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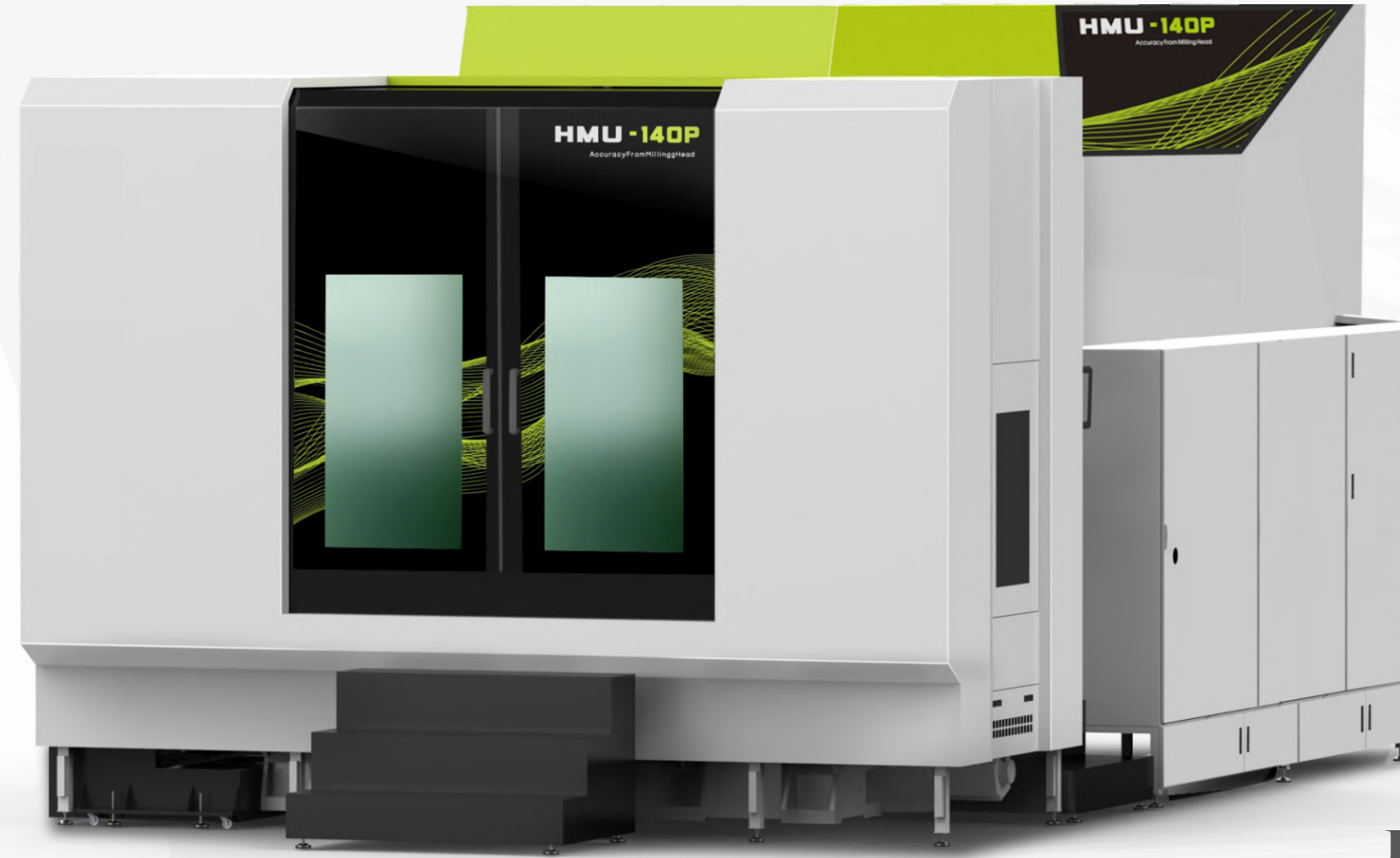
- ✘With continous innovation of research and development, the product specification, data, appearance and product appearance in attachment recorded in this sample may update at any time. All those are subject to change without notice.
- ✘All product pictures in this sample include optional specification and equipment.
- ✘All the machining data recorded in this sample are obtained under specified conditions

HMU Five-axis CNC Machining Center



Chasing the Future

HMU-140P five-axis CNC horizontal machining center has excellent rigidity, fast response, and stable precision. It is a sharp tool for the processing of aviation titanium alloy, superalloy and other large and medium-sized complex parts.



