Desktop NC Pro Intro

$5999

1. Overview

Desktop NC Pro is a desktop five-axis CNC machine with *RTCP. Its major feature is its compact design and powerful five-axis processing capability. It can process various common materials, including metals such as aluminum and copper alloys, as well as non-metal materials like plastics, wood, stone, and wax. It is highly suitable for small businesses, individual makers, educational institutions, and laboratories.

Compared to Turbo, it features an integrated sheet metal casing and an upgraded offline CNC system (for detailed differences, refer to the table). It is equipped with C5 ground ball screws, while other parameters are mostly the same.

* RTCP, which stands for Rotational Tool Center Point, is a function where the tooltip follows the workpiece, and it serves as a standard for a true five-axis CNC system.

* It's worth noting that desktop-level CNC machines can process steel and titanium alloys, but the processing efficiency is very low.

2. Feature

2.1. High-Performance Spindle: With a powerful 800-watt motor, it operates at a high speed of 24,000 RPM, efficiently water-cooled, and exhibits radial runout of 3-5μm.

2.2. High-Precision Components: It includes a harmonic motor for the rotational axis, a linear axis with a direct current servo motor, ball screws, and upper silver linear guides.

2.3. Sheet Metal Casing: Designed to be dustproof and noise-reducing, with waterproof treatment for critical components and equipped with a cutting fluid circulation system.

2.4. User-Friendly Operation: Features automatic tool measurement and an electronic handwheel for simplified operation.

2.5. Cost-Effective Manufacturing: Ideal for processing aluminum alloy materials, offering a cost-effective solution.

2.6. Professional Technical Services: Provides CAM programming, simulation guidance, on-site training, custom fixture design, and component upgrades.

* Recommended CAM Software：PowerMill、Fusion360、UG

*Post-Processing Programs: Powermill、UG、Fusion360、HSM

* Motion Simulation Software： PowerMill、Vericut

3. Specs

The basic parameters are the same as Turbo, with differing parameters highlighted in blue.

Machinery			
Packing Dimension	W870×D620×H1000mm	**Packaging Weight**	150kg
Equipment Dimension	W800× D550×H800mm	**Equipment Weight**	135kg
Workbench Dimension	Φ100mm	**Workbench Max. Load**	5kg
XYZ Effective Travel	X160×Y200×Z130mm	**A&C Effective Travel**	A：-30-120°,C：360°
3-Axis Machining Range	X160×Y200×Z125mm	**4-Axis Machining Range**	Cylinder: Φ150× H105mm /Φ1000×H120mm Cube: W125×D125×H110mm
3-Axis Machining Accuracy	Linear axis parallelism & perpendicularity 0.03mm Spatial accuracy<0.02mm	**4-Axis Machining Accuracy**	Linear axis parallelism & perpendicularity 0.05mm Spatial accuracy<0.05mm
XYZ Ball Screw	X&Z: 1204 C5 Y: 1604 C5	**A&C Axis**	1:80 20 Harmonic reducer return <1' 1N servo motor torque after deceleration
XYZ Linear Guideway	X&Z: Hiwin MGN12, Y: Hiwin MGN15	**Frame**	Forced Parts: 45 # Quenched &Tempered Steel Others：Al6061-T6 Aviation Aluminum
Machining Speed	4000mm / min (vary by material)		
Principal Axis	Φ65mm Water-cooled Spindle	**Protect**	Accordion dustproof Oil seal waterproof & dustproof.
Tool Diameter & Length	ER11 0-8mm , ≤75mm	**Part Fixtures**	Steel fixture with reserved hole position Can add er50 clip holder, 63,80 Chuck
Work Material	Metal: aluminum alloy, copper alloy, gold alloy, silver alloy, * steel, * titanium alloy		Non-metal: plastic, wood, wax, jade, glass, etc
Electrical			
Drive Motor	A 36V DC Servo 1500rpm/min	**Spindle Motor**	800W, 24,000 rpm Can Upgrade 40000 rpm
Drive Power	220V Input,36V15A output	**Control System**	Windows
Home Switch	Photoelectric Sensor	**Tool Setter**	Contact force 1.5N Repeated tool setting accuracy 2um
Software			
Control Software	e2 Studio	**Program Software**	PowerMill， Fusion360, NXUG， MasterCAM

* Linear axis parallelism: the parallelism between the slide datum when the full length of the linear slide block is running

* Verticality of linear axis: whether the Angle between the movements of two straight axes (two straight lines) meets the requirement of 90 degrees.

4. New NC System

1.Optimized high-speed interpolation

2.Offline Linux system, resistant to interference, high stability

3.Support for manual guidance with a handwheel

4.Integrated EtherCAT communication, with external expansion capabilities

5.PLC programming capability

6.Support for macro programs

7.Power-off recovery for carving tasks

8.MDI mode (Manual Data Input)

9.Support for probing operations.

