

# MODELAPROII MDX-540/540S

Specifications	MDX-540S	MDX-540
Cuttable material	Resins such as chemical wood and modeling wax, Light metals	
X, Y, and Z operation strokes	500 (X) x 400 (Y) x 155 (Z) mm (19.6 (X) x 15.7 (Y) x 6.1 (Z) in.)	
Distance from spindle nose to table	Maximum 254 mm (10 in.)	
Table size	550 (W) x 420 (D) mm (21.7 (W) x 16.5 (D) in.)	
Loadable workpiece weight	At acceleration of 0.2 G: maximum 12 kg (26 lb.), 0.1 G: 20 kg (44 lb.), 0.05 G: 20 kg (44 lb.)	
XYZ-axis drive system	AC servo motor, 80 W	AC servo motor, 60 W
Operating speed	Maximum 7.5 m/min (295 in./min)	
Acceleration	0.2 G, 0.1 G, 0.05 G	
Software resolution	RML-1 mode: 0.01 mm (0.0004 in.), NC-code mode: 0.001 mm (0.00004 in.)	
Mechanical resolution	0.001 mm (0.00004 in.)	
Positioning accuracy	±0.1 mm/300 mm (±0.004 in./12 in.), under no-load conditions	
Repeat accuracy	±0.02 mm (±0.0008 in.), under no-load conditions	±0.05 mm (±0.002 in.), under no-load conditions
Origin reproducibility (when the power is switched on/off)	±0.02 mm (±0.0008 in.)	±0.05 mm (±0.002 in.)
Spindle motor	DC brushless motor, maximum 400 W	
Spindle speed	400 to 12,000 rpm; 400 to 3,000 rpm for positioning and centering	
Cutting tool chuck	Collet method, maximum tool diameter: 10 mm (0.4 in.)	
Control command sets	RML-1 and NC codes	
Interface	USB (compliant with Universal Serial Bus Specification Revision 1.1)	
Power supply	Voltage and frequency: AC 100 to 120 V/220 to 240 V ±10%, 50/60 Hz; Required power capacity: 7 A (100 to 120 V)/4 A (220 to 240 V)	
Power consumption	Approx. 700 W	
Acoustic noise level	During operation (when not cutting): 65 dB (A) or less, During standby: 40 dB (A) or less	
Dimensions	765 (W) x 955 (D) x 858 (H) mm (30.1 (W) x 37.6 (D) x 33.8 (H) in.)	745 (W) x 955 (D) x 858 (H) mm (29.3 (W) x 37.6 (D) x 33.8 (H) in.)
Weight	102 kg (225 lb.)	
Operating temperature	5 to 40°C (41 to 104°F)	
Operating humidity	35 to 80% (no condensation)	
Included items	Handy panel, Power cord, Tool sensor, Sensor cable, Nut, Nut wrench, Wrench(24mm), Hexagonal wrench, Roland Software CD-ROM, SRP Player CD-ROM, User's Manual, Roland Software Guide, SRP Player Installation and Setup Guide, NC Code Reference Manual	

Automatic Tool Changer (ZAT-540) Specifications	
Number of tools housed	4
Maximum tool length	110 mm (4.3 in.)
Maximum tool diameter	10 mm (0.4 in.)
Maximum tool weight	350 g (0.77 lb.)
Tool-holder format	Taper shank: JBS4002 15T 7/24 taper. Pull stud: JBS4002 15P (45°) special
Tool-selection method	Direct-changing type, fixed-address specification
Compatible compressed air	0.7 to 1.0 MPa, 50 L/min or higher
Spindle speed	400 to 12,000 rpm; 400 to 3,000 rpm for positioning and centering
Weight	6.8 kg (15 lb.) (total weight including spindle, magazine, control box, etc.)
Included items	Control box, Magazine unit, ATC spindle, Air cylinder, Base plate, Z-origin sensor, Spacer, Cap screws, Plastic screws, Hexagonal wrenches, Retaining bands, Cable retainers, User's Manual

\*When this unit is installed, the X-axis operation stroke of the MDX-540S and MDX-540 are as follows: \*Standard table, no rotary axis unit: 400 mm (15.7 in.)  
 \*Standard table, rotary axis unit present: 270 mm (10.6 in.)/325 mm (12.7 in.) (with expanded X-axis operation stroke) \*T-slot table, no rotary axis unit: 400 mm (15.7 in.)  
 \*T-slot table, rotary axis unit present: 203 mm (7.9 in.)/258 mm (10.1 in.) (with expanded X-axis operation stroke)

