

TECHNICAL PRODUCT SPECIFICATIONS

IL200

MADE
IN
GERMANY



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Machine	General Description
System configuration	Ultra precision 3 axes (XZC) CNC high dynamic machining center
Machine base	Natural granite base for excellent accuracy
Vibration isolation	Self leveling pneumatic isolation system (option: passive or electronically controlled active leveling)
Control system	Beckhoff TwinCAT 3 CNC high performance machine controller; Intel® Core™ i5 CPU, 4 Cores; operating system Windows 10; 21.5" color flat panel touch screen display and 22" color flat panel display; EtherCAT bus communication technology; Digital Servo drives with 100 kHz current & position control loop frequency
Programming resolution	1 nm linear (0.01 nm optional), 0.0000001° rotary
Set points (pts/sec)	Up to 2,000 in CNC mode; 10,000 in DirectDrive3D
File transfer	USB, Ethernet
Requirements	Air: 7-10 bars, 300 l/min, 10 µm prefiltered; Electrical: 400 V, 16 A, 50/60 Hz; Water: 8-10 °C, 30 l / min; Connectivity: Ethernet
Machine size	1,800 * 1,100 * 2,000 mm (D * W * H)
Air conditioner size	510 * 1,100 * 740 mm (D * W * H)
Periphery cabinet size	1,200 * 1,200 * 1,800 mm (D * W * H)

Linear Axes	X-Axis	Z-Axis
Travel	200 mm	150 mm
Feedback type	Noncontact linear encoder	Noncontact linear encoder
Resolution	0.03125 nm	0.03125 nm
Straightness	< +/- 0.2 µm	< +/- 0.2 µm
Pitch, roll, yaw	< +/- 2 arcsec for all	< +/- 2 arcsec for all
Max. speed	8,000 mm/min	8,000 mm/min
Drive system	Brushless linear motor	Brushless linear motor
Static stiffness	380 N / µm vertical	420 N / µm vertical
Media supply	Compact integrated hydrostatic supply unit, low pulsation	

Rotary Axes	C-Axis
Type	Workholding spindle; porous graphite air bearing
Radial load capacity	550 N at 7 bar
Axial load capacity	1,250 N at 7 bar
Radial stiffness	185 N/µm
Axial stiffness	50 N/µm
Motion accuracy radial	< 15 nm
Motion accuracy axial	< 15 nm
Velocity control	< 18,000 rpm
Position control	< 3,000 rpm

Interfacing High Precision Mode	Interfacing High Speed Mode
Up to 6,000 RPM	Up to 18,000 RPM
Ultra-precise clamping system for work piece	Fixed vacuum chuck
Clamping mechanism: Spring loaded mechanical clamping, pneumatic unclamping	Ø:100 mm or 150 mm
Repeatability / accuracy: < 0.5 µm radial & axial	

Metrology LVDT (Option)	
2D Surface line scan	Air bearing LVDT probe for compensation
Working distance / range	0.5 mm
Resolution	< 10 nm
Stylus tip	Ruby, diamond

ILSONIC (Option)	Circulating Air Shower (Option)
Transversal ultrasonic unit for diamond turning of steel	Air conditioning unit with filtration system
Working frequency: 100 kHz	Air flow rate: 400 l/min
Max. depth for concave parts: 70 mm	Temperature constancy < 0.1 °C
NanoGrip interface to machine	Required room temperature < 3 °C
55° insert tool, monocrystalline diamond	Machine external setup, integrated control

Part	General Description
Size	Ø < 180 mm; length < 130 mm
Turning performance	Form accuracy (PV) < 0.1 µm; surface roughness (Ra) < 1 nm
Overdrive freeform HUD	250 * 200 mm; total stroke 2.1 mm; form accuracy (PV) < 0.5 µm; machining time 3.5 h

Application
The IL200 is the first ultra-precision platform to be versatily configurable to adress different market needs in perfect tailoring
The IR Optics Platform - Ultimate Productivity World leading spindle with 18,000 RPM and ultra fast acceleration for unmatched productivity with vacuum chuck parts interface. Robust design for beneficial cleaning
The D-Cut & Camera Lens Platform - Ultimate Accuracy Variable mounting of spindle @ X or Z slide. Wireless technology of axes for subnanometer following error. DirectDrive3D technology for 10,000 set points/ second
The Direct Metal Optics - Ultimate Automation Automated robot loading of parts for autonomous parts production. Integrated air shower for ultimate long-term stability. Pneumatic chuck part interfacing for serial production