

Installation Guide: NexBot Robotics MA012-001 6-Axis Robot Arm 25kg Payload

SKU: NXB-ROB-MA012-001 | Revision: 1.0 | Category: Robots > Articulated Robots > Medium Articulated (10-50kg)

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 certified lifting straps (rated for >300 kg)
- Calibrated high-range torque wrench for M16/M20 mounting bolts
- Industrial metric socket set and hex (Allen) key set
- Precision laser level or machinist's level
- Digital multimeter with AC voltage and continuity functions
- Insulated wire strippers and terminal crimping tool
- Laptop with NexBot Robotics Controller Interface software pre-installed
- Earth ground resistance tester

2. Pre-Installation Checks

1. Verify the foundation is a reinforced concrete slab or steel structure rated for the robot's 285.0 kg static weight plus dynamic loading.
2. Confirm the dedicated 3-phase power source is stable and measures within the 380-480VAC range.
3. Inspect the installation area for full clearance, ensuring no obstructions within the robot's 1710 mm reach.
4. Unpack and inspect the MA012-001 robot arm, controller, and cables for any signs of shipping damage against the packing list.
5. Ensure the ambient environment is free from corrosive gases, excessive moisture, and heavy particulate contamination.

6. Plan the routing for power, EtherCAT communication, and end-of-arm tooling cables to prevent pinching or abrasion.

3. Installation Procedure

Step 1: Positioning and Lifting

Using certified lifting equipment, carefully hoist the MA012-001 robot via the designated cast-in lifting points on its base. Slowly lower the robot into position, aligning the mounting holes with the anchors in the prepared foundation.

Warning: Never stand directly beneath a suspended load. Ensure all personnel are clear of the lifting area during this operation.

Step 2: Securing Robot Base

Insert all specified mounting bolts and washers, then hand-tighten. Using a calibrated torque wrench, tighten the bolts to the specified torque value in a crisscross pattern to ensure even pressure distribution.

Step 3: System Grounding

Connect the primary grounding lug on the robot base to the facility's main earth ground point using the provided heavy-gauge grounding cable. Verify a low-resistance connection (<1 ohm) using a ground tester to ensure electrical safety.

Warning: Failure to properly ground the robot can result in a severe electric shock hazard and potential damage to electronic components.

Step 4: Main Power Connection

With the main circuit breaker in the OFF and locked-out position, connect the 380-480VAC 3-Phase power lines to the L1, L2, and L3

terminals in the robot controller. Ensure the connection is secure and phasing is correct as per the wiring diagram.

Step 5: Communication Cable Connection

Connect the shielded EtherCAT communication cable from your master controller or PLC to the designated input port on the robot controller. Connect the corresponding cable from the controller to the communication port at the base of the MA012-001 arm.

Step 6: Removal of Shipping Brackets

Locate and remove all red-painted shipping brackets and motor locks from the robot's joints. These fixtures prevent movement during transit and must be completely removed before attempting to power on the motors.

Warning: Attempting to power on the robot with shipping brackets installed will cause severe damage to the motors and gearboxes.

Step 7: Initial Power-Up Sequence

Perform a final visual inspection of all connections. Remove the lockout/tagout device and energize the main circuit breaker. Power on the controller and follow the initialization prompts on the teach pendant.

Step 8: Robot Mastering (Calibration)

Attach the supplied mastering jigs to the robot arm as instructed in the service manual. Execute the mastering routine from the teach pendant to establish the precise zero position for all six axes, which is critical for achieving the specified ± 0.03 mm repeatability.

4. Post-Installation Verification

1. Using the teach pendant at low speed, jog each of the 6 axes through its full range of motion to verify smooth, unrestricted movement.

2. Test every Emergency Stop button on the teach pendant, controller, and in the workcell to confirm they immediately halt robot motion.
3. Verify a stable EtherCAT communication link is established by checking the network status indicator in the controller software.
4. Accurately define the installed end-of-arm tooling and a test payload (up to 25 kg) in the controller's payload settings.
5. Execute a simple pre-written test program to confirm correct path following and positioning.
6. After one hour of operation, re-torque the base mounting bolts to ensure they are secure.

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