

Installation Guide: NexBot Drives 631-002 Pressure Safety Mat

SKU: NXB-GEN-631-002 | Revision: 1.0 | Category: Safety Systems > Safety Mats & Bumpers > Pressure Safety Mats

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

1. Required Tools & Materials

- Drill with appropriate bits for floor surface (e.g., masonry, concrete)
- Digital Multimeter (for continuity and resistance checks)
- Torque Screwdriver with insulated bits
- Wire Stripper and Crimping Tool
- Level
- Caulking Gun with industrial-grade floor adhesive/sealant
- Safety Controller Interface Software
- Personal Protective Equipment (PPE) including safety glasses and gloves

2. Pre-Installation Checks

1. Verify the received product SKU is NXB-GEN-631-002 and check for any shipping damage.
2. Ensure the installation surface is clean, dry, and level. The mat must lay completely flat with no gaps.
3. Confirm the safety controller or safety relay is compatible with a 4-wire, dual-channel monitored safety device.
4. De-energize and lock-out/tag-out (LOTO) all related machinery and control panels before beginning installation.
5. Review the complete safety system schematic to understand the mat's integration point.
6. Ensure the ambient temperature and environmental conditions are within the mat's specified operating range.

3. Installation Procedure

Step 1: Step 1: Site Preparation and Cleaning

Thoroughly sweep and degrease the designated floor area where the 1200 x 800 mm mat will be placed. The surface must be free of debris, oils, and moisture to ensure proper adhesion and prevent premature wear.

Step 2: Step 2: Positioning the Mat

Carefully place the NexBot Drives 631-002 mat in its final position as determined by the risk assessment. Ensure the cable exit point is oriented correctly towards the intended cable routing path to the control cabinet, minimizing trip hazards.

Warning: Do not bend or fold the mat. Mishandling can damage the internal switching elements.

Step 3: Step 3: Securing the Mounting Trim

Place the aluminum mounting trim around the perimeter of the mat. Mark and drill pilot holes for the floor anchors, then securely fasten the trim to the floor, ensuring it provides a beveled edge to prevent tripping.

Warning: Ensure the trim does not pinch or crush the mat's edges, which could cause a permanent fault.

Step 4: Step 4: Sealing the Perimeter

Apply a continuous bead of industrial-grade sealant between the mounting trim and the floor. This prevents fluids and debris from getting under the mat, maintaining its IP67 rating and operational integrity.

Step 5: Step 5: Routing the Connection Cable

Route the integrated cable from the mat to the control cabinet using an appropriate conduit or protected channel. Avoid routing

the cable in areas where it can be crushed by vehicle traffic or damaged by sharp edges.

Warning: Do not exceed the minimum bend radius of the cable. Excessive bending can break the internal conductors.

Step 6: Step 6: Wiring to the Safety Controller

Connect the four wires to the designated safety input terminals on your safety PLC or relay. Refer to the device's manual for correct terminal assignments for a dual-channel OSSD (Output Signal Switching Device) with monitoring.

Warning: Incorrect wiring can lead to a failure of the safety function. All wiring must be performed by a qualified electrician.

Step 7: Step 7: Final Electrical Checks

With the system still de-energized, use a multimeter to check for continuity on the safety circuits and ensure there are no short circuits to ground. Verify the resistance values are within the specifications listed in the product data sheet.

Step 8: Step 8: Commissioning and Validation

After re-energizing the system, configure the safety controller to recognize the mat input. A qualified safety engineer must perform a full functional validation test to ensure the mat triggers a machine stop command reliably from all points on its surface.

Warning: The system is not considered safe for use until it has been fully commissioned and validated by a certified professional.

4. Post-Installation Verification

1. Verify that stepping on any part of the mat surface triggers an immediate stop command in the machine's safety circuit.
2. Check that the machine cannot be restarted while a person is present on the mat.

3. Confirm that once the mat is cleared, a deliberate, external reset action is required to restart the machine.
4. Inspect the mat for any 'dead zones', particularly around the edges, by applying pressure systematically across the entire surface.
5. Verify that the safety controller correctly indicates the mat's status (e.g., 'Clear' vs. 'Activated').
6. Complete and sign the installation checklist and add it to the machine's technical file.

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