

Installation Guide: NexBot Robotics ELC412-001 Electric Gripper 120mm Stroke

SKU: NXB-GEN-ELC412-001 | Revision: 1.0 | Category: End-of-Arm Tooling > Grippers > Electric Grippers

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

1. Required Tools & Materials

- Torque wrench with a range up to 20 Nm
- Metric hex key set (3mm, 4mm, 5mm)
- M12 4-pin A-coded female connector cable
- Digital multimeter
- Wire strippers and crimpers
- Anti-static wrist strap
- M6 mounting bolts (length dependent on robot flange)
- Medium-strength threadlocker compound

2. Pre-Installation Checks

1. Verify the robot arm and controller are de-energized and follow Lock-Out/Tag-Out (LOTO) procedures.
2. Inspect the robot's mounting flange to ensure it is clean, flat, and free of debris or damage.
3. Confirm the received product is SKU NXB-GEN-ELC412-001 and check for any signs of shipping damage.
4. Measure the 24VDC power supply output to ensure it is stable and within $\pm 5\%$ of the nominal voltage.
5. Ensure an IO-Link master port is available on the control system and the correct IODD file for the ELC412-001 is on hand.
6. Check that the mounting pattern on the gripper corresponds to the robot arm's flange adapter plate.

3. Installation Procedure

Step 1: Mechanical Mounting

Carefully align the mounting holes on the NexBot ELC412-001 gripper with the robot arm's end-of-arm-tooling (EOAT) flange. Insert the appropriate M6 bolts with a drop of medium-strength threadlocker and hand-tighten to secure the 3.2 kg unit.

Warning: Ensure the robot arm is properly supported and cannot move during installation. The gripper's weight could cause unexpected movement.

Step 2: Torqueing Mounting Fasteners

Use a calibrated torque wrench to tighten the mounting bolts in a star pattern to the specification listed in the robot's user manual. This ensures an even distribution of clamping force and prevents vibration from loosening the gripper.

Step 3: Electrical Connection

Connect the M12 4-pin cable to the corresponding port on the gripper. Route the cable along the robot arm, ensuring it is secured and has enough slack to accommodate all robot movements without stretching or pinching.

Warning: Ensure all power sources are off before making any electrical connections to prevent equipment damage or electrical shock.

Step 4: Power and IO-Link Wiring

Wire the other end of the M12 cable to the 24VDC power supply and the designated IO-Link master port. Pin-out details can be found in the ELC412-001 datasheet; ensure power, ground, and communication lines are correctly terminated.

Step 5: Gripper Finger Installation

Mount the custom or standard gripper fingers onto the gripper's jaws using the provided threaded holes. Ensure fingers are securely fastened and do not interfere with the gripper's full 120mm range of motion.

Warning: Do not operate the gripper without fingers installed, as this can cause the jaws to collide with the housing.

Step 6: System Power-Up

Remove all tools from the work area and follow the established procedure to remove LOTO. Power on the 24VDC supply first, followed by the robot controller. Observe the status LED on the gripper for power and communication indicators.

Step 7: IO-Link Configuration

In your PLC or robot controller's engineering software, configure the IO-Link master port connected to the gripper. Load the ELC412-001's IODD file to enable access to all process data, parameters, and diagnostics.

4. Post-Installation Verification

1. Verify the gripper's status LED shows a solid green light, indicating stable power and IO-Link communication.
2. In a manual or test mode, command the gripper to slowly open and close through its full 120mm stroke, checking for smooth, unobstructed movement.
3. Test the position control by sending a command to move to 50% stroke (60mm) and visually confirming the position.
4. Check the force control by setting a low force limit and gently resisting the fingers to ensure they stop as expected.
5. Execute a test pick-and-place routine to verify the gripper's repeatability of ± 0.02 mm in a real application cycle.

6. Review the diagnostic data via the IO-Link master to confirm that motor temperature and voltage readings are within normal operating ranges.

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