Rotary axis unit (ZCL-540) Specifications	
Supported workpiece	Resins (metal not supported)
Maximum angle of rotation	±2,147,483.647° (±5,965.23 turns)
Loadable workpiece size *1	Items within the range of a 90 mm (3.5 in.) in radius from the center of the rotary axis by 371 mm (14.6 in.) long. The actual cuttable range is smaller than this.
Workpiece thickness holdable by workpiece chuck	15 to 100 mm (0.6 to 3.9 in.)
Loadable workpiece weight	Maximum 5 kg (11 lb.), maximum moment of inertia: 0.02 kgm <sup>2</sup> Center drill used: Maximum 1.5 kg (3.3 lb.)
Control method	Simultaneous 4-axis control
Feed rate	Maximum 20 rpm
Software resolution	RML-1 mode: 0.1°, NC-code mode: 0.01°
Mechanical resolution	0.002°
Static precision	Backlash: 0.05°, Eccentricity: 0.3 mm (0.012 in.) or less
Dimensions	720 (W) x 100 (D) x 195 (H) mm (28.3 (W) x 3.9 (D) x 7.7 (H) in.)
Weight	6.5 kg (14.5 lb.) (total weight including drive unit, tailstock, base plates, etc.)
Included items	Drive unit, Tailstock, Base plates, Live center, Center drill, Y-origin sensor, Z-origin sensor, Spacer, Origin-detection pin, Cap screws, Plastic screws, T-slot nuts, Hexagonal wrenches, Retaining bands, User's Manual

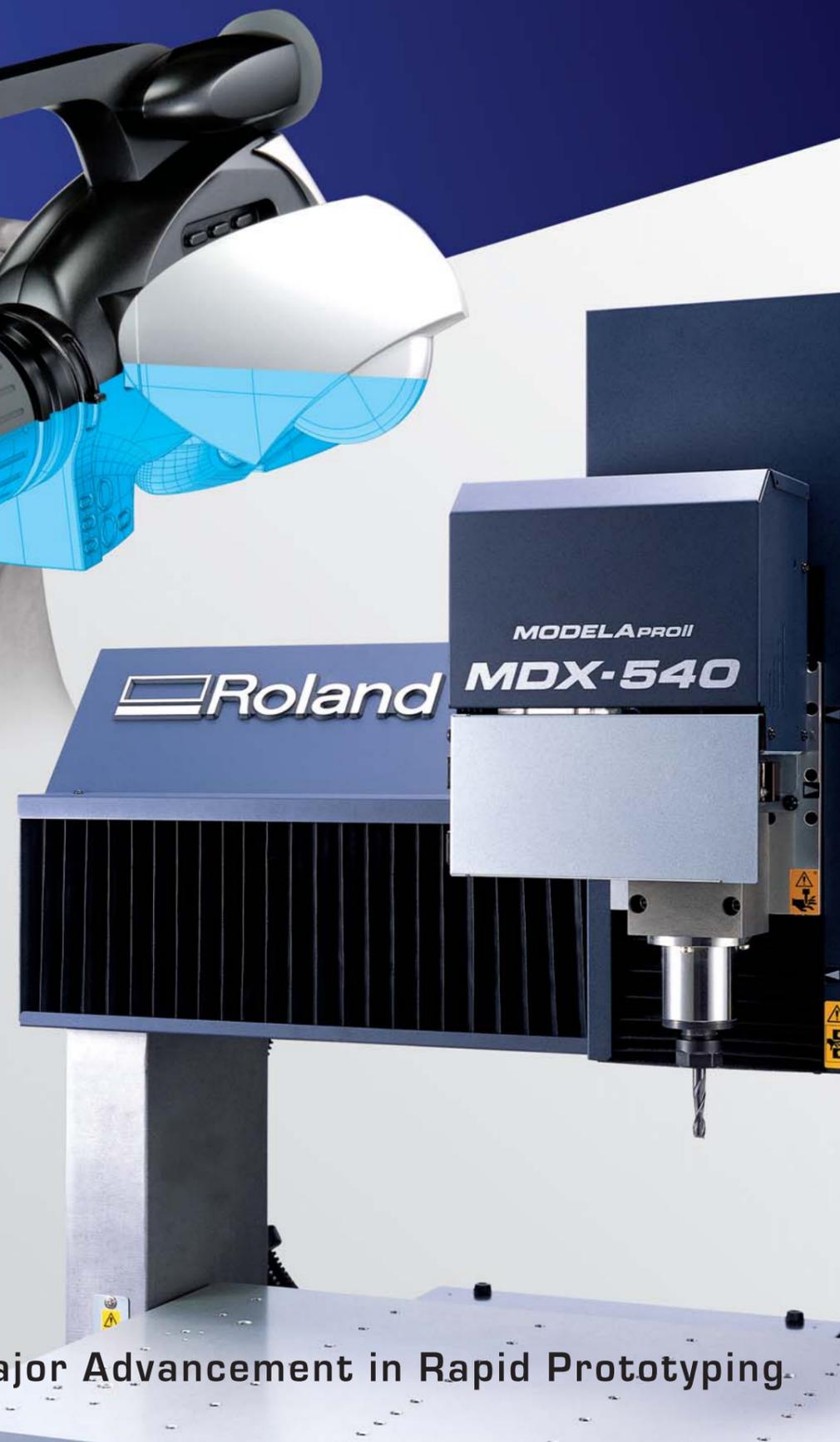
\*1 When the T-slot table is installed, the length is 297 mm (11.7 in.)  
 \* When this unit is installed, the X-axis operation stroke of the MDX-540S and MDX-540 are as follows: \*Standard table, no ATC unit: 285 mm (11.2 in.)/325 mm (12.7 in.) (with expanded X-axis operation stroke) \*Standard table, ATC unit present: 270 mm (10.6 in.)/325 mm (12.7 in.) (with expanded X-axis operation stroke) \*T-slot table, no ATC unit: 218 mm (8.5 in.)/258 mm (10.1 in.) (with expanded X-axis operation stroke) \*T-slot table, ATC unit present: 203 mm (7.9 in.)/258 mm (10.1 in.) (with expanded X-axis operation stroke)

