

MECHANICAL SPECIFICATIONS

MANIPULATOR	
Manipulator Motors	4 axis AC brushless servo motors
Manipulator Repeatability	±0.016 mm
Resolution	±0.01 mm
Configuration	X, Y1, Y2 & Z
WORK STATION	
Board Positioning	Two workstations, Side by Side, each with dedicated fixture
Panel Location	Located by tooling holes or edge of PCB
Loading/Unloading	Inline, "left to right" loading from conveyor Unloading with pick and place arm
Panel Types	All types with tooling holes
Panel Size (mm)	320 x 250
Panel Thickness	0.5 - 2.0 mm

PICK AND PLACE BOARD HANDLER	
Pick Up	Dedicated fixture with anti static vacuum pick up nozzles
Axis Configuration	X, Y and Z axis
Vacuum pump	0.25kW 1.4 bar

SPINDLE SYSTEM	
Spindle motor	0.5 kW spindle with Ceramic Bearings
Chucking	Internal pneumatic collet
Tool change	Manual tool change (optional Auto change)
Router bit	Shank size 3.175 mm (1/8")
Cooling system	Re-circulating water through a fan cooled radiator, fitted with thermal couple and inline flow switch

DUST FILTRATION SYSTEM	
Power	4 kW rotary vane
Filtration	3 stage filter with disposable filter bag (10 microns)

VISION SYSTEM	
Video camera	High resolution CCD video camera PCB Fiducial capturing (Optional)

UTILITIES	
Power supply	415v, 3 phase, 20 amps, 50 Hz, 10KVA (options available)
Air supply	6 - 8 bars, consumption < 4 L/min

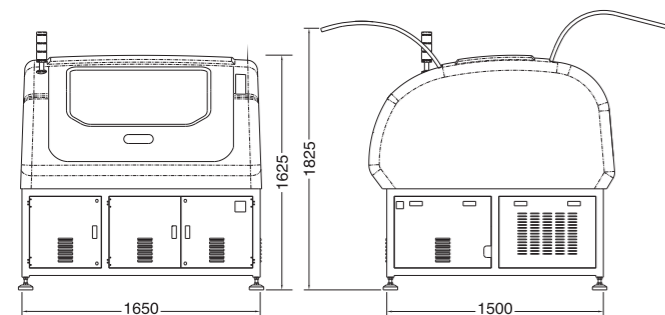
OPERATING SPECIFICATIONS

SPINDLE SPEED	
Spindle speed:	Variable up to 50,000rpm (80,000 rpm optional)

ROUTING CAPABILITY	
Non routing speed	1400 mm/sec
Routing speed	100 mm/sec max. depending on material
Repeatability	< 0.1 mm Straight lines, curves and interpolated profiles

SAFETY FEATURES	
"E" stop buttons front and back, enclosed work area, door interlocks, Spindle / door interlocks, Spindle overheat detection, Servo overload. Low noise level <76 dBA	

OPTIONS	
<ul style="list-style-type: none"> Automatic tool Bit change (5 bits) Spindle speed Variable up to 80,000 rpm PCB Fiducial Recognition capturing Forced ionized airflow 	<ul style="list-style-type: none"> Router Linear Encoders Barcode reader Spare parts Kit CE Certification



机械规格

驱动系统	
驱动马达	四台交流无刷伺服马达
驱动系统重复精度	±0.016 mm
分辨率	±0.01 mm
配置	X, Y1, Y2及Z四驱动轴

工作站	
切板定位	并排双工作站, 各配特制夹具
线路板定位	定位孔或PCB边沿定位
装载及卸载	由左向右传送带装载 抓放臂卸载
线路板类型	具有定位孔的各种线路板
线路板尺寸(毫米)	320 x 250
线路板厚度(毫米)	0.5 - 2.0

机械取放臂	
抓取	带有防静电真空吸嘴的特制夹具
驱动轴配置	X, Y及Z轴
真空泵	0.25千瓦, 1.4巴

主轴系统	
主轴马达	0.5千瓦主轴(陶瓷轴承)
刀具夹头	内置式气动夹头
刀具更换	人工刀具更换(选项: 自动刀具更换)
切割刀具	刀具直径3.175毫米(1/8")
冷却系统	水循环系统(流经风扇降温散热器) 配以热电偶及流量开关

