Installation Guide: NexBot Drives HA014-002 6-Axis Robot Arm 250kg Payload

SKU: NXB-ROB-HA014-002 | Revision: 1.0 | Category: Robots > Articulated Robots > Heavy Articulated (>200kg)

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

1. Required Tools & Materials

- Overhead crane or forklift with a minimum lifting capacity of 2500 kg
- Calibrated industrial torque wrench (1000 Nm capacity)
- Laser leveling and alignment system
- M24 chemical anchor bolt system
- Industrial multimeter with high voltage probes
- EtherCAT network cable tester and RJ45 crimping tool
- Hydraulic lug crimper for grounding cables
- Personal Protective Equipment (PPE) including steel-toed boots, hard hat, and safety glasses

2. Pre-Installation Checks

1. Foundation Verification: Confirm the concrete mounting pad is fully cured, level to within 1.5mm over the base footprint, and engineered to support the robot's 2350.0 kg static weight and dynamic operational loads.
2. Power Availability: Ensure a dedicated, lockable 480VAC 3-phase circuit is available and de-energized at the installation site.
3. Workspace Clearance: Verify the robot's 3,200 mm reach envelope is clear of all obstructions, personnel pathways, and structural elements.
4. Component Inventory: Unpack all crates and cross-reference the contents with the packing list, ensuring the HA014-002 arm, controller, cables, and teach pendant are present and undamaged.

5. Network Readiness: Confirm that a functional EtherCAT network drop is located within 5 meters of the planned controller location.
6. Environmental Conditions: Check that the ambient temperature and humidity are within the operating specifications and the area is free from excessive dust or corrosive vapors.

3. Installation Procedure

Step 1: Lifting and Positioning

Using a certified overhead crane and the designated lifting points on the robot body, carefully hoist the HA014-002 arm. Slowly lower it into position, aligning the base mounting holes with the anchor bolts set in the foundation.

> **Warning:** Never stand under a suspended load. Use guide ropes to control sway and ensure the robot base is perfectly aligned before lowering completely.

Step 2: Anchoring the Robot Base

Insert and hand-tighten all M24 anchor bolts. Follow the chemical anchor manufacturer's instructions regarding curing times before applying torque.

Step 3: Torquing and Leveling

Using a calibrated torque wrench, tighten the anchor bolts in a star pattern to the torque value specified in the foundation manual. Verify with a laser level that the robot mounting flange is level; use provided shims for micro-adjustments if necessary.

> **Warning:** Uneven torquing or an unlevel base can introduce stress into the robot casting and affect motion repeatability.

Step 4: Connecting Main Power and Signal Cables

Route the main umbilical cable from the robot base to the primary connector on the NexBot controller. Ensure the connectors are fully seated and locked.

Step 5: Terminating 480VAC Supply

With the main supply locked out, a qualified electrician must connect the 480VAC 3-phase power lines to the L1, L2, and L3 terminals in the controller cabinet. Connect the main equipment ground to the grounding bus bar.

> **Warning:** Risk of lethal electrocution. All electrical work must be performed by certified personnel in accordance with local codes.

Step 6: Establishing EtherCAT Communication

Connect the incoming plant network cable to the EtherCAT IN port on the controller. If the robot is the last device in the chain, ensure the OUT port is properly terminated or left empty as per your network topology.

Step 7: Connecting Safety Circuits

Wire external safety devices such as emergency stop buttons, safety gates, and light curtains into the designated safety I/O terminals in the controller. These circuits are critical for safe operation in an automated cell.

Step 8: Attaching End-of-Arm Tooling (EOAT)

Mount the specified EOAT to the Axis 6 flange, ensuring the bolt pattern and locating dowel are correctly aligned. Connect any required pneumatic or electrical services for the tool.

> **Warning:** Ensure the combined weight of the EOAT and workpiece does not exceed the maximum 250 kg payload.

4. Post-Installation Verification

1. Visually inspect all cable connections and ensure routing does not create pinch points or interfere with the robot's range of motion.
2. Release all emergency stops and power on the system. Verify that no critical faults appear on the teach pendant during boot-up.
3. Confirm that the robot controller is visible and communicating on the EtherCAT network from the master PLC or engineering station.
4. Perform a static brake test on each of the 6 axes from the teach pendant's service menu.
5. Configure the newly installed EOAT in the software, including its weight, center of gravity, and Tool Center Point (TCP).
6. In manual mode and at low speed (<=10%), jog each axis through its full range of motion to confirm smooth, unrestricted movement.

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