User Manual: NexBot Vision 222-015 Teach Pendant with 10.1-inch Display

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1. Safety Information

READ ALL SAFETY INSTRUCTIONS BEFORE OPERATION. Failure to follow safety procedures may result in serious injury or equipment damage.

DANGER: Activating the Emergency Stop button is the only approved method for stopping the robot in a critical emergency. Never attempt to stop the robot by physically obstructing its path.

WARNING: The three-position enabling switch is a critical safety feature. Never tape, bypass, or otherwise defeat this switch. Doing so can lead to unexpected robot motion when an operator releases their grip.

WARNING: Do not operate the system if the teach pendant cable shows signs of damage, such as cuts or exposed wires. A damaged cable can compromise the safety circuit and create an electrical hazard.

CAUTION: The NexBot Vision 222-015 has an IP65 rating, making it resistant to dust and low-pressure water jets. Do not expose the unit to high-pressure washers, submersion, or corrosive cleaning agents.

NOTICE: Always place the teach pendant in its designated holder when not in use. Leaving the pendant on the floor or other surfaces can lead to damage from being dropped, stepped on, or run over.

2. Product Overview

The NexBot Vision 222-015 is a high-performance teach pendant designed for programming, jogging, and operating NexBot industrial and collaborative robots. This human-machine interface (HMI) provides operators and programmers with direct, intuitive control over robot motion and application logic, streamlining setup and reducing commissioning time. Its ergonomic design is engineered for comfort and efficiency during long programming sessions, minimizing operator fatigue. Key features include a vibrant 10.1-inch multi-touch display with a high-resolution of 1280x800 pixels, providing a clear and responsive surface for interacting with the NexBot programming environment. The pendant combines this modern touchscreen interface with tactile physical controls, including a precision 6-axis joystick for fine-tuned jogging and customizable function keys for frequently used commands. This hybrid approach ensures both flexibility and speed in a variety of industrial applications, from machine tending and pick-and-place to complex path following for welding or dispensing. Built for demanding factory environments, the pendant's housing is constructed from a durable Polycarbonate/ABS blend and is sealed to an IP65 rating, making it resistant to dust ingress and low-pressure water jets. Safety is paramount, with an integrated 3-position enabling switch and a prominent E-stop button that conform to international safety standards. The device is lightweight at only 1.2 kg, further enhancing its usability. The hot-swappable functionality allows the pendant to be connected or disconnected during operation without requiring a full system restart, maximizing uptime on the factory floor. Installation is straightforward, requiring a single-cable connection to the main robot controller cabinet.

3. Getting Started

1. Powering On and UI Overview

The teach pendant powers on automatically when the robot controller receives power. Upon startup, the main dashboard is displayed, showing robot status, active program name, operating mode, and I/O status. The primary navigation menu is accessible via icons on the side of the screen.

2. Understanding Operating Modes

Use the physical key switch to select the operating mode. T1 (TEACH) allows for programming and manual jogging at reduced speed. T2 (MANUAL) allows for manual jogging at full speed (where permitted). AUTO mode is for production and disables manual jogging.

3. Initial System Checks

Before any operation, always check the top status bar for active alarms or warnings. Ensure the correct tool center point (TCP) and payload are selected for the attached tooling to guarantee accurate movement and performance.

4. Operation

Jogging Robot Axes

In T1 or T2 mode, press and hold the enabling switch to power the motors. Use the joystick to move the robot. The jog menu allows you to switch between different coordinate systems, such as Joint, World, and Tool, for intuitive control.

> **Tip:** When teaching new positions near obstacles, always use a low jog speed override (e.g., 10%) to minimize the risk of a collision.

Creating and Editing Programs

Navigate to the Program Editor to create a new program or load an existing one. Use the on-screen keyboard and command list to add motion instructions, logic, waits, and I/O commands. Points are taught by jogging the robot to a position and pressing the 'Record Point' hard key.

