

# Sayaka PCB Routers



### Inline

## SAM-CT34XJi

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#### High-spec inline router

Click or Scan to watch video Automatic Tool Change (ATC)

#### Features

- Data Matrix or QR Code data can be saved for traceability
- ▷ ATC: Automatic Tool Change function replaces the router bit at pre-defined cut distances
- ▷ Available options allow for a fully autonomous system
- ▷ Simple point and click programming is possible thanks to the onboard camera. Offline CAD programming is also possible with included software.
- Standard equipment includes QR Code selection of program, fiducial mark alignment, and bad mark rejection
- > Automatic Z-axis height control allows for up to 5x router bit life
- ▷ Safely cut PCB with little stress transferred to mounted components
- > 3-axis servo controls allow precise cut with short takt time

LEI: 274527	
Model	SAM-CT34XJi
Routing Area	300x400mm
PCB Thickness	.4-3mm
Material	FR4, CEM1, CEM3, etc.

PCB Thickness	.4-3mm
Material	FR4, CEM1, CEM3, etc.
ent Height Limit	Upper Face: 30mm (including PCB)
ter Bit Diameter	.8-3mm
num Cut Speed	50mm/sec
n Motion Speed	1,200mm/sec
Repeatability	±0.01 mm or less
Z axis stroke	40 mm
Spindle RPM	5,000-60,000rpm (changeable)
X/Y/Z Controls	AC servo motor
Power Supply	3ph 220V AC 50/60Hz
ic Consumption	Approx 1.2kVA (including dust collector)
Air pressure	0.5-0.7MPa
Air consumption	20-40L/min
Outer size	w1,150 x d550 x h700mm (excluding PC and signal tower option, magazine loader, unloader)
Weight	Approx. 600kg

### SAM-CT23BPF

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#### Versatile inline router machine

Flexible for PCB outfeed

#### Features

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- Customizable conveyance and Pick & Place can be customized for PCB in/outfeed
- Fixture sensor allows for autonomous program changeover
- ▷ Offline CAD based point and click programming software included
- ▷ Automatic Z-axis height control allows for up to 5x router bit life
- Safely cut PCB with little stress transfer to mounted components

Model	SAM-
Routing Area	250x350mm
B Thickness	1-2mm
Material	FR4, CEM1
Height Limit	Upper Face
Bit Diameter	.8-3mm
n Cut Speed	50mm/sec
otion Speed	500mm/sec
Repeatability	±0.01 mm c
Z axis stroke	50 mm
pindle RPM	5,000-60,00
Y/Z Controls	AC servo m
ower Supply	3ph 220V A
Consumption	Approx 3.0k
Air pressure	0.5-0.7MPa
consumption	200L/min
Outer size	w1,980 x d8 (excluding s
Weight	Approx. 750

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Max Electric



#### CT23BPF

, CEM3, etc.

e: 21mm (including PCB)

or less

00rpm (changeable)

notor

AC 50/60Hz

kVA (including magazine loader & dust collector)

880 x *h*1690mm signal tower option)

kg

## Twin Table



## SAM-CT23/CT34W

High-end and high-speed router machine with image processing

Easy teaching operation with integrated camera, short cycle time with 3-axis servo controls, high rigidity frame

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#### Features

Simple point and click
programming is possible
thanks to the onboard camera
Offline CAD programming is
also possible

- Standard equipment includes QR Code selection of program, fiducial mark alignment, and bad mark rejection
- Automatic Z-axis height control allows for up to 5x router bit life
- Safely cut PCB with little stress transferred to mounted components
- 3-axis servo controls allow precise cut with short cycle time

#### **Optional Equipment**

- $\triangleright$  PCB floating detection sensor
- Router bit broken/slipped detection sensor

