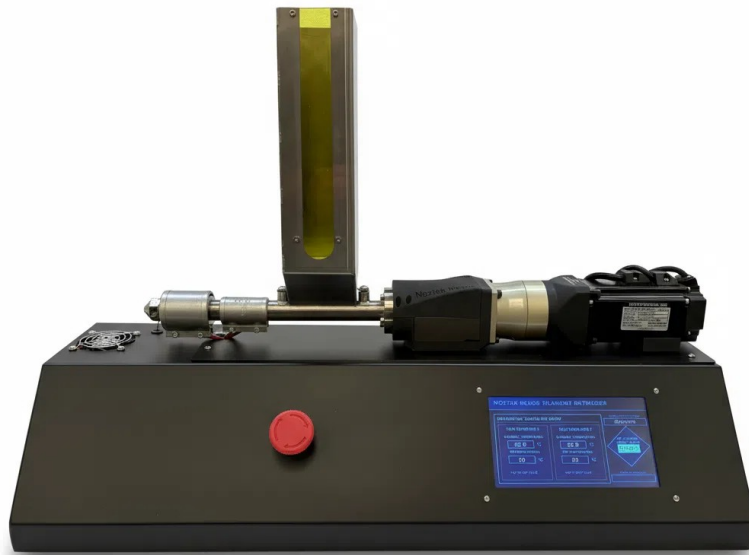


Noztek Nexus

The Noztek Nexus: Servo-Powered Desktop Extrusion



Overview

Introducing the Noztek Nexus: Servo-Powered Desktop Filament Production.

The Noztek Nexus is a revolutionary desktop filament extruder that sets a new standard for precision with its advanced 48V, 750W RS485 DC Servo Motor and 20:1 planetary gearbox, delivering up to 150 RPM and 24 NM of torque. Engineered for researchers and innovators, the Nexus delivers industrial-grade filament extrusion on a desktop scale—perfect for robotic integration and high-precision material development.

The extruder features a 250mm barrel with three independently controlled heater bands, capable of reaching temperatures up to 300°C. This makes the Nexus ideal for processing a wide variety of materials, from traditional polymers to advanced composites and filled compounds.

With lab-grade precision of less than 0.05mm diameter variation and an output rate of up to 4.5 meters of filament per minute, the Nexus delivers a 125% throughput increase over traditional desktop extruders while maintaining 95% material utilization.

Technical Specifications

General Features

Screw: The Noztek Nexus features a precision-engineered 2-stage screw system with optimized melting and metering zones. This design ensures uniform polymer flow and reduces shear stress, enabling consistent processing of materials from PLA to advanced thermoplastic composites.

Specifications:

- Barrel Length: 250mm, removable for easy cleaning.
- Screw Design: 2-stage (melting, metering).
- Construction: Stainless steel barrel, screw and nozzles.

Versatile Material Compatibility: The Nexus handles thermoplastics including PLA, ABS, PETG, TPE, TPU, and composites such as carbon-fiber-filled nylons, glass bead compounds, and ceramic-filled materials. Also compatible with sustainable biopolymers (PHA, PCL), conductive materials, and recycled plastics.

Nozzles: Stainless steel nozzles available in two sizes: 1.75mm and 2.85mm in diameter. Custom sizes available on request.

Colour/Finish: Black powder coat chassis with stainless steel components.

Dimensions and Weight: L: 50 cm x W: 20 cm x H: 30 cm. 10 kg.

Heating System

Heater bands: Equipped with three distinct, independently controlled heater bands, each capable of reaching temperatures up to 300°C or 500°C Individual band control via the Nexus Control Hub enables precise temperature profiling for optimal material processing.

Motor

Servo Motor System:

- Type: 48V, 750W RS485 DC Servo Motor.
- Gearbox: 20:1 Planetary reduction.
- Torque: 24 NM maximum.
- Speed: Up to 150 RPM.
- Precision: $\pm 0.1\%$ speed regulation with closed-loop control.

Output Capacity

Extrusion output: Up to 4.5 meters of filament per minute with less than 0.05mm diameter variation. This represents a 125% throughput increase over traditional desktop extruders while maintaining 95% material utilization.

Certification: CE certified for compliance with safety and quality standards.

Technical Specifications

Control & Connectivity

Bespoke PCB for optimized performance.

Nexus Control Hub Software: The Noztek Nexus comes complete with Noztek's proprietary integrated software, providing real-time performance monitoring with detailed temperature, RPM, torque, and load charts. Features include 3-step workflow (Setup → Warmup → Run), live performance dashboard, precision tuning controls, custom alerts, and one-click CSV data export.

7" Touchscreen Interface: Intuitive and easy to operate. Manual control over temperature and RPM via touchscreen interface.

Program Memory: The system retains the most recently used target temperature, speed settings, and timer configurations even after a system restart.

Connectivity: RS485/RS232 ports for computer integration. Monitor and export all important data from each extrusion run.

Processor: Arduino-powered control system.

Power

Voltage Requirements: 220VAC or 110VAC.

Motor Power Supply: 48V DC, 20A max.

Frequency: 50 Hz / 60 Hz.

Safety & Monitoring

Emergency Shutdown: In cases of urgency, the system offers a rapid electrical shutdown mechanism for immediate cessation of all operations.

Warm-Up Function: The warm-up feature ensures the barrel reaches optimal operating temperature. System dashboard shows real-time heating progress and alerts when ready to extrude.

Custom Alerts: Get notified if temperatures drift or loads spike—protecting your materials and equipment.

Servo Feedback System: Closed-loop control with continuous torque, speed, and position feedback. Integrated encoder provides live analytics for predictive maintenance and process optimization.

Noise Level: 60% quieter than traditional extruders, ideal for shared labs and office environments.

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Advanced 3D Extrusion