Running a Program for Testing

In T1 mode, you can execute a program for verification. Use the 'Step Forward' and 'Step Backward' keys to execute one instruction at a time. To run continuously at slow speed, press and hold the enabling switch and the 'Start' button.

> **Tip:** Always run a new or modified program through at least one full cycle in T1 mode before attempting to run in AUTO mode.

Monitoring System I/O

The I/O screen provides a real-time view of all digital and analog inputs and outputs on the robot controller. From this screen, operators can manually toggle outputs for testing grippers, sensors, and other peripheral equipment.

Managing Files

Use the File Manager to save, load, copy, and delete programs, tool data, and system backups. Files can be managed on the pendant's internal storage or transferred to an external device via the USB port.

> **Tip:** Regularly back up important programs and system configurations to an external USB drive to prevent data loss.

5. Maintenance Schedule

Interval	Task	Notes
Daily	Visually inspect the pendant, cable, and connectors for any signs of physical damage, such as cracks, cuts, or strain.	Perform this check at the beginning of each shift.
Weekly	Clean the 10.1-inch display with a soft, microfiber cloth and an approved electronics screen cleaner. Do not spray cleaner directly onto the screen.	A clean screen improves visibility and touchscreen accuracy.
Weekly	Functionally test the Emergency Stop button and the three-position enabling switch to ensure they are operating correctly.	Log the results of this safety check in the maintenance record.
Monthly	Clean the Polycarbonate/ABS blend housing with a damp cloth and mild	

Interval	Task	Notes
	detergent to remove oil and grime. Ensure the unit is powered off.	Avoid harsh solvents which can damage the plastic housing.
Quarterly	Check the teach pendant cable for secure connections at both the pendant and controller ends. Gently tighten connector screws if loose.	Loose connections can cause intermittent communication errors.
Annually	Perform a touchscreen calibration via the system settings menu to ensure continued accuracy.	Recalibrate sooner if operators report input inaccuracies.

6. Troubleshooting

Symptom	Possible Cause	Solution
Pendant screen is black after controller power-up.	Loose cable connection, no 24VDC power from controller, or internal pendant failure.	Power down the controller. Reseat the pendant cable at both ends. Verify the controller's 24VDC supply for the HMI port is active. If issue persists, contact support.
Touchscreen input is inaccurate or unresponsive.	Screen is dirty, out of calibration, or has failed.	Clean the screen thoroughly. Run the touchscreen calibration utility in the settings menu. If the problem is not resolved, the digitizer may be damaged.
A 'Communication Error' message is displayed.	Pendant cable is damaged, disconnected, or there is significant EMI/RFI.	Inspect the entire length of the cable for damage. Ensure connector screws are tight. Check that the cable is not routed parallel to high-power motor cables.
Cannot enable robot motors to jog.	An active E-Stop, enabling switch not engaged, or a separate system fault is present.	Ensure all E-Stops are released. Squeeze the enabling switch to its middle position. Check the alarm log for any other active faults and clear them.
Joystick or a physical button is not responding.	Debris is lodged under the button, or the component has failed.	With the controller off, use compressed air to gently clean around the unresponsive button. If the issue continues, the button may require replacement by a service technician.
The pendant reboots intermittently during use.	Intermittent power loss due to a damaged cable/ connector pin or a software fault.	Inspect the cable connectors for any loose or damaged pins. Update the pendant and controller firmware to the latest stable version. Contact

Symptom	Possible Cause	Solution
		NexBot support if the issue persists.
Cannot save or load programs.	Insufficient internal memory, incorrect file path, or corrupted file system.	Delete old or unnecessary files to free up space. Verify you are saving to a valid directory. If the issue persists, perform a system backup and re-initialize the file system.

7. Technical Specifications

Parameter	Value	Unit
Weight	1.2	kg
Material	Polycarbonate/ABS Blend	
Voltage	24VDC	
IP Rating	IP65	
Country of Origin	IT	
Dimensions	300 x 200 x 65 mm	