

Installation Guide: NexBot Robotics 621-007 Door Interlock, PLe/SIL3

SKU: NXB-GEN-621-007 | Revision: 1.0 | Category: Safety Systems > Safety Interlocks > Door Interlocks

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

1. Required Tools & Materials

- Phillips Head Screwdriver (#2)
- Flat-Head Screwdriver (3mm for terminals)
- Torque Wrench with M5 Hex Bit
- Wire Stripper/Cutter (16-22 AWG)
- Digital Multimeter
- Electric Drill with bits appropriate for mounting surface
- M5 Mounting Screws and Washers
- Crimping Tool and appropriate terminals

2. Pre-Installation Checks

1. Verify the received product is SKU NXB-GEN-621-007 and is free from any visible shipping damage.
2. Ensure the mounting surface on the machine frame is rigid, flat, and free of vibration.
3. Confirm the door or gate alignment allows for smooth, repeatable engagement with the actuator.
4. Verify the safety controller has compatible OSSD (Output Signal Switching Device) inputs and a 24VDC output for the solenoid.
5. De-energize and lock-out/tag-out the machine's main power supply before beginning any wiring.
6. Check that the provided cabling is of sufficient length and gauge for the installation distance.

3. Installation Procedure

Step 1: Position Interlock Body

Align the main interlock body (145 x 40 x 50 mm) on the fixed part of the machine guard frame. Ensure the actuator entry slot is correctly oriented to receive the actuator from the moving door.

Step 2: Mount Interlock Body

Mark and drill mounting holes based on the interlock's footprint. Securely fasten the die-cast zinc alloy body to the frame using M5 screws. Do not fully tighten the screws at this stage.

Warning: Ensure mounting hardware does not interfere with internal components or compromise the housing's integrity.

Step 3: Position Actuator

With the interlock body loosely mounted, close the door and insert the actuator into the interlock head. Position the actuator on the moving part of the door so it aligns perfectly without causing any lateral force on the interlock.

Step 4: Mount Actuator

Mark and drill holes for the actuator. Securely fasten the actuator to the moving door or gate. Use appropriate hardware to ensure it will not loosen with repeated use.

Step 5: Finalize Mechanical Alignment

Open and close the door several times to check for smooth entry and exit of the actuator. Adjust the position of the interlock body as needed, then tighten all mounting screws to the manufacturer's recommended torque specification.

Warning: Poor alignment is a primary cause of premature failure. Do not use the interlock as a door stop.

Step 6: Prepare Electrical Cable

Route the control cable to the interlock, ensuring it is protected from physical damage, sharp edges, and environmental hazards. Strip wire ends to the appropriate length for the terminal block.

Step 7: Connect Wiring

Open the wiring compartment cover. Connect the 24VDC power, solenoid control, and safety monitoring signals to the designated terminals as per the wiring diagram. Ensure polarity is correct.

Warning: Incorrect wiring can damage the unit and compromise the safety function. Double-check all connections before applying power.

Step 8: Seal and Close

Ensure the cable gland is tightened securely around the cable to maintain the IP67 rating. Reinstall the wiring compartment cover and tighten its screws to create a proper seal.

4. Post-Installation Verification

1. With power restored, verify the status indicators on the interlock show the correct state (e.g., Door Closed, Locked).
2. Use a multimeter to confirm a stable 24VDC is supplied to the unit.
3. Functionally test the lock command from the safety controller and verify the solenoid engages audibly and mechanically.
4. Functionally test the unlock command and ensure the solenoid disengages, allowing the door to be opened.
5. Perform a full system validation: confirm the machine enters a safe state when the door is opened and cannot be started with the door open.
6. Attempt to start the machine with the door closed and unlocked; the system should prevent startup until the interlock is locked.

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