System requirements: Roland SRP Player	
OS	Windows® 8/8.1/10 (32/64-bit) Windows® 7 Ultimate / Professional (32/64 bit)
CPU	Pentium® 4 recommended
RAM	1GB or more recommended (2GB or more recommended for Windows® 8 or later)
Free hard-disk space	20MB or more recommended

Options	Model	Description
High Precision Spindle Unit	ZS-540TY	For replacement
Automatic Tool Changer	ZAT-540	Refer to the specifications
Rotary Axis Unit	ZCL-540	Refer to the specifications
T-Slot Table	ZTT-540	550 (W) x 420 (D) x 35 (H) mm, 9 kg [21.7 (W) x 16.5 (D) x 1.4 (H) in., 20 lb.]
Safety Cover	ZBX-540E	1042 (W) x 1030 (D) x 978 (H) mm, 68 kg [41 (W) x 40.6 (D) x 38.5 (H) in., 150 lb.]

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SUBTRACTIVE  
RAPID PROTOTYPING

Introducing A Major Advancement in Rapid Prototyping





# Create Precision Models and Prototypes Quickly and Easily In Your Office Environment Using Roland SRP Technology

## MODELA PRO II MDX-540 Features:

- Precision benchtop milling machine produces high-quality parts and models using Roland DG's Subtractive Rapid Prototyping (SRP) technology
- Advanced S models utilizing higher accuracy ballscrews available for even greater precision
- Simple on-screen menus and operation panel make setup and production easier than ever
- Cutting area of 500 (X) x 400 (Y) x 155 (Z) mm (19.6 (X) x 15.7 (Y) x 6.1 (Z) in.) accommodates larger prototypes
- Advanced software optimizes your 3D CAD data for flawless molds and parts
- In-house milling shortens the design/development cycle and lowers product development costs



The MDX-540 mills even the most intricate details.

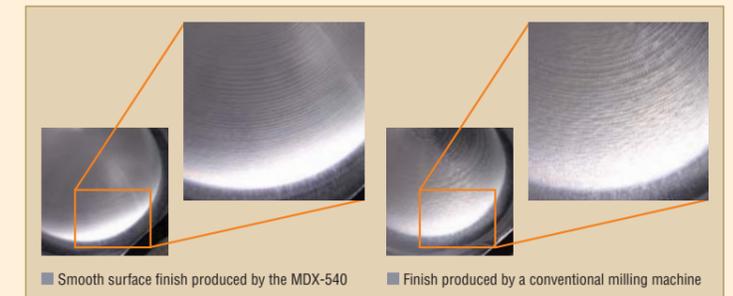
Generate smooth curves and surfaces without handwork.