Everything is beyond your imagination!

Welcome to use HMU-140P horizontal five-axis machining center

Five-axis Linkage Machining of Heavy Cutting

HMU-140P adopts horizontal moving column structure and is equipped with ourself-developed high rigidity and high torque gear transmission turntable and single pendulum milling head. Since the whole frame has excellent rigidity and flexible movement, it can easily cope with the efficient and high-precision processing requirements of parts made of various materials.



Application fields | +Aviation industry +Shipping industry +Engineering machinery +Mold industry



Military industry
Material: titanium alloy



Aviation industry
Material: aluminium alloy



Military industry
Material: aluminium alloy



Aviation industry
Material: stainless steel







Aviation industry
Material: stainless steel



Aviation
Material: stainless steel

NAS Precision Measurement

NAS		circular precision	0.012mm	(X/Y feeding speed:3,000mm/min and 100mm diameter)
		circular degree	<0.006mm	(Taper five-axis linkage)
		flatness	<0.01mm	(Φ80/300x400mm)
		surfaceness	0.04mmPa	(Φ80/300x400mm)

* There may be discrepancies between the data recorded in the catalogue due to the measured environment and machining conditions.

HMU-140P

X/Y/Z positioning accuracy/
repeated positioning accuracy

0.008/0.005mm

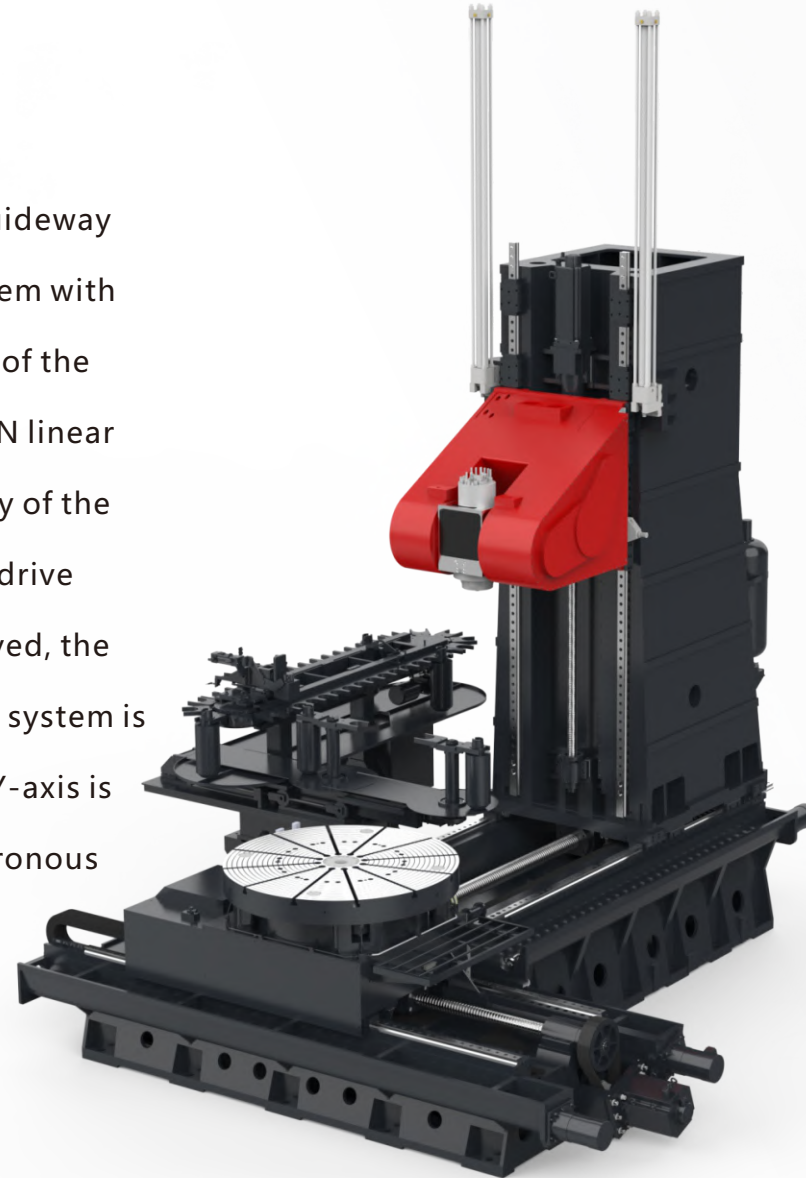
A/C positioning accuracy/
repeated positioning accuracy