Desktop NC New CNC System Comparison				
Feature	DNC Turbo	Remarks	DNC Pro	Remarks
Offline Operation	×	Requires USB connection to control computer	√	Built-in ARM Linux system
Electronic Handwheel	√	Supports	√	Supports
Handwheel Guidance	×	Not supported	√	Convenient for beginners to use the handwheel for trial processing, reduces collision risk
Tool path Display	√	Supported	×	Default off to save processor performance
Expandability	×	All I/O ports used up, not expandable	√	Supports EtherCAT communication protocol, can be externally connected or expanded
Macro Programs	×	Not supported	√	Supports macro script variable settings, customizable functionality
High-Speed Interpolation Algorithm	×	Only trapezoidal acceleration/deceleration	√	Smooth S-acceleration, speed lookahead, small line segment optimization for improved processing efficiency
PLC Programming	×	Not supported	√	Supports ladder diagram PLC programming
Resume Carving	×	Not supported	√	In case of an unexpected halt, the system automatically records the line number, allowing one-click return to the machining position for resumption
MDI Mode	×	Not supported	√	Allows manual input of code for execution
Auxiliary Machining	×	Not supported	√	Allows direct setting of simple milling, drilling, grooving, and other commands in the auxiliary interface, generating tool paths
Probe Support	×	Not supported	√	Supports probe commands for tool center point alignment and other detection commands
Tool Table	√	Only records tool length	√	Supports tool compensation modifications for Z-axis and diameter wear
HAL Customization	×	Not supported	√	Allows manual modification of the definition of various IO pins

| G-Code Support | √ | Supports some non-standard formats, non-universal | √ | Supports common industrial system code formats such as G43.4, G53, G53.1, G68, G68.2, etc., and supports code mapping for |

		post-processing settings		custom definitions
System Stability	√	Prone to computer lag and USB interference, leading to signal delays or interference errors	√	The offline system is not affected by the host computer, and all board signals are isolated, supporting PRU real-time signal processing unaffected by external factors

5. Standard & Optional

5.1. Standard List

No.	Type	Name	Description	PCS
1	Equipment	Host	Bare machine, excluding sheet metal	1
2	Material Fixture	A-Type Self-Centering Vise	Clamps for 8-55mm square materials	1
3	Tool Holder	ER11 Collet	ER11-4 & ER11-6	2
4	Tools	End Mills, Ball Mills	0.2mm End Mills (for engraving) × 10, 2, 4, 6mm End Mills × 2, R-Ball Mills × 2	18
5	Electrical	Power Box	Motor Control Inverter	1
6	Electrical	Power Cable	Equipment's total power supply	1
7	Electrical	USB Data Cable	Connects the computer to the host	1
8	Electrical	Electronic Handwheel	Axis movement control	1
9	Tools	Hex Key Set	1.5-10mm, 9PCS	1
10	Tools	Spindle Wrench Set	14 & 17mm open-end wrenches	2
11	Material	Substitute Wood Blocks	For practice	4

5.2. Optional and Upgrades

No.	Type	Name	Description	Quantity
1	Spindle	40000rpm	Same power, 800W, 65mm diameter	1
2	Tool Holder	Main Spindle ER11 Collet	Complete set, 2~8mm	10
3	Material Fixture	A-Type Self-Centering Vise	Clamping range 50-75mm	1
4	Material Fixture	B-Type Larger Self-Centering Vise	Clamping range 0-100mm	1
5	Rod Material Fixture	Hand-Tightening 80 Chuck (Four-Jaw)	Height: 48mm stroke, can clamp bars and square materials	1
6	Rod Material Fixture	Metalworking 80 Chuck (Three-Jaw)	Height: 66mm stroke, better concentricity than four-jaw	1
7	Rod Material	ER40 Chuck (ER50, ER40 optional)	High concentricity, used with ER40 collet (clamp Φ4~30mm)	1

	Fixture			
9	Rod Material Fixture	ER40 Collet Set	6.8.10.12.15.18.20.25.28.30mm collets (for the same diameter bars)	10
10	Rod Material Fixture	ER50 Chuck	Used with ER50 collet (clamp Φ4-36mm)	1
11	Rod Material Fixture	ER50 Collet, optional size	Self-selected size within 4~36mm, 70 yuan each	1

6. Warranty

1.1   The warranty period is one year, and replacement parts are available at cost after the warranty expires.

1.2   If natural damage occurs during the warranty period, we will provide parts and remote guidance free of charge.

1.3   Warranty does not cover incorrect operation, unauthorized product disassembly, or deliberate human damage.

7. Show