

NexBot Robotics 311-005 6-Axis Force/Torque Sensor

NexBot
Robotics

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Sensors

Overview

The NexBot Robotics 311-005 is a compact, high-performance 6-axis force/torque sensor designed to provide robots with a sense of touch for complex manufacturing tasks. This sensor accurately measures forces and torques along all three spatial axes (Fx, Fy, Fz, Tx, Ty, Tz), enabling sophisticated force control strategies. Its robust design and high signal-to-noise ratio make it an ideal solution for applications requiring precision, repeatability, and environmental resistance. Key features include a durable, single-piece transducer machined from high-strength aluminum, providing excellent overload protection and a long operational lifespan. The integrated electronics digitize the signals close to the source, minimizing noise and latency. With an IP67 rating, this sensor is fully protected against dust ingress and can withstand temporary immersion in water, making it suitable for deployment in environments with coolants or washdown procedures. This sensor excels in applications such as automated assembly, where it can detect part misalignment and control insertion force to prevent damage. In material removal processes like grinding or deburring, it allows the robot to maintain constant pressure against a surface, improving finish quality and consistency. Other common uses include product testing, haptic feedback systems, and advanced research. The 311-005 model offers a measurement range of up to 500 N in force and 50 Nm in torque, providing the sensitivity needed for delicate operations while retaining the durability for industrial use. Installation is straightforward, with a standard ISO 9409-1 tool flange pattern for mounting between the robot wrist and the end-of-arm tooling.

Technical Specifications

Parameter	Value	Unit
Weight	0.85	kg
Material	Aluminum 7075-T6, Anodized	
Voltage	24VDC	
IP Rating	IP67	
Country of Origin	SE	
Protocol	EtherCAT	
Dimensions	110 x 110 x 45 mm	

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