8/5ARCSEC

* According to the definition of GB17421.22000

HMUI40P

Three axis are all the structure of high-precision ball screw and roller guideway structure. Y-axis counterweight is a high-precision oil pressure balance system with excellent response performance, eliminating the problem of excessive wear of the Y-axis screw caused by gravity. Each linear axis is equipped with HEIDENHAIN linear grating. In the design of the feed system, by increasing the natural frequency of the machine feed system, the cut-off frequency of the entire electromechanical drive system is increased, so that the position loop gain KV value is greatly improved, the positioning time is effectively shortened, the hysteresis of the machine feed system is reduced, and the contour accuracy during surface processing is improved. Y-axis is a roller screw directly connected to the motor, and Z/X axis is a motor synchronous belt connected ball screw drive.

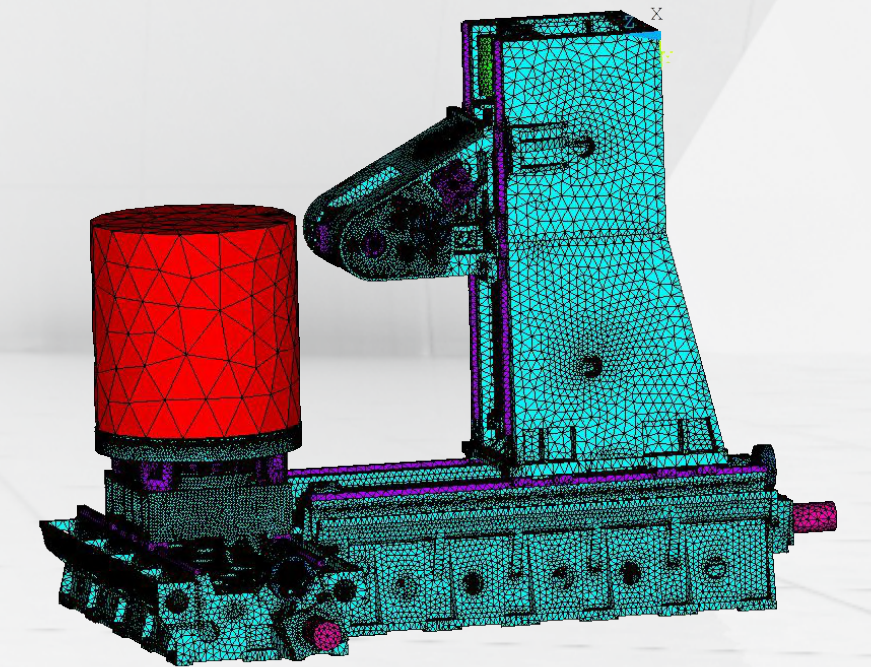
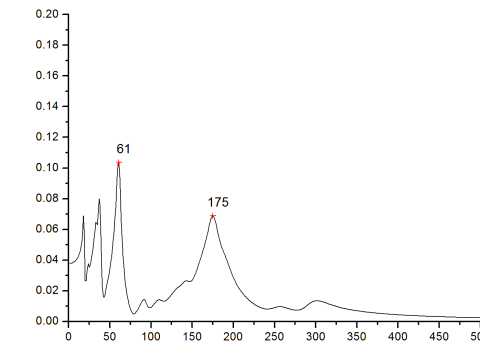


Adopting finite element analysis and kinetic optimization to greatly improve the performance of the whole machine

The dynamic optimization is carried out through FEA during the design to achieve the best matching of the structural quality, rigidity and damping of the whole machine, so as to reduce the cross dynamic flexibility between the tool tip and the workpiece, improve the regenerative flutter limit during rough machining, increase the cutting amount of rough machining, and achieve efficient cutting. At the same time, due to the reduction of the relative amplitude between the tool tip and the workpiece, the surface finish during machining is improved, the vibration speed of the tool tip is decreased, and the tool wear is reduced.

