

ALD Guide Machine

ALD导片机

设备功能 Device function

- 硅片从花篮形态与金属舟形态互转
- Silicon wafers transition from flower basket shape to quartz boat shape

兼容硅片尺寸 Compatible with silicon size

- 156*156±0.5mm ~ 188*188±0.5mm

兼容花篮 Compatible cassette

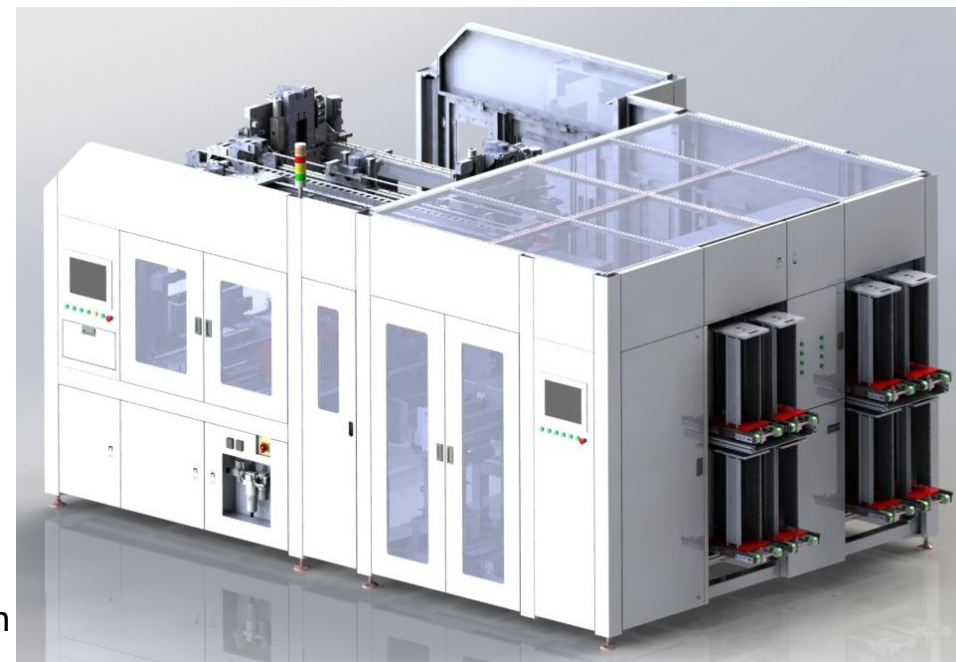
- 100槽花篮 花篮槽间距4.76mm/5.44mm
- 100-slot flower basket flower basket groove spacing 4.76mm/5.44mm

金属舟规格 Quartz boat specifications

- 400片石英舟, 间距2.38mm±0.05mm, 2.72mm±0.05mm水平放置;
- 400 quartz boats with a pitch of 2.38mm±0.05mm or 2.72mm±0.05mm

性能指标

- 上下料方式: 人工上下料花篮
- 吸盘: 100片吸盘, 材质氧化锆
- 产能: ≥16000 片/小时
- 破片率: ≤0.02%, (A类片, 统计由自动化造成的碎片)
- Up Time : ≥98.5%
- MTBF≥500 小时
- MTTR≤1 小时
- 预留MES接口, 支持数据上传功能



Performance

Loading and unloading method: manual loading and unloading flower basket
Suction cup: 100 suction cups, zirconia
Capacity: ≥16000 pieces / hour
Fragmentation rate: ≤0.02%, (A type of film, statistics caused by automation)
Up Time: ≥98.5%
MTBF≥500 hours
MTTR ≤ 1 hour
Reserved MES interface to support data upload function

名称Item	电源输入 Power input	功率 power	外形尺寸 Overall dimensions	气源 pressure	环境温度Environment
参数 Parameters	AC 380V±5% / 3L+N+PE 50Hz±5%	15kW	L5000mm x W2200mm x H2300mm	0.7Mpa±0.1Mpa 400L/min 进气管D16	温度 Temp17°C-34°C 湿度 Humidity<80%