## Unmatched Quality and Performance

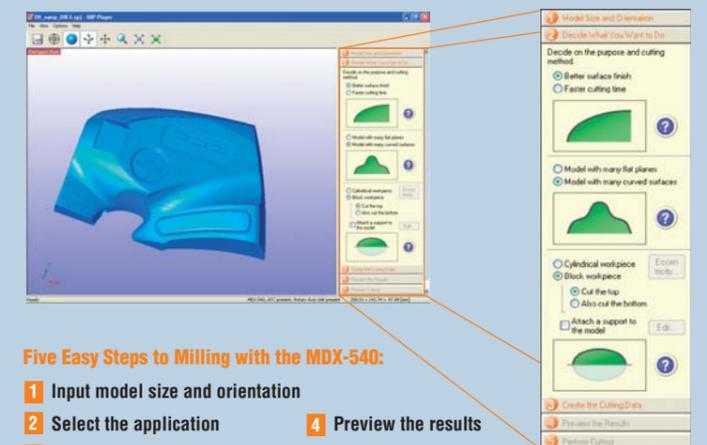
The new MDX-540 features numerous upgrades including a more rugged body design, faster arithmetic processing, improved smoothing functions, a streamlined worktable and more. Nearly every part and feature have been upgraded for superior all-around performance. Curved and rounded surfaces are smoother than ever for flawless finishes every time. The MDX-540 features a combination of Digital AC Servo motors and Feed Forward Processing (DAC-FFP) commonly used in larger, more expensive NC machines. This advanced technology ensures optimum torque and speed throughout the production process for powerful, high-speed milling.

\*Milling quality may vary depending on software resolution, materials used and other criteria.



## SRP Player Advanced, Easy-To-Use Software

The introduction of Roland DG's MODELA PRO II and SRP Player software allow even novices to operate the MDX-540 for professional results. Every MDX-540 comes equipped with Roland SRP Player, which was developed exclusively for the MDX-540. Simply enter the required information into five setting groups and SRP Player does the rest, automatically determining the best tools and other details required to generate the optimum tool path. To prevent costly and time-consuming errors, SRP Player allows you to preview your job on-screen to confirm the cutting path for quality results every time.



### Five Easy Steps to Milling with the MDX-540:

- 1 Input model size and orientation
- 2 Select the application
- 3 Determine the cutting data
- 4 Preview the results
- 5 Produce the model

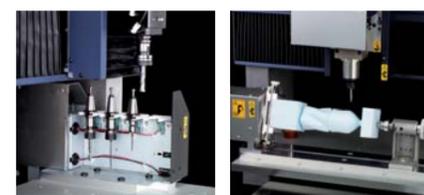
## User-Friendly Operation

Designed from the ground up for ease of use, the MDX-540 features a handy control panel that simplifies the setup and production processes by strategically grouping the most commonly used settings. Using a jog-dial, you can quickly and easily reposition tools and adjust spindle speeds without interrupting the milling process. For other settings, simply access the MDX-540's on-screen operation panel featuring clear, easy-to-navigate icons.



## Powerful Options for High Production Demands

Four powerful options let you build on your MDX-540 for even greater performance and unattended operation. These include an Automatic Tool Changer (ATC), rotary axis unit, T-slot table and safety cover. The optional ATC holds up to four tools while the rotary axis unit facilitates 360 degree and multiple-surface cuts.



■ Automatic Tool Changer(ATC) ■ Rotary axis unit

## Able to Mill a Wide Variety of Materials

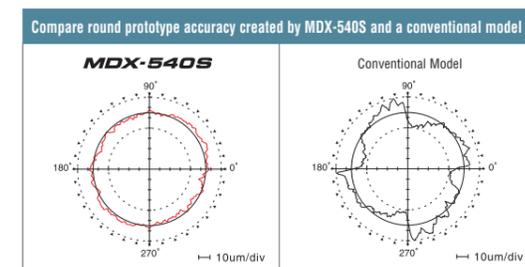
With the MDX-540, you can produce molds and parts for small lot production quickly and inexpensively from a wide range of materials, including chemical woods, resin, ABS and non-ferrous metals such as aluminum, brass and copper.\*

\* The MDX-540 cannot mill light metals with the rotary axis unit.



## "S" Models for Precision Applications

S models offer high quality milling for snap-fit prototypes, smooth surface finishes and other advanced applications. S models feature precision ballscrews that achieve repeat accuracy up to  $\pm 0.02$  mm ( $\pm 0.0008$  in.) and minimize cutting marks.



Comparison results were obtained by milling acrylic cylinders with 40mm radius and 30mm height using both an MDX-540S and a conventional mill.

# MODELA PRO II



Photo: MDX-540 and safety cover

Standard SRP Model  
**MDX-540**  
Precision SRP Model  
**MDX-540S**