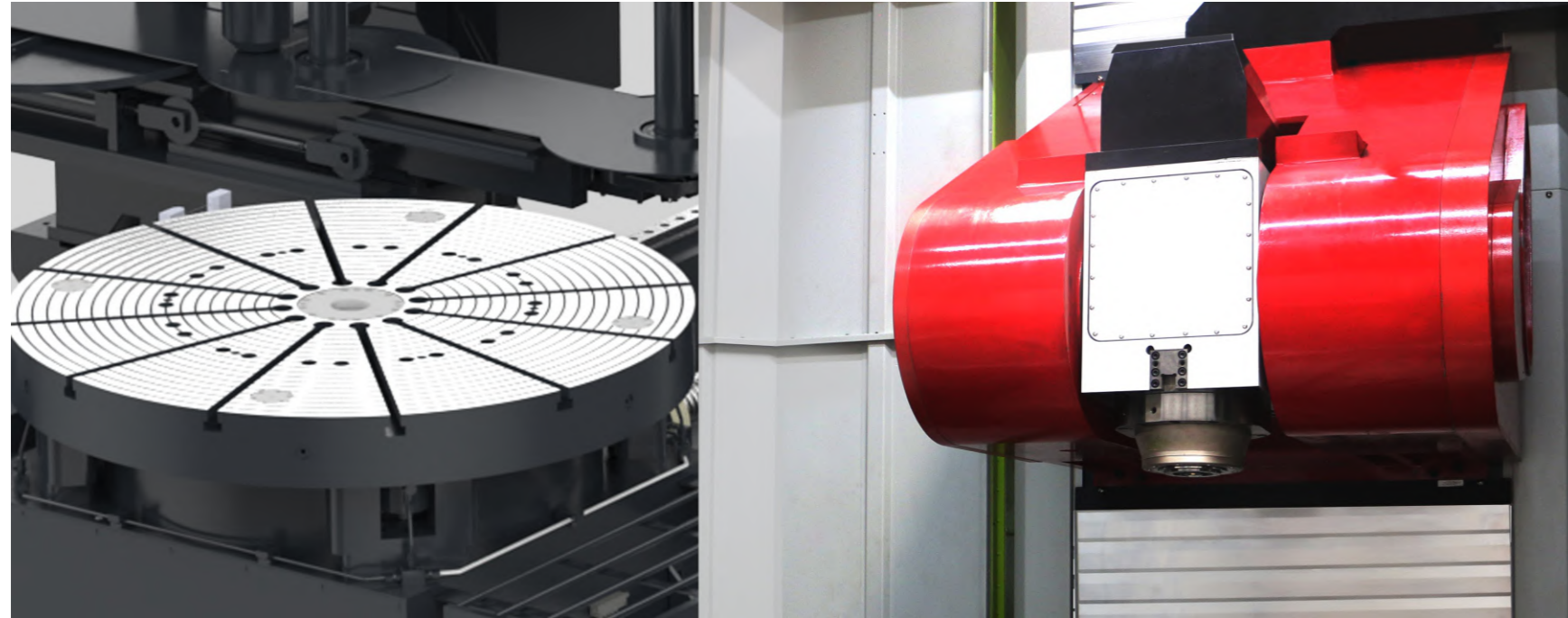
The design uses finite element analysis and kinetic optimization, which greatly improve the static and dynamic property, so as to ensure the whole rigidity/stability and dynamics of machine.

- + FEA of the whole machine
- + Accurately calculating the optimal dynamic rigidity under actual operating conditions
- + Improving the inherent and load-stop frequency, reducing the positioning time and the hysteresis of the feed system, and achieving dynamic performance with high response and the contour accuracy of high speed machining.



GTRT

HMU-140P turntable adopts patented mechanical transmission GTRT technology, which achieves more powerful torque output, higher rigidity, stability and better rotation accuracy than conventional turntable drive.



A/B axis are all high rigidity gear clearance elimination transmission, the slewing bearing is YRT combination roller bearing, and the mechanical transmission has the transmission rigidity that the torque motor drives the turntable unattainable, which is the best choice for the processing of difficult cutting materials such as aviation titanium alloy and superalloy. The brakes are large-size disc brakes driven by high-pressure oil, eliminating the axis skew defects of ordinary surround brakes, and are equipped with standard high-precision HEIDENHAIN round gratings.