#### Options

Production data including QR code data can be saved for traceability & MES

Model	SAM-CT23W	SAM-CT34W
Routing Area, 1 table	330x500mm	380x600mm
Routing Area, 2 tables	250x350mm	300x400mm
Board thickness	.4-6mm*	.4-6mm*
Material	FR4, CEM1, CEM3, etc.	FR4, CEM1, CEM3, etc.
Component Height Limit	25mm (including PCB)	25mm (including PCB)
Router Bit Diameter	¢0.8-2.0mm	¢0.8-2.0mm
Maximum Cut Speed	50mm/sec	50mm/sec
Maximum Motion Speed	1,000mm/sec	1,000mm/sec
Repeatability	±0.02mm or less	±0.02mm or less
Z Axis Stroke	40mm	40mm
Spindle RPM	25,000-50,000rpm (changeable) Option: 5,000-60,000rpm (changeable)	25,000-50,000rpm (changeable) Option: 5,000-60,000rpm (changeable)
X/Y/Z controls	Stepping motor, Closed-loop	Stepping motor, Closed-loop
Power supply	220V AC 50/60Hz	220V AC 50/60Hz
Max electric consumption	Approx 3.0kVA inc. Dust Collector	Approx 3.0kVA inc. Dust Collector
Air pressure	0.5-0.7MPa	0.5-0.7MPa
Air consumption	20-30L/min	20-30L/min
Outer size	w1,050 x d1,250 x h1,450mm	w1,150 x dl,380 x h1,470mm
Weight	Approx. 530kg	Approx. 600kg
	*with upgraded spindle motor	

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## Standalone



### SAM-CT34/56XJ

High-end high-speed router capable of autonomous operation

Productivity increased by teaching camera, short cycle time, and ATC: Automatic Tool Changer (optional)

#### Features

- ▷ Simple point and click programming is possible thanks to the onboard ca Offline CAD programmir also possible.
- Standard equipment inc QR Code selection of pr fiducial mark alignment, bad mark rejection
- > Automatic Z-axis height allows for up to 5x route
- Safely cut PCB with little stress transferred to mo components
- > 3-axis servo controls alle cise cut with short cycle

#### Options

- PCB floating detection s
- Router bit broken/slippe detection sensor
- ▷ ATC: Automatic Tool Ch
- Production data includin code data can be saved traceability & MES
- ▷ Router bit diameter auto measurement

	Model	SAM-CT34XJ	SAM-CT56XJ
	Routing Area	300x400mm	500x600mm
e :amera.	Board thickness	.4-6mm*	.4-6mm*
ng is	Material	FR4, CEM1, CEM3, etc.	FR4, CEM1, CEM3, etc.
	Component Height Limit	30mm (including PCB)	30mm (including PCB)
rogram,	Router Bit Diameter	<td></td>	
, and	Maximum Cut Speed	50mm/sec	50mm/sec
	Maximum Motion Speed	1,200mm/sec	1,000mm/sec
er bit life	Repeatability	±0.01mm or less	±0.01mm or less
е	Z Axis Stroke	40mm	40mm
ounted	Spindle RPM	5,000-60,000rpm (changeable)	5,000-60,000rpm (changeable)
	X/Y/Z Controls	AC servo motor	AC servo motor
e time	Power supply	220V AC 50/60Hz	220V AC 50/60Hz
	Max electric Consumption	Approx 3.0kVA inc. Dust Collector	Approx 3.0kVA inc. Dust Collector
sensor	Air pressure	0.5-0.7MPa	0.5-0.7MPa
ed	Air consumption	20-40L/min	20-40L/min
anger	Outer size	w750 x d1,215 x h1,350mm exc PC & Signal Tower (option)	w950 x d1,620 x h1,350mm exc PC & Signal Tower (option)
na OR	Weight	Approx. 380kg	Approx. 570kg
for		*with upgraded spindle motor	

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### SAM-CT23/34/56NJ

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#### High-end and high-speed router machine with image processing

Easy teaching operation with integrated camera, short cycle time with 3-axis servo controls, high rigidity frame

