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Super LIL **CNC ROUTER** K

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**DEPARTMENT OF SCIENCE AND TECHNOLOGY
METALS INDUSTRY RESEARCH AND DEVELOPMENT CENTER**

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DEPARTMENT OF SCIENCE AND TECHNOLOGY
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What is a router?

A router is a tool used to hollow out an area in a face of a solid workpiece, typically wood or plastic.

Traditional/Manual Router

Disadvantages:

- Gives inconsistent output
- Gives low production yield
- Requires special bits
- Requires templates
- Works on limited materials
- Time consuming
- Prone to human error
- Processes basic and simple designs only



Manual Engraving



Traditional Router

What is CNC?

CNC stands for Computer Numerical Control. It is a control system integrated to a device or a machine to make it computer-controlled.

CNC is operated by G-Codes. The controller reads the G-Codes and translates the numbers to mechanical movement.

Advantages of CNC machines:

- Give consistent output
- Require minimal supervision
- Process intricate and customized designs
- Give high production yield
- Work on various materials

The MIRDC, in partnership with the PMEDSO and Primark Tooling Services,

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G-Code Sample
File Edit Format View Help
N3 G40 G17
N10 T1 M06
N15 G90 G0 X0 Y0 Z0
N20 S3000 M03
N25 G00 F30.0
N30 X0.076 Y0.341
N35 G00 Z-1.000 F90.0
N40 G01 Z-1.125 F30.0
N45 G01 F60.0
N50 X0.064 Y0.326
N55 X0.060 Y0.293
N60 X0.077 Y0.267
N65 X0.111 Y0.257
N70 X0.149 Y0.252
N75 X0.188 Y0.255
N80 X0.227 Y0.268
N85 X0.257 Y0.271
N90 X0.335 Y0.265
N95 X0.412 Y0.271
N100 X0.474 Y0.287
N105 X0.491 Y0.289
N110 X0.517 Y0.273
N115 X0.544 Y0.263
N120 X0.580 Y0.261
N125 X0.595 Y0.263
N130 X0.621 Y0.274
N135 X0.659 Y0.306
N140 X0.673 Y0.335
N145 X0.679 Y0.361
N150 X0.678 Y0.389
    
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G-Code Sample. The code is then read and interpreted into mechanical movements by the router.

developed a CNC Router to help the local wood-working and metal cutting industries stay competitive.

A CNC Router is a combination of a Router machine and a CNC device.

The developed CNC Router, like any CNC machines, is run by a software that not only allows creativity and complexity in woodworking and metal-cutting designs but also increases work efficiency.

The Router machine can cut and engrave on woods, metals, and acrylics. The speed of the spindle and type of router bit can be adjusted on the software controller. The CNC Router is driven by a stepper motor to move and cut in three directions: X, Y, and Z. The X-axis goes left to right, the Y-axis runs from front to back, while the Z-axis runs up and down. Because of its ability to cut various materials, more intricate and sophisticated woodworking designs can be produced and reproduced in large quantity without fear of unwanted cutting quality every single time.

Machine Specifications table:

Particulars	Specifications
Max. Working area (mm):	1300 x 2600
Z-axis travel (mm):	460
Z-axis clearance (mm):	200
Max. Travel Speed (m/min):	30
Max. Cutting Speed (m/min):	20
Position Precision (mm):	+/- 0.05
Accuracy (mechanical) (software)	+/- 0.25 mm +/- 0.003125 mm
Power Supply (V):	220/60Hz
T-Slot table (mm):	1260 x 2600 Extrusion
Drivers (3):	X,Y,Z axes DSP
File Format Acceptable:	G-Code
Spindle (Collet):	Router type, 3HP, 18,000 RPM, inverter driven servo motor
Dust Collector:	2.2kW (minimum)
CAM Post Processor:	for 3D
Controller:	DSP Controller, 32MB memory, with USB port, Computer inter-face
With additional rotary axis:	360 deg.

Applications of CNC Router:



On Wood



On Brass



On Acrylic