Worktable size	Φ1400mm
A-axis swing	+60/-100
B-axis rotation	∞
Payload	3000kg

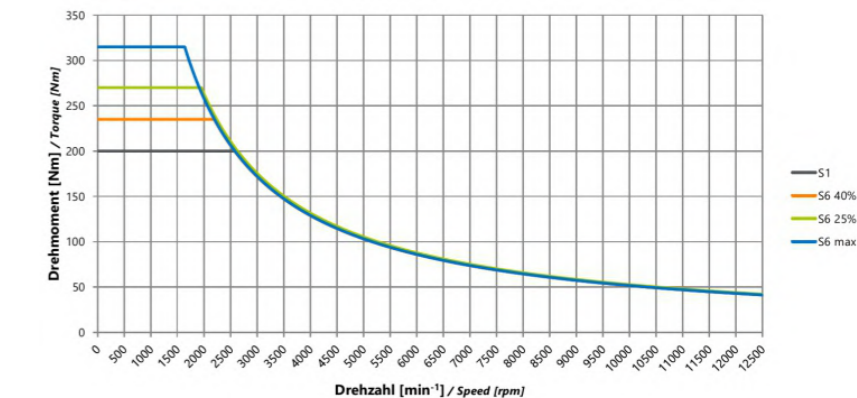
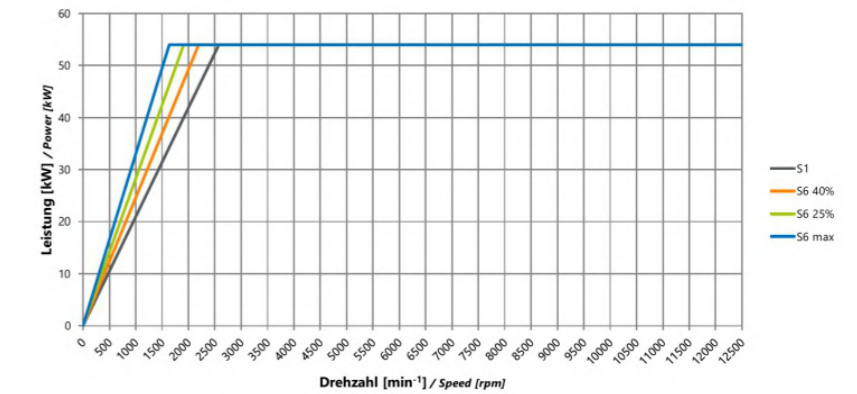
KESSLER Electric Spindle

The standard 12500rpm HSK-A100 high-torque spindle is suitable for high-precision parts processing in the aerospace field to maximize machining efficiency



12500rpm electric spindle HSK-A100
High speed and high rigidity are maximized for a wide range of applications

54/54 kW
power (maximum power output S₁/S₁-60%)
200/235 N.m
torque (maximum output torque S₁/S₁-60%)

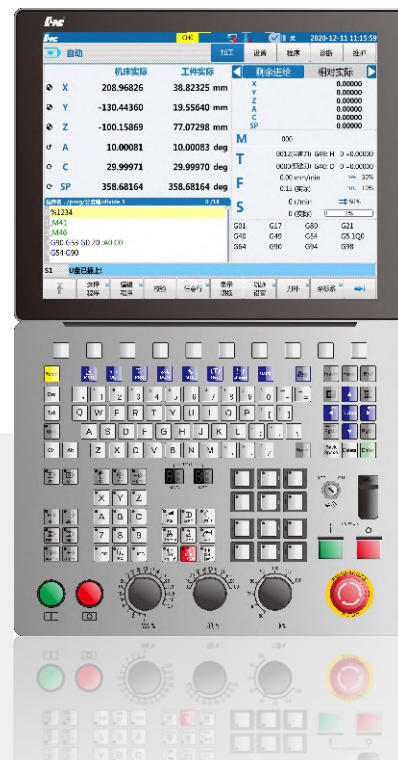


CNC Controller

High-end CNC Controller for safe machining and high precision

To transform engineering manufacturing capabilities into high-efficiency machining to achieve high-precision and convenient operation of workpieces, intelligent CNC systems are indispensable.

HNC-848Di-M 17-inch



Wide application

CNC controller suitable for 5-axis machine, heavy-duty machine and lathe mill compo machining center

