Installation Guide: NexBot Vision HA014-003 6-Axis Robot Arm 250kg Payload

SKU: NXB-ROB-HA014-003 | 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 3000 kg
- Certified lifting straps and shackles
- High-capacity torque wrench (up to 1000 Nm)
- M30 chemical or mechanical anchor bolt installation kit
- Laser leveling system or precision machinist's level
- Industrial multimeter with high voltage probes
- PROFINET cable tester and termination tool kit
- Grounding resistance tester

2. Pre-Installation Checks

1. Verify the concrete foundation meets the specified depth, curing time, and flatness requirements outlined in the site preparation manual.
2. Confirm the incoming 480VAC, 3-phase power supply is de-energized and locked-out/tagged-out.
3. Inspect the robot shipping crate and base for any signs of damage that may have occurred during transit.
4. Ensure the installation area is clear of all personnel not directly involved in the lifting and placement operation.
5. Check that the robot controller's intended location has adequate ventilation and is within the specified cable length of the robot base.

6. Unpack and verify all components against the shipping manifest, including the robot arm, controller, teach pendant, and cable sets.

3. Installation Procedure

Step 1: Foundation Preparation and Anchoring

Drill anchor holes into the prepared concrete foundation according to the template provided. Clean holes of all debris and install the M30 anchor bolts, ensuring they are plumb and at the correct height.

> **Warning:** Failure to properly prepare the foundation and install anchors can lead to robot instability, causing catastrophic failure and severe injury.

Step 2: Robot Rigging and Placement

Attach certified lifting straps to the designated lifting points on the robot's cast iron base. Carefully lift the 2300 kg robot arm using an overhead crane and slowly lower it onto the anchor bolts.

> **Warning:** Never stand under a suspended load. Only certified rigging personnel should perform the lift.

Step 3: Securing the Robot Base

Once the robot is positioned, place washers and nuts on the anchor bolts. Sequentially tighten the nuts in a star pattern to the specified torque value using a calibrated torque wrench to ensure even loading.

Step 4: Main Electrical Connection

Route the main power cable from the controller to the robot base terminal box. Connect the 480VAC 3-phase power lines and the main equipment ground conductor as specified in the electrical schematics. Verify all connections are secure.

> **Warning:** All electrical work must be performed by a qualified electrician in accordance with local codes. Ensure power is locked out before beginning.

Step 5: Controller and Pendant Connection

Connect the main umbilical cable between the robot base and the robot controller. Connect the teach pendant to its designated port on the controller.

> **Warning:** Ensure cable connectors are properly seated and locked to maintain IP67 rating and prevent communication errors.

Step 6: PROFINET Network Integration

Connect the robot controller to the facility's PROFINET network using shielded industrial Ethernet cabling. Configure the controller's IP address and device name to integrate it with the master PLC.

Step 7: Initial Power-Up and System Check

Remove all lock-out/tag-out devices and energize the system. Power on the controller and observe the boot sequence on the teach pendant for any initial errors or warnings.

> **Warning:** Ensure all personnel are outside the robot's maximum work envelope (3100 mm reach plus tooling) before applying power.

Step 8: Axis Mastering and Calibration

Perform the first-time axis mastering procedure using the teach pendant. This process establishes the zero position for each of the 6 axes and is critical for ensuring the robot's ±0.07 mm repeatability.

4. Post-Installation Verification

1. Verify that all axes can be jogged slowly in both directions throughout their entire range of motion without any binding or unusual noise.
2. Confirm that all safety circuits, including emergency stops on the controller and teach pendant, are functioning correctly.
3. Check the PROFINET connection status on both the PLC and the robot controller to ensure a stable communication link.
4. Run a low-speed test program without any payload to verify correct path following and system operation.
5. Inspect all cable connections and mounting hardware for security after the initial movements.
6. Set the correct payload data (250 kg max) in the system configuration to ensure proper dynamics and motor performance.

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