粉尘过滤系统	
能耗	4千瓦, 旋转叶片
过滤	三级过滤器配以一次性过滤袋 (10微米孔径)

视觉系统	
视频摄像头	高分辨率数码相机 PCB 基准点捕捉(选项)

电气供应	
电源	415伏, 3相, 20安, 50赫兹, 10千伏安 (更多选项)
气源	6 - 8巴, 气耗 < 4升/分钟

操作参数

主轴转速	
可调, 最高达50,000转/分钟(选项: 80,000转/分钟)	

切割能力	
非切割速度	1400毫米/秒
切割速度	高达100毫米/秒(取决于切割材料)
重复精度	< 0.1毫米, 直线、弧线及内插曲线

安全特性急停按钮	
安全特性急停按钮(前后均配), 封闭工作空间, 安全门联锁, 主轴过热保护, 伺服系统过载保护, 低噪音(低于76分贝)	

选项	
<ul style="list-style-type: none"> 自动刀具更换(5钻头) PCB基准点辨识 线性编码器 备用零件箱 	<ul style="list-style-type: none"> 主轴可调转速最高达80000转/分钟 电离化气流设备 条形码阅读器 CE认证

Agent / 代理商:



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"Performance, Value, Integrity"

GETECH AUTOMATION PTE. LTD.

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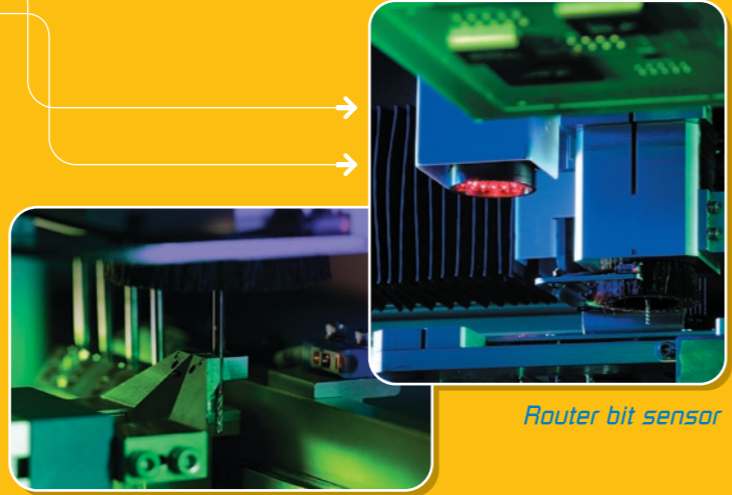
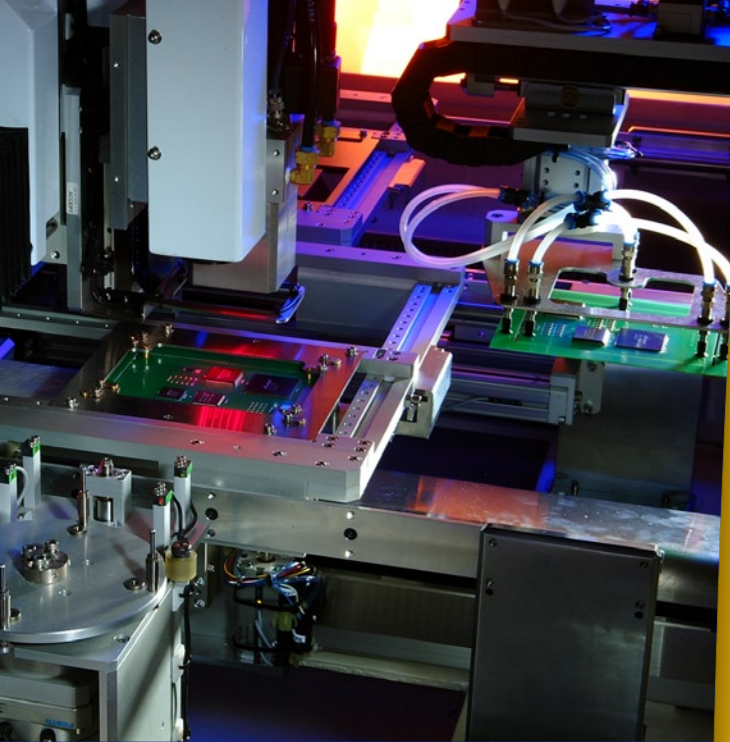
Fully Automatic Inline Router with Board Handling The RBM