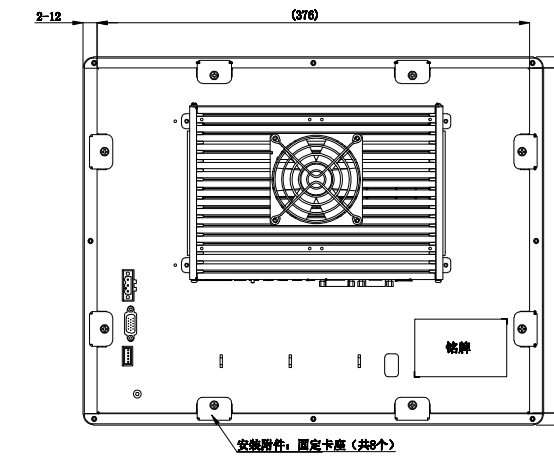
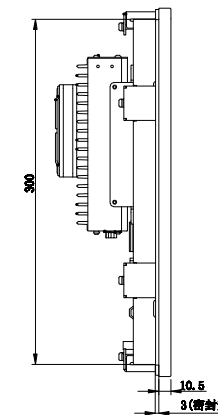
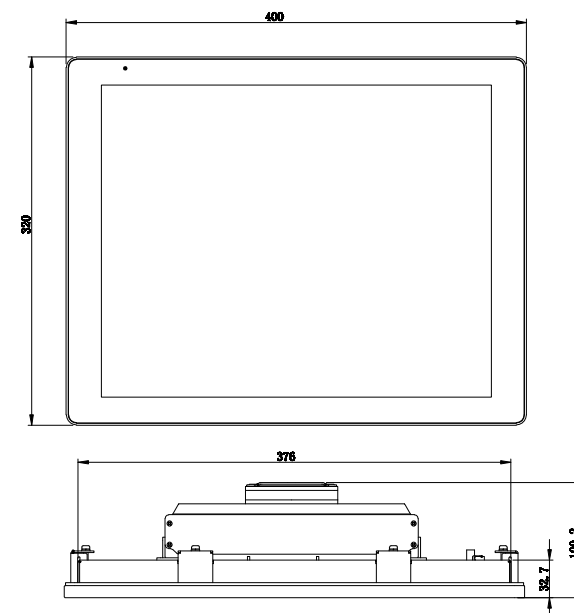
Basic parameter

- 17" color LCD screen (touch screen is optional)
- Single panel version and upper-lower panel version are supported
- Up to 9 feed axes and 4 spindles in each channel
- 9 simultaneously controlled axes at maximum (RTCP is not supported)
- Typical matching machine tool: mill lathe combo, 5-axis machine, cam grinder

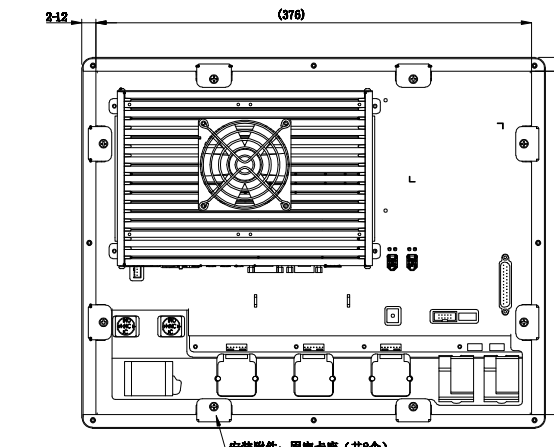
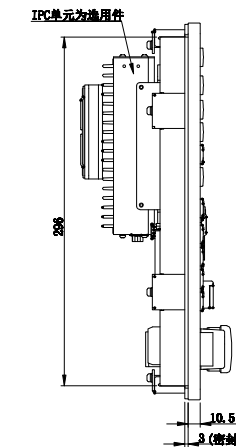
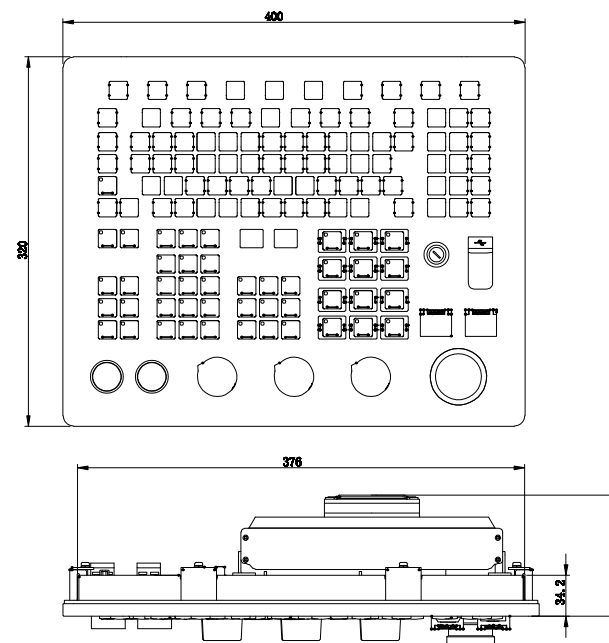
- High-speed high-precision control
- 5-simultaneously-axis control
- 5-axis auto calibration
- 5-axis RTCP function
- 5-axis large circular interpolation Hyperbolic interpolation
- 5-axis orientation machining
- Synchronization control
- Error compensation
- Direct drive
- Intelligent control
- Lathe-mill combination
- Multi-channel control
- Seamless integration of CAM software
- Touch screen is supported
- Backlash elimination for multiple motors

