

Installation Guide: NexBot Vision 212-011 Safety Controller SIL3/PLe

SKU: NXB-CTL-212-011 | Revision: 1.0 | Category: Controllers & Software > Robot Controllers > Safety Controllers

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

1. Required Tools & Materials

- Flat-head screwdriver (3mm) for terminal blocks
- Phillips head screwdriver (#2) for mounting hardware
- DIN rail cutter or hacksaw
- Wire stripper and crimper (for 22-14 AWG wire)
- Digital multimeter
- Laptop with Ethernet port and NexBot SafetyLogic software
- PROFINET/Ethernet cable (shielded)
- Torque screwdriver (0.5 Nm)

2. Pre-Installation Checks

1. Verify the received product SKU is NXB-CTL-212-011 and check for any signs of shipping damage.
2. Ensure the control cabinet is de-energized and locked out according to local safety procedures.
3. Confirm adequate clearance on the 35mm DIN rail, allowing for at least 50mm of open space above and below for ventilation.
4. Verify the 24VDC power supply is correctly rated and can provide sufficient current for the controller and connected devices.
5. Have the electrical schematics and safety function design document for the work cell readily available.
6. Ensure the installation environment complies with the IP20 rating; the cabinet must protect against solid objects larger than 12.5mm and has no protection against liquids.

3. Installation Procedure

Step 1: De-energize Control Cabinet

Before beginning installation, ensure all power sources to the control cabinet are switched off and locked out. Use a multimeter to verify that no voltage is present at the power distribution terminals.

Warning: Failure to de-energize the system can result in severe electrical shock, injury, or death.

Step 2: Mount Controller on DIN Rail

Position the NexBot Vision 212-011 onto the 35mm DIN rail. Hook the top edge of the mounting clip over the rail and press down firmly on the bottom of the unit until it clicks securely into place.

Step 3: Connect Protective Earth (PE)

Connect a dedicated grounding wire from the controller's PE terminal to the main protective earth busbar of the control cabinet. This connection is critical for safety and noise immunity.

Warning: An improper or missing ground connection can compromise the safety function and create an electrical shock hazard.

Step 4: Connect 24VDC Power Supply

Connect the 24VDC and 0V lines from your Class 2 power supply to the designated power input terminals on the controller. Pay close attention to the polarity markings on the housing.

Warning: Applying incorrect voltage or reversing the polarity can permanently damage the controller.

Step 5: Connect PROFINET Network

Connect a shielded PROFINET cable from your network switch or PLC to one of the RJ45 ports on the controller. Ensure the cable connector clicks securely into place.

Step 6: Wire Safety Input Devices

Connect safety input devices such as emergency stop buttons, light curtains, and safety gates to the designated input terminals. Follow the wiring diagrams in the full technical manual for single-channel or dual-channel configurations.

Warning: Incorrect wiring of safety inputs will prevent the safety system from functioning as designed, potentially leading to a hazardous situation.

Step 7: Wire Safety Output Devices

Connect the controller's safety outputs to the devices they will control, such as power contactors or variable frequency drive 'Safe Torque Off' (STO) inputs. Ensure the connected load does not exceed the output's maximum current rating.

Step 8: Verify Terminal Connections

Gently tug on each wire to ensure it is secure in its terminal. Use a torque screwdriver to tighten each terminal screw to the specified torque value to prevent loose connections.

4. Post-Installation Verification

1. Perform a final visual inspection of all wiring to ensure it matches the electrical schematics.
2. Close and secure the control cabinet door.
3. Remove the lockout/tagout device and re-energize the control cabinet.
4. Observe the status LEDs on the NexBot Vision 212-011 during its boot sequence and confirm it enters a normal operating state (e.g., solid green 'POWER' and 'RUN' LEDs).

5. Establish a connection with the NexBot SafetyLogic software and verify the controller is online and fault-free.
6. Perform a comprehensive functional test of every connected safety device and validate the entire safety function according to your risk assessment before placing the machine into service.

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