Installation Guide: NexBot Robotics TBL021-004 Collaborative Robot Arm 10kg Payload

SKU: NXB-ROB-TBL021-004 | Revision: 1.0 | Category: Robots > Collaborative Robots > Tabletop Cobots (≤5kg)

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

1. Required Tools & Materials

- M6 Hex Key Set
- Torque Wrench (rated for at least 50 Nm)
- Precision Machinist Level
- ESD-Safe Wrist Strap
- Industrial Wire Stripper and Crimper (for 48VDC connector)
- EtherCAT Network Cable Tester
- Lifting Straps (rated for >30 kg)
- Mounting Hardware (M8 bolts, quantity 4, grade 8.8 or higher)

2. Pre-Installation Checks

1. Verify the mounting surface is flat, rigid, and can support a static load of at least 120 kg.
2. Confirm a stable, regulated 48VDC power source capable of supplying a minimum of 10A is available within 2 meters of the installation point.
3. Ensure the control cabinet and EtherCAT master are installed and operational.
4. Inspect the NexBot Robotics TBL021-004 for any signs of damage that may have occurred during shipping.
5. Review the site-specific risk assessment to ensure all required safety measures (e.g., light curtains, safety mats) are in place.
6. Unpack all components and verify against the packing list, including the robot arm, controller cable, and documentation.

3. Installation Procedure

Step 1: Position and Secure the Robot Base

Using appropriate lifting equipment, carefully position the 28.5 kg robot arm onto the prepared mounting surface. Align the base mounting holes and loosely install four M8 bolts.

> **Warning:** Risk of crushing injury. Use at least two people or a certified mechanical lift to handle the robot arm. Never lift the robot by its joints or cabling.

Step 2: Level and Torque the Robot Base

Place a precision level on the mounting flange of the robot base. Adjust until level, then tighten the M8 mounting bolts in a star pattern to the specified torque value found in the hardware manual. Re-verify level after torquing.

Step 3: Connect the Main Power and Control Cable

Ensure the main power source is de-energized. Connect the primary multi-conductor cable from the robot base to the corresponding port on the NexBot controller.

> **Warning:** Ensure the 48VDC power source is locked out and tagged out (LOTO) before making any electrical connections to prevent electric shock.

Step 4: Connect EtherCAT Communication

Connect a shielded EtherCAT cable from the EtherCAT master or previous slave device to the EtherCAT IN port on the robot's controller. If this is the last device in the chain, ensure the OUT port remains unconnected or is properly terminated as per your network topology.

Step 5: Connect Safety Circuits

Wire the facility's Emergency Stop (E-Stop) circuit and other safety I/O (e.g., safety gates, light curtains) to the dedicated safety terminal block on the

controller. All safety connections must comply with local and international safety standards.

> **Warning:** Improperly configured safety circuits can lead to serious injury or death. This step must be performed by a qualified automation safety technician.

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

Mount the desired gripper or tool to the tool flange at the end of Axis 6. Ensure the EOAT weight, including any workpiece, does not exceed the 10 kg payload limit. Connect any required pneumatic or electrical lines for the tool.

Step 7: Initial Power-On

Clear the work area of all tools and personnel. Remove the LOTO and energize the 48VDC power supply. Power on the robot controller and observe the status indicators for normal operation.

> **Warning:** The robot may perform a slight, unexpected motion during its initial boot sequence. Maintain a safe distance.

4. Post-Installation Verification

1. Verify the status LEDs on the robot controller indicate a successful boot and stable power.
2. Check the EtherCAT master device list to confirm that the TBL021-004 has been successfully identified on the network.
3. Using the teach pendant, perform a master calibration routine to establish the robot's home position.
4. Test all connected safety circuits, including the E-Stop buttons and any interlocks, to ensure they function correctly.
5. Jog each of the 6 axes individually at low speed to confirm smooth, unrestricted movement across their full range.
6. Run a pre-loaded test program without a workpiece to verify correct path execution and repeatability.

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