Features

HNC-848Di series install dimensions

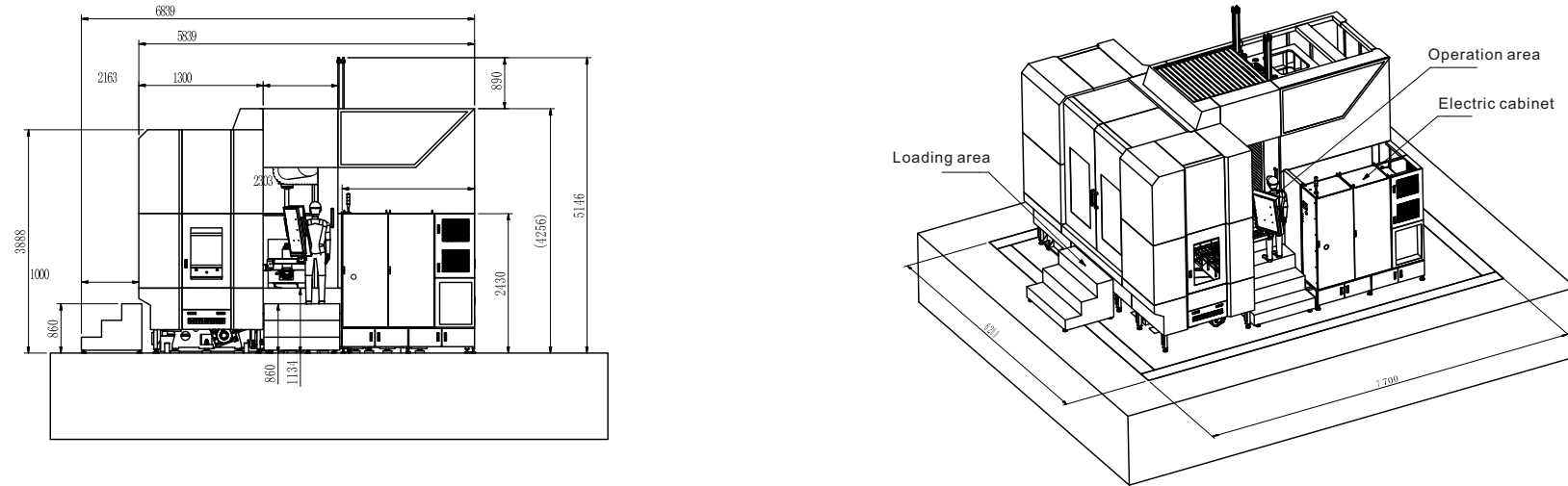


Upper panel

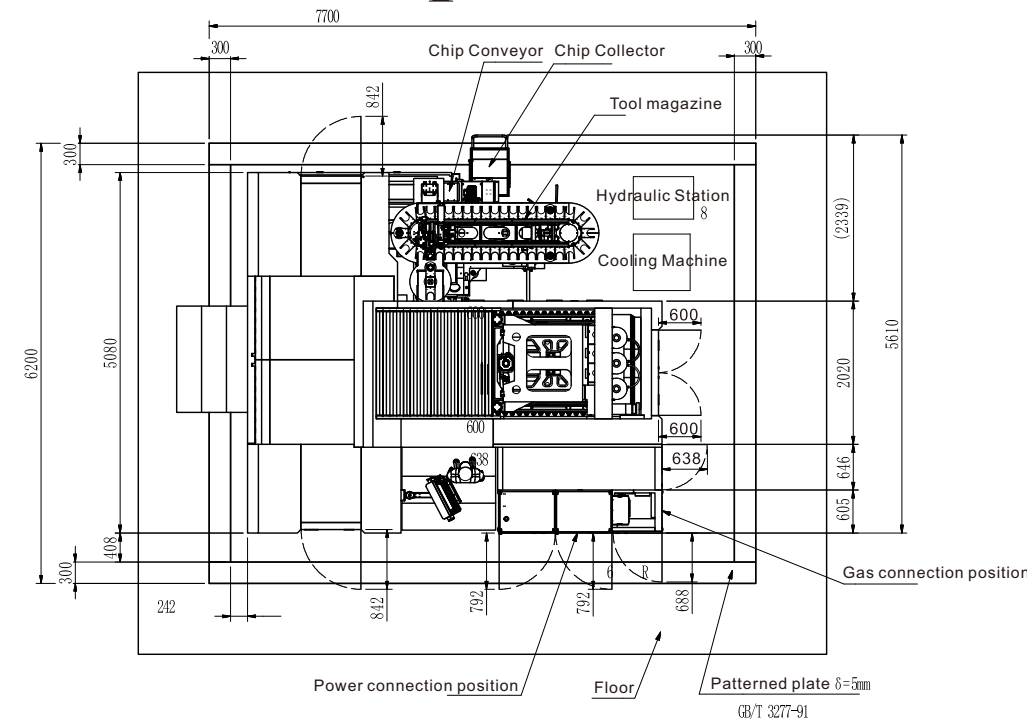


Lower panel

Dimensional drawing of the whole machine



Distribution map of the whole machine



HMU-140P Horizontal Five-axis Machine Tool Technical Specifications

Names	Unit	HMU-140P	HMU-140P (Heightened)
CNC Controller		HNC-848Di	HNC-848Di
X/Y/Z axis travel	mm	1800/1400/1400	1800/2000/1400
A/C axis travel	deg	+60至-100/∞	+60至-100/∞
Spindle nose to worktable distance	mm		
Worktable size	mm	1400	1400
Maximum payload	kg	3000	3000
Spindle			
Maximum spindle speed/taper shank	rpm	12500HSK-A100	12500HSK-A100
Spindle power (S1/S6-40%)	kW	54/54	54/54
Torque (S1/S6-40%)	N.m	200/235	200/235
Feed system			
X/Y/Z axis rapid traverse	m/min	20/20/20	20/20/20
Maximum cutting feed rate	m/min	10	10
A/B axis fast forward speed	rpm	20/15	20/15
Rated torque A/B	N.m	4000/5600	4000/5600
Brake troque A/B	N.m	9000/13000	9000/13000
Positioning accuracy/repeated positioning accuracy (ISO 10791-4:1998)			
X/Y	mm	0.008/0.005	0.008/0.005
Z	mm	0.008/0.005	0.008/0.005
A/B	ARCSEC	8/5	8/5
Automatic tool changing system			
Tool number	Pcs	40T	40T
Tool changing time (Tool-tool)		8	8
Tool maximum length	mm	400	400
Tool maximum diameter	mm	∅25/∅250	∅25/∅250
Tool maximum weight	kg	25	25
