Installation Guide: NexBot Drives SA011-002 6-Axis Robot Arm 10kg Payload

SKU: NXB-ROB-SA011-002 | Revision: 1.0 | Category: Robots > Articulated Robots > Small Articulated (≤10kg)

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

1. Required Tools & Materials

- Heavy-duty lifting straps (rated for >200 kg)
- Calibrated torque wrench with M12 metric socket set
- Industrial-grade laser level or precision machinist's level
- M12 anchor bolt installation kit for concrete
- PROFINET cable crimping tool and network tester
- Digital multimeter for voltage verification
- Metric Allen key set (5mm - 14mm)
- Anti-vibration mounting pads

2. Pre-Installation Checks

1. Verify foundation integrity: Ensure the mounting surface is level, cured, and rated to support the robot's static weight (165.0 kg) and dynamic operational forces.
2. Confirm power availability: Check that a dedicated 400-480VAC 3-Phase power source with appropriate circuit protection is available near the installation point.
3. Inspect robot for shipping damage: Carefully uncrate the SA011-002 and visually inspect all axes, cabling, and the base for any signs of damage incurred during transit.
4. Check environmental conditions: Ensure the installation area is free from excessive dust, moisture, and corrosive vapors, adhering to the IP54 rating limitations.
5. Verify clearance: Confirm a clear working envelope of at least a 1300 mm radius around the robot base, plus additional safety clearance as per local regulations.

6. Review Bill of Materials: Cross-reference all delivered components against the packing list to ensure all required cables, fasteners, and documentation are present.

3. Installation Procedure

Step 1: Positioning and Lifting

Using certified lifting straps attached to the designated lifting points, carefully hoist the 165.0 kg robot arm. Position it over the pre-drilled mounting holes on the prepared foundation.

> **Warning:** Improper lifting can cause severe injury or equipment damage. Always use rated equipment and follow safe lifting practices.

Step 2: Securing the Robot Base

Lower the robot onto the mounting surface, aligning the base holes with the floor anchors. Install and tighten the M12 anchor bolts in a star pattern to the torque specified in the mechanical drawings.

Step 3: Leveling the Base

Use a precision machinist's level on the machined surface of the robot base. Adjust leveling bolts or shims as necessary to ensure the base is perfectly level for optimal repeatability.

> **Warning:** Failure to properly level the base can negatively impact the robot's accuracy and service life.

Step 4: Connecting Main Power

With the main breaker in the OFF position, connect the 400-480VAC 3-Phase power cable to the robot controller's main power input terminal. Ensure proper phasing and secure grounding according to the provided electrical schematics.

> **Warning:** All electrical work must be performed by a qualified electrician. Risk of electric shock.

Step 5: Connecting Communication Cables

Route and connect the PROFINET communication cable from the robot controller to the master PLC or network switch. Ensure the cable is secured and protected from physical damage or electromagnetic interference.

Step 6: Installing End-of-Arm Tooling (EOAT)

Mount the desired gripper or tool to the Axis 6 flange, ensuring the combined weight of the tool and workpiece does not exceed the 10 kg payload limit. Connect any required pneumatic or electrical lines for the tooling.

Step 7: Powering On and System Initialization

Clear the work area of all personnel and tools, and close all safety gates. Power on the main breaker and then the robot controller, following the startup sequence outlined in the controller manual.

> **Warning:** Ensure the Emergency Stop circuit is fully tested before the first power-on.

Step 8: Brake Release and Axis Calibration Check

Using the teach pendant in T1 (manual) mode, perform a brake release test on each of the 6 axes. Slowly jog each axis to verify smooth movement and check that the home position calibration is correct.

4. Post-Installation Verification

1. Verify teach pendant connectivity and ensure all buttons and the joystick are responsive.

2. Check for fault codes on the controller display after the initial power-up sequence completes.
3. Perform a dry run of a simple motion program at low speed to confirm correct axis movement and reach.
4. Test all external safety circuits, such as emergency stops and light curtains, to ensure they correctly stop robot motion.
5. Confirm successful PROFINET communication by checking the network status on both the robot controller and the master PLC.
6. Re-torque all mounting bolts after the first 8 hours of operation to account for any initial settling.

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