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Features	Model	SAM-
Simple point and click pro-	Routing Area	250x350mm
to the onboard camera. Offline	Board Thickness	.4-6mm*
CAD programming is also	Material	FR4, CEM1
	Component Height Limit	30mm (inclu
QR Code selection of program.	Router Bit Diameter	.8-3mm
fiducial mark alignment, and	Maximum cut speed	50mm/sec
bad mark rejection	Maximum motion speed	800mm/sec
Automatic Z-axis height control allows for up to 5x router bit life	Repeatability	±0.01 mm or
Safely cut PCB with little	Z Axis Stroke	40mm
stress transferred to mounted	Spindle RPM	5,000-60,00
	XYZ Controls	AC Servo M
3-axis servo controls allow precise cut with short cycle	Power Supply	3ph 220V A
time	Max Power Consumption	Approx 3.0k
Options	Air Pressure	.57MPa
PCB floating detection sensor	Air Consumption	20-40L/min
▷ Production data including QR	Dimensions	w800 x d852
code data can be saved for traceability & MES	Weight	Approx. 300
		*with upgrade

)V A 3.0k Pa /min d852 . 300 ograded spindle motor



M-CT23NJ	SAM-CT34NJ	SAM-CT56NJ	
0mm	300x400mm	500x600mm	
*	.4-6mm*	.4-6mm*	
EM1, CEM3, etc.	FR4, CEM1, CEM3, etc.	FR4, CEM1, CEM3, etc.	
(including PCB)	30mm (including PCB)	30mm (including PCB)	
I	.8-3mm	.8-3mm	
sec	50mm/sec	50mm/sec	
/sec	800mm/sec	800mm/sec	
im or less	±0.0l mm or less	±0.0l mm or less	
	40mm	40mm	
0,000rpm (changeable)	5,000-60,000rpm (changeable)	5,000-60,000rpm (changeable)	
vo Motor	AC Servo Motor	AC Servo Motor	
0V AC 50/60Hz	3ph 220V AC 50/60Hz	3ph 220V AC 50/60Hz	
3.0kVA inc. dust collector	Approx 3.0kVA inc. dust collector	Approx 3.0kVA inc. dust collector	
Pa	.57MPa	.57MPa	
/min	20-40L/min	20-40L/min	
d852 x h1,322mm	w900 x d950 x h1,327mm	w1,140 x d1,125 x h1,410mm	
. 300kg	Approx. 380kg	Approx. 570kg	

## Table Top



### SAM-CT23S

#### High-spec router machine with image processing

Production data including QR code data can be saved for traceability & MES

#### Features

- ▷ MES Traceability function is equipped as standard
- Suitable for both mass production and NPI Minimal footprint optimizes
- production floorspace
- ▷ Simple point and click programming is possible thanks to the onboard camera. Offlin CAD programming is also possible
- ▷ Standard equipment includes QR Code selection of program fiducial mark alignment, and bad mark rejection
- Automatic Z-axis height control allows for up to 5x router bit li

		,
_	Model	SAM-CT23S
	Working envelope	250x350mm
	PCB Thickness	.4-2mm
	Material	FR4, CEM1, CEM3, etc.
	Component Height Limit	23mm (including PCB)
	Router Bit Diameter	.8-2mm
	Maximum Cut Speed	50mm/sec
ie	Maximum Motion Speed	720mm/sec
	Repeatability	±0.02 mm or less
	Spindle RPM	40mm
, m,	X/Y Controls	25,000-50,000rpm (changeable)
	Power Supply	Stepping motor, Closed-loop control
ol	Max Electric Consumption	3ph 220V AC 50/60Hz
ife	Air pressure	Approx 1.2kVA (including dust collector)
	Air consumption	No pneumatic required
	Outer size	w800 x d700 x h510mm
	Weight	Approx. 90kg

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### SAM-CT23/35/36Q

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#### Cost-effective desktop machine

Easy program teaching with DXF data-support software or included pendant

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#### Features

- Minimal footprint optimizes production floorspace
- ▷ Designed for ease of use with minimal maintenance
- ▷ Simple point and click programming with the included software utilizes existing CAD data or program manually with included teaching pendant
- ▷ Safely cut PCB with little stress transferred to mounted components
- ▷ Manual bit depth control extends bit life up to 3x