ルーター式基板分割機
Inline-Nutzentrenner
全自动在线PCB切割机

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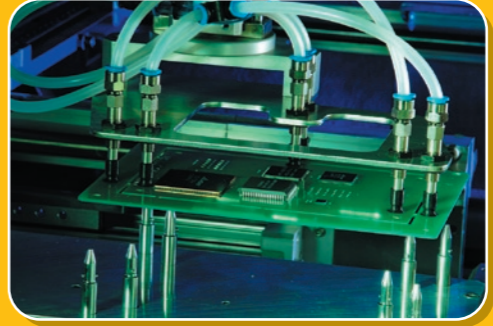
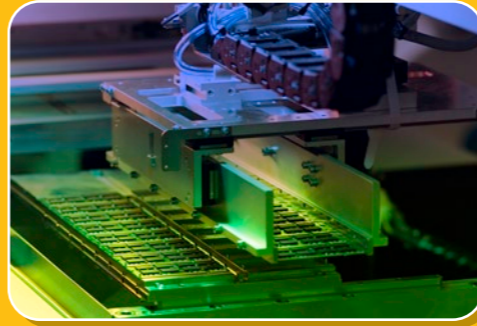
Providing the Link to Automated End-Of-Line Processing 为自动化生产线末端处理提供完美衔接



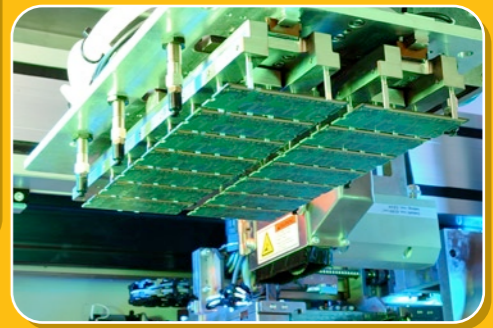
Router bit sensor

Auto tool change

Lifter unloading



Vacuum unloading

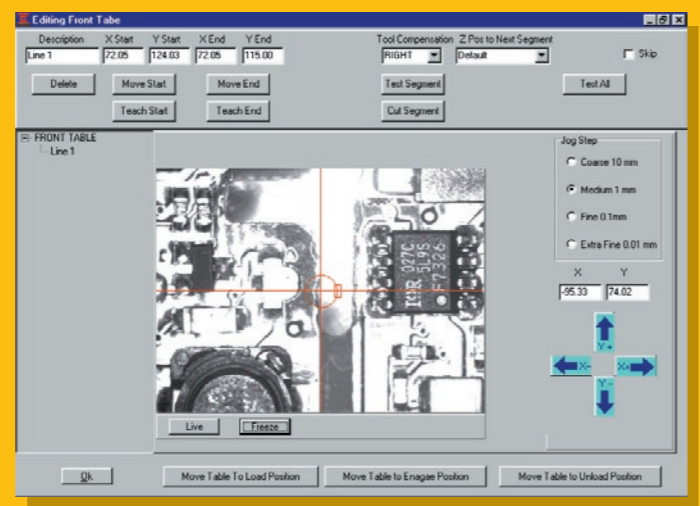


Gripper unloading

FEATURES 特性

- High routing speeds up to 100 mm/sec
- Positioning speeds up to 1400 mm/sec
- Two independent work stations
- PnP arm to transfer de-panelized board to further automated EOL operations
- Automatic tool change (optional)
- High-speed water-cooled spindle
- Advanced tool management including:
 - Tool life monitoring
 - Tool wear compensation
 - Tool break detection
- Vision assisted jog and teach facility for cutting tool paths

- 切割速度高达100毫米/秒
- 定位速度高达1400毫米/秒
- 两个独立的工作站
- 机械抓放臂将已切割的线路板送出以进行下一步操作
- 自动刀具更换 (选项)
- 高速水冷主轴
- 先进的刀具管理系统, 包括:
 - 刀具寿命监控
 - 刀具磨损补偿
 - 刀具断裂检测
- 采用视觉设备辅助的示教工具用以编辑刀具切割轨迹



Windows based GUI

The Routing Process 切割过程

The RBM provides the link for a fully automated End Of Line processing. A typical sequence starts when the input conveyor receives a PCB panel. The panel is then shuttled to one of the two parallel routing stations and located onto the fixture ready for routing.

