Installation Guide: NexBot Robotics 322-016 3D Vision Camera 5MP Resolution

SKU: NXB-SNS-322-016 | Revision: 1.0 | Category: Sensors & Vision > Vision Systems > 3D Vision Cameras

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

1. Required Tools & Materials

- M4 Hex Key Set
- Torque Wrench (up to 10 Nm)
- Wire Stripper and Ferrule Crimper for Power Connector
- Digital Multimeter
- Anti-static Wrist Strap
- Industrial Shielded Cat6A Ethernet Cable with M12 X-coded connector
- Bubble Level
- Laptop with NexBot Vision Suite Software Installed

2. Pre-Installation Checks

1. Verify package contents include the 322-016 camera, power connector, data connector cap, and mounting screws.
2. Inspect the camera's anodized aluminum housing and optical surfaces for any signs of damage incurred during shipping.
3. Confirm the mounting surface is rigid, flat, and capable of supporting the camera's 1.2 kg weight plus dynamic forces.
4. Ensure the designated power source provides a stable, isolated 24VDC supply.
5. Verify a dedicated Gigabit Ethernet port is available on the robot controller or host PC.
6. Download the latest firmware and NexBot Vision Suite software from the official NexBot Robotics support portal.

3. Installation Procedure

Step 1: Securely Mount the Camera

Affix the NexBot Robotics 322-016 camera to the mounting bracket or robot end-effector using four M4 bolts. Tighten bolts in a cross pattern to the recommended torque specification to ensure a secure fit for the 1.2 kg device.

> **Warning:** Ensure the mounting structure is properly grounded to the main system earth ground to prevent electrical noise.

Step 2: Connect Power Supply

Wire the 24VDC power source to the provided M12 power connector. Ensure correct polarity is observed (+24V and GND) before connecting it to the camera.

> **Warning:** Incorrect voltage or reverse polarity can cause permanent damage to the camera's internal electronics. Verify voltage with a multimeter before connection.

Step 3: Connect Ethernet Cable

Connect a shielded Gigabit Ethernet cable with an M12 X-coded connector to the camera's data port. Route the cable securely, ensuring it has sufficient slack for any robotic motion and is protected from physical damage.

> **Warning:** Use of unshielded or lower-grade cable may result in data loss and unreliable performance, especially in electrically noisy industrial environments.

Step 4: Ground the Chassis

Connect the dedicated grounding point on the camera's chassis to the central system ground using a low-impedance connection. This step is critical for ESD protection and stable operation.

Step 5: Initial Power On

Apply 24VDC power to the camera. Observe the status indicator LED; it should illuminate and transition to a steady state indicating a successful boot sequence.

Step 6: Configure Network Settings

Connect a laptop to the same network and use the NexBot Vision Suite discovery tool to find the camera. Assign a static IP address, subnet mask, and gateway appropriate for your automation network.

> **Warning:** Consult your network administrator to avoid IP address conflicts, which can disrupt plant-wide operations.

Step 7: Remove Protective Films

Carefully remove the protective plastic films from the camera lens and the structured light projector window. Use a lint-free cloth to gently wipe away any fingerprints or smudges.

> **Warning:** Do not use sharp objects to remove the films, as this can scratch the optical surfaces.

Step 8: Perform Coarse Alignment

Physically adjust the camera's position and orientation to frame the intended workspace or region of interest. Use the live 2D view in the NexBot Vision Suite to aid in this initial alignment process.

4. Post-Installation Verification

1. Verify the camera's status LED indicates a stable power and network connection.
2. Ping the camera's configured IP address from the host PC or controller to confirm network reachability.
3. Establish a stable connection to the camera using the NexBot Vision Suite software.

4. Capture a test point cloud to ensure both the imager and the structured light projector are functioning correctly.
5. After 30 minutes of operation, check that the 155 x 92 x 65 mm aluminum housing is warm but not excessively hot to the touch.
6. Run the initial intrinsic calibration routine as prompted by the software to ensure measurement accuracy.

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