Machine size			
Machine total height	mm	5200	5800
Covering area (length×width)		6900x5600	6900x5600
Machine net weight	kg	3300	3900
Electric power	kW	110	110

HMU-140P Standard Configuration/Optional Configuration (Options)

- Standard configuration
- Optional configuration
- Unassembled

		HMU-140P	HMU-140P (Heightened)
CNC Controller	HNC-848Di	●	●
Spindle	12500rpm/HSK-A100	○	○
	Spindle cooler	●	●
	Spindle CTS30	○	○
	Spindle air curtain dust control system	●	●
Number of tools in tool magazine	40T horizontal tool magazine	○	○
High-precision response	Laser tool setting gauge (full-automatic tool length measurement & tool wear detection)	●	●
	Contach tool setting gauge	○	○
	X/Y/Z axis grating scale	●	●
	A/C axis grating scale	○	○

- Standard configuration
- Optional configuration
- Unassembled

		HMU-140P	HMU-140P (Heightened)
Chip Removal System	Crawling chip conveyor	●	●
	Worktable water gun	●	●
	Worktable air gun	●	●
	Full splash guard	●	●
	Cutting water system	●	●
	Machining air cylinders	●	●
	Oil mist collector	○	○
	Oil-water separator	○	○
	Safety system	Front door safety switch	○
Lubricating system	Self-lubrication grease	●	●
Electric parts	Worklamp	●	●
	Warning light	●	●
	Electrical cabinet air conditioning system	●	●
Accessories	Tool box	●	●
	Bay bolt	●	●
	Operation manual	●	●