NexBot Robotics HRM121-001 Harmonic Gearbox 100:1

NexBot Robotics

SKU: NXB-GBX-HRM121-001 | Category: Drive Systems > Gearboxes > Harmonic Gearboxes

Overview

The NexBot Robotics HRM121-001 is a high-performance harmonic gearbox engineered for applications demanding exceptional positional accuracy and torque density. This component is a critical element for achieving smooth, precise motion in articulated and collaborative robot arms, providing zero-backlash performance that is essential for tasks requiring high repeatability. At its core, the HRM121-001 utilizes a strain wave gearing mechanism, which consists of a flexible steel spline, a circular spline, and a wave generator. This design principle eliminates the gear tooth clearance found in traditional planetary or spur gearboxes, resulting in superior positioning accuracy and the elimination of motion loss during direction changes. The benefit for automated processes is a significant reduction in positioning errors, leading to higher quality assembly, welding, or inspection results. Key features include a high gear reduction ratio of 100:1 in a compact, lightweight package. This allows for the use of smaller, high-speed motors while still achieving high output torque, making it ideal for weight-sensitive applications such as robot wrist joints. The gearbox is rated for a peak torque of 121 Nm, providing ample power for dynamic movements and payload handling. Its robust construction ensures a long operational life under demanding industrial conditions. The compact form factor, with an outer diameter of 121 mm, facilitates integration into tight spaces within a robot's arm structure. This gearbox is a direct-fit replacement component for specific joints in NexBot Robotics systems, ensuring seamless installation and restoration of original performance specifications. It is commonly deployed in applications such as automated assembly, material handling, machine tending, and precision dispensing where path accuracy is paramount. Regular inspection and adherence to robot maintenance schedules will ensure the longevity of the gearbox and the entire drive system.

Technical Specifications

Parameter	Value	Unit
Weight	1.8	kg
Material	Aluminum Alloy Housing, Steel Components	
Country of Origin	JP	
Dimensions	121 x 121 x 48 mm	
Torque	121 Nm Peak	

Safety Notice: This product must be installed and operated by qualified personnel in accordance with applicable safety standards (ISO 10218, IEC 61508).

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