Model	SAM-CT23Q	SAM-CT35Q	SAM-CT36Q
Routing Area	250x350mm	350x500mm	350x600mm
Board Thickness	.4-6mm*	.4-6mm*	.4-6mm*
Material	FR4, CEM1, CEM3, etc.	FR4, CEM1, CEM3, etc.	FR4, CEM1, CEM3, etc.
nent Height Limit	21mm (including PCB)	21mm (including PCB)	21mm (including PCB)
ıter Bit Diameter	.8-2mm	.8-2mm	.8-2mm
imum cut speed	50mm/sec	50mm/sec	50mm/sec
m motion speed	400mm/sec	400mm/sec	400mm/sec
Repeatability	±0.02 mm or less	±0.02 mm or less	±0.02 mm or less
Z Axis Stroke	25mm	25mm	25mm
Spindle RPM	Standard 40,000rpm Option 5,000-60,000rpm (changeable)	5,000-60,000rpm (changeable)	5,000-60,000rpm (changeable)
XYZ Controls	AC Servo Motor (XY axes) Air Cylinder (Z axis)	AC Servo Motor (XY axes) Air Cylinder (Z axis)	AC Servo Motor (XY axes) Air Cylinder (Z axis)
Power Supply	3ph 220V AC 50/60Hz	3ph 220V AC 50/60Hz	3ph 220V AC 50/60Hz
er Consumption	Approx 3.0kVA inc. dust collector	Approx 3.0kVA inc. dust collector	Approx 3.0kVA inc. dust collector
Air Pressure	.57MPa	.57MPa	.57MPa
Air Consumption	Approx. I0L/min	Approx. IOL/min	Approx. IOL/min
rogram capacity	max. 60 kinds	max. 60 kinds	max. 60 kinds
Dimensions	w720 x d640 x h510mm (manual) w720 x d640 x h533mm (auto)	w820 x d740 x h533mm	<i>w</i> 970 x <i>d</i> 740 x <i>h</i> 533mm
Weight	Approx. 72kg	Approx. 80kg	Approx. 100kg
	*with upgraded spindle motor		





### Features

 $\triangleright$  Spare and consumable parts stocked in CA

> Engineer support based in CA,GA, and MX

#### **Dedicated or Universal Fixtures**

- Dedicated fixtures for high-throughput production
- Simple, easy-to-set magnetic universal fixtures are available
- ▷ Rapid changeover meets production demands

#### Intuitive Windows-Based GUI





**QR** Code Identification

#### **Curvilinear Cutting Path**

▷ Automatic operation with safety features

- Easy push button control starts operation and safety door protects the operator during the routing process
- ▷ Advanced image processing software offers point-and-click operation for programing router paths
- ▷ Automatic alignment compensation by CCD Camera
- CCD Camera reads fiducial marks on a PCB and compensates for variance on relative position of cutting paths

#### Visibly Improved Results





Production Management Information

**Click or** 

Scan to

watch video

- Fiducial Marker Recognition
- Extended router bit life
- ▷ Automatic 5-stage depth adjustment extends bit life and reduces time and cost of replacement
- ▷ High-speed X Y Robot and Z-axis Servo motor reduces takt time and improves productivity







▷ Router Depanelling

### Efficient dust collection that also aids in securing PCBs to the fixture

▷ Our machine's local vacuum system provides powerful dust collection



#### ▷ Roller Blade Depanelling



Strain Level Comparison by Depaneling Methods			Strain Level Comparison by Distance from Cut					
Depaneling Method	Direction	Stress Level	Ref. Stress limit of Ceramic capacitor	Depaneling Method	Distance from cut	Stress Level	Ref. Stress limit of Ceramic capacitor	
Hand Breaking with V-groove	Parallel to cut	400µ€	800 to 1800µ€	Rolling blade with V-groove	3mm	1500µ€		
	Perpendicular to cut	1800µ€			4mm	500.00		
Rolling blade with V-groove	Parallel to cut	1700µ€		800 to 1800µ€	00 to		500μ0	800 to
	Perpendicular to cut	1600µ€						1800µ€
Router (1.0mm bit, 10mm/sec)	Parallel to cut	110µ€		Router (1.2mm bit, 15mm/sec)	3mm	60µ€		
	Perpendicular to cut	300µ€		101111/000/				

Sample PCB: CEM3, T=1.6mm

### Strain Gauge Comparison Between Routing and Cutting





• Sample PCB: Glass Epoxy, T=1.2mm



**SEIKA** 





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