Whilst the first panel is being routed, a second board is received and shuttled to the second workstation where it waits for the first board to be routed.

After separation, the off load Pick and Place PnP accurately transfers the boards onto the next workstation ready for further EOL operations.

RBM为全自动生产线末端处理提供了理想的衔接。典型的切割处理流程由一块PCB板进入输入传送带开始。PCB板将被送至两个平行切割工作站之一, 并将被固定在夹具上以准备切割。

当第一块板进行切割时, 第二块板将进入传送带并被送至另一个切割工作站等候切割。如此反复, 以确保切割钻头的停滞时间最短。

切割结束后, 卸载机械抓放臂将切割后的线路板精确地送至下一台设备。

Programming 切割程序编辑

The RBM features user-friendly "visual" programming with the use of a camera to view the board from the perspective of the routing bit. Coordinates for straight lines, curves and interpolated profiles are taught by physically moving the routing bit to the specific coordinates, and then "teaching" the machine this position.

RBM使用数码相机以切割钻头的视角为用户提供友善便捷的“视觉”编辑界面。用户可以实际移动切割钻头至目标位置, 并“教授”RBM该位置, 以此来编辑直线、弧线及内插曲线的准确坐标。

Software Features 软件特性

The Getech control software operates on a Windows® operating system, and incorporates full programming functionality with an easy to use operator interface offering:

- Diagnostic tools, Multi-level Password Protection
- Advanced Tool life management, including tool broken sensor, tool diameter compensation, tool life optimization
- Tracking of aberration in the spindle cooling system
- Definable distance routed for vacuum filter bag and tool bit change
- On-line Vision assisted point to point manual teaching
- Editing function, including Dry run vision assisted / test run mode, copy and paste

Getech控制软件以微软视窗(Windows®)操作系统为基础而开发, 并结合一套操作便捷功能全面的用户界面, 为用户提供:

- 错误诊断报警工具, 多重密码保护
- 高级刀具寿命管理, 包括刀具断裂传感器、刀具直径补偿、刀具寿命优化
- 主轴冷却系统失灵追踪
- 可设置的提示更换真空过滤袋的切割累计长度及提示更换刀具钻头的切割累计长度
- 实时视觉辅助点对点人工编辑
- 丰富的编辑功能, 包括视觉辅助模拟运行/试运行模式, 数据复制及粘贴

Manipulators 驱动系统

The unrivaled performance of the RBM is achieved by the use of advanced precision manipulators on all four axis offering:

- Extremely high speed linear motion, and repeatability
- Maintenance free AC servomotors
- Heavy duty pre-loaded re-circulating ball guides
- Power off brake on the Z axis to prevent the axis from falling under its own weight
- Complete PC based control, incorporating a high end motion control card

RBM卓越的性能和表现得益于四套运行轴的高精度驱动系统。由此给RBM带来:

- 极高速线性运动及高重复性
- 免维护交流伺服马达
- 重型预载循环滚珠导轨
- Z轴断电刹车装置, 以防止断电后Z轴因自重而降落
- 完全电脑控制, 配有高性能运行控制卡

PnP Unloading 机械抓放臂

The PnP arm uses an array of anti static vacuum pads to pick up both the boards and panel frame from the fixture, the frame is then dropped into a waste bin and the boards are accurately placed onto the next work station ready for further operations.

自动机械抓放臂采用一组防静电真空吸嘴抓取线路板, 线路板边角料随后将掉入垃圾回收运送带上, 而切割好的线路板则将被准确地放置到下一个工作站以备进一步操作。

Ergonomics and Safety 工效性和安全性

The RBM is designed to provide a user-friendly machine. The welded base structure with glass fiber canopy, fitted with ESD safe Perspex windows, and raising doors, provides for a safe, fully enclosed machine.

RBM是一台高效便捷易于掌握的切割机。钢制基座配以玻璃纤维顶罩, 加上防静电有机玻璃窗和升降门将机器完全封闭, 提供安全的操作及运行环境。