

MINTECH

CNC SOLUTIONS

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Model TR48M



Model TR510M

MINTECH CNC ROUTER TR-M SERIES



Product Overview

High-precision TR-M Series CNC Router for UV printing, signage, packaging, textiles, and industrial fabrication. Multi-function CNC cutting machine, all-in-one CNC cutter, precision CNC machining across metals, plastics, rubber, and composite materials. Available across the USA including California. Perfect as an all-in-one CNC Cutter, it excels in cutting, engraving, and drilling a wide range of materials. It combines automation, efficiency, and precision to meet the needs of professional users.

Key Features:

- Versatile Machining Capabilities
 - Supports multiple cutting tools: Electric Vibrating Knife (ideal for rubber cutting in plastics industry), Pneumatic Vibrating Knife, Active Wheel Knife, Pointed Knife, Oblique Knife (V Cut), Spring Knife (Kiss Cut), Creasing Knife (perfect for corrugated cardboard cutting in packaging).
- CCD Automatic Recognition System
 - Built-in CCD camera detects material marks automatically for precise path alignment.
 - Essential for printing, flexi sign, signage, and packaging industries.
- Broad Material Compatibility
 - Metals: Copper, aluminum, aluminum composite panels, PV sheets, and other soft/hard metals.
 - Plastics & Polymers: Acrylic, PVC, EVA, rubber.
 - Composites & New Materials: Carbon fiber and other advanced composites.
 - Flexible Materials: Foam, rubber, fabric, leather, post-printed textiles.
 - Hard Materials: Wood, acrylic, fiberglass, decorative panels.
- Advanced CNC System
 - User-friendly high-performance CNC controls.
 - Automatic tool changing.
- High Efficiency and Precision
 - 40K RPM spindle paired with precision servo drive.
 - Exceptional surface finish quality.

Applications:

- Packaging Industry
- Plastics Industry
- Advertising & Signage
- Apparel & Textile Industry
- Aerospace & Automotive Components
- Custom Fabrication & Prototyping
- Advanced Woodworking & Furniture Decoration

Applicable Materials

Metal Materials

- Light metals such as copper and aluminum.

Plastics and Polymers

- Includes PMMA, PC, PVC, PS, PP, PA, PE, PET, and POM.

Composite Materials

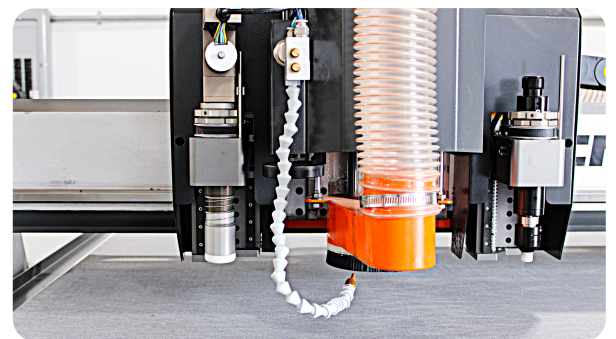
- MDF, carbon fiber composites, aluminum composite panels, honeycomb panels, and fiberglass (FRP).

Flexible Materials

- Foam, rubber, fabrics, thin films, leather, cardboard, felt, and sponge.

Hard Materials

- Solid wood, plywood, acrylic, and other rigid materials.



Technical Specifications

Model	TR48M	TR510M
Working area	4' x 8' (1250 x 2500 mm)	5' x 10' (1530 x 3060 mm)
Dimensions	133" x 87" x 69" (3370 x 2200 x 1750 mm)	158" x 97" x 69" (4000 x 2450 x 1750 mm)
Weight	3400 lbs	3900 lbs
Work Area and Capacity	• Z-Axis Travel: 4 inches (110 mm). • Material Thickness: Up to 3.5 inches (90 mm). • Maximum Cutting Thickness: Up to 1 3/4 inches (45 mm) with appropriate tooling.	
Machine Structure	Frame: Square steel pipe welded structure, stress-relieved through high-temperature aging.	
Working Table	Phenolic composite grid vacuum table with aluminum T-slots.	
Control System	• CNC System: MDRNCRouter VC204-C. • File Support: DXF, AI, CDR, NC, G-code, with automatic G-code generation. • Interface: Integrated industrial control computer with handheld controller. • Communication Protocols: MODBUS/TCP, OPC UA, MT CONNECT.	
CAM Software Compatibility	Compatible with industry-standard software such as VCarve, Aspire, Alphacam, Engview, MasterCAM, Enroute, Type 3 and others	
Motion and Drive	• Movement Type: Gantry movement. • Drive System: Servo-driven motors. • Transmission:XY-Axis: Helical rack-and-pinion with linear guides. • Z-Axis: Ball screw with linear guides. • Speed: Max travel speed of 197 ft/min (60 m/min). • Precision: ±0.004 inches (±0.1 mm). • Repeatability: ±0.002 inches (±0.05 mm).	
Spindle	• Power: 5.3 HP (4 kW). • Speed: Up to 40,000 RPM (Water-cooled). • Tool Holder: ISO 20, ER20 collet. • Cutting Tool: Milling Cutter Spindle.	
Cooling method	Water Cooling	
Cutting Heads (Optional Modules)	• Electric Vibrating Knife: For cutting flexible materials. • Active Wheel Knife: For contour cutting. • Pointed Knife: For fine details. • Oblique Knife (V Cut): For V-shaped cuts. • Spring Knife (Kiss Cut): For light, shallow cuts. • Creasing Knife: For scoring and folding lines. • Pneumatic Vibrating Knife: For precise cutting of dense materials.	
Power and Utility Requirements	• Main Power: 208-240V, single-phase, 60 Hz, 30A. • Compressed Air: 0.6-0.8 MPa (87-116 psi), ≥3-5 CFM (85-140 L/min). • Vacuum Requirements: 117.7-176.6 CFM (200-300 m³/h), vacuum pressure ≥85 mbar (8500 Pa).	
Misting / Lubricating System	Includes flexible loc-line nozzles for adjustable coolant or mist delivery to the cutting area, ensuring efficient lubrication and extended tool life.	
Environmental Requirements	• Temperature: 10-40°C. • Humidity: 40-60%.	
Available Configurations	Optional high-resolution CCD camera for precise positioning and material alignment.	
Advantages	• Exceptional Performance: High-speed spindle and cutting precision meet rigorous quality standards. • Versatility: Handles a wide variety of materials with multiple cutting tools and modules. • Automation: CCD recognition system ensures accurate alignment and consistent results. • Ease of Use: Intuitive control system simplifies even complex tasks.	



Active Wheel Knife



Electric Vibrating Knife



Creasing Knife



Pointed Knife



Spring Knife