard Lockout/Tagout (LOTO) procedures to prevent accidental startup.

> **Warning:** Failure to de-energize equipment can result in severe electrical shock and/or unexpected machine movement, leading to serious injury or death.

Step 2: Step 2: Prepare Mounting Location

Clean the designated mounting surface with isopropyl alcohol and a lint-free cloth. Ensure the surface is flat and free from burrs or old gasket material to guarantee a secure fit for the 58 x 58 mm encoder body.

Step 3: Step 3: Mechanically Mount the Encoder

Position the ABS141-002 encoder onto the mounting surface, aligning the mounting holes. Insert and hand-tighten the mounting screws, then use a torque wrench to tighten them to the specification listed in your robot's service manual.

> **Warning:** Do not overtighten mounting screws, as this can warp the anodized aluminum housing and damage internal components.

Step 4: Step 4: Connect Shaft Coupling

Carefully slide a suitable flexible shaft coupling onto the motor/joint shaft and the encoder shaft. Ensure there is no axial pre-load on the encoder shaft and secure the coupling's set screws.

> **Warning:** Using a rigid coupling or forcing the shaft can cause excessive bearing load and lead to premature encoder failure.

Step 5: Step 5: Connect BiSS-C Signal Cable

Align the key on the signal cable connector with the socket on the encoder and push until it clicks into place. Screw the locking ring until it is hand-tight to secure the connection and maintain the IP67 seal.

Step 6: Step 6: Connect 24VDC Power

Connect the dedicated power cable to the encoder's power input connector. Ensure the power source is off before making the connection, then secure the connector's locking ring.

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

Step 7: Step 7: Route and Secure Cabling

Route the power and signal cables along designated cable paths, avoiding sharp bends or proximity to high-voltage lines. Use cable ties or clamps to secure the cables, leaving a small service loop to prevent strain on the connectors.

4. Post-Installation Verification

1. Remove all tools from the work area and re-install any safety guards that were removed.
2. Following safety procedures, re-energize the robotic system.
3. In the controller software, verify that the ABS141-002 encoder is detected and communicating via the BiSS-C protocol.
4. Check for any diagnostic error codes related to the new encoder.
5. Manually command a slow movement of the associated axis and confirm that the position data updates smoothly and correctly.
6. Perform a zero-point or homing calibration procedure as required by your application's software.

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