AGV automatic docking

导片机AGV自动对接

设备功能 Device function

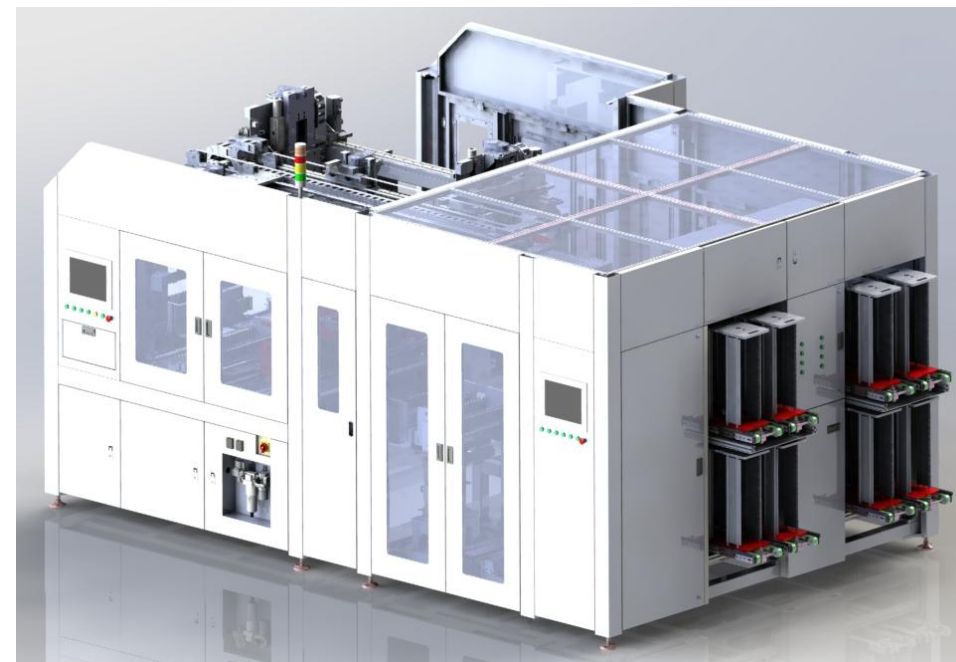
- AGV来料对接与ALD自动上下花篮
- AGV incoming docking and ALD automatic up and down basket
- **兼容花篮尺寸** Compatible with silicon size
- 206*206±0.5mm ~ 234*234±0.5mm

兼容花篮 Compatible cassette

- 100槽花篮 花篮槽间距4.76mm/5.44mm
- 100-slot flower basket flower basket groove spacing 4.76mm/5.44mm

性能指标

- 上下料方式：AGV自动对接；
- AGV对接通道：2个；
- 上料缓存花篮数量：5个x2道x2台=20个花篮；
- 下料缓存花篮数量：5个x2道x2台=20个花篮；
- 花篮上料方式：机械手抓取2个花篮；
- 花篮形态：1正1反180度放置；
- 破片率：≤0.02%，(A类片，统计由自动化造成的碎片)；
- Up Time : ≥98.5%；
- MTBF≥500 小时；
- MTTR≤1 小时；
- 预留MES接口，支持数据上传功能；



名称Item	电源输入 Power input	功率 power	外形尺寸 Overall dimensions	气源 pressure	环境温度Environment
参数 Parameters	AC 380V±5% / 3L+N+PE 50Hz±5%	15kW	L5000mm x W2200mm x H2300mm	0.7Mpa±0.1Mpa 400L/min 进气管D16	温度 Temp17°C-34°C 湿度 Humidity<80%

Diffuse upper and lower material pilot 扩散上下料导片机

设备功能 Device function

- 硅片从花篮形态与石英舟形态互转
- Silicon wafers transition from flower basket shape to quartz boat shape

兼容硅片尺寸 Compatible with silicon size

- 156*156±0.5mm ~ 188*188±0.5mm

兼容花篮 Compatible cassette

- 100槽花篮 花篮槽间距4.76mm
- 100-slot flower basket flower basket groove spacing 4.76mm

石英舟规格 Quartz boat specifications

- 1200片石英舟, 间距2.38mm±0.05mm, 槽倾斜角度3°
- 1200 quartz boats with a pitch of 2.38mm±0.05mm and a groove inclination angle of 3°

性能指标

- 上下料方式: 人工上下料花篮
- 吸盘: 50片吸盘, 材质氧化锆
- 产能: ≥6000 片/小时
- 破片率: ≤0.02%, (A类片, 统计由自动化造成的碎片)
- Up Time : ≥98.5%
- MTBF≥500 小时
- MTTR≤1 小时
- 预留MES接口, 支持数据上传功能



Performance

- Loading and unloading method: manual loading and unloading flower basket
- Suction cup: 50 suction cups, zirconia
- Capacity: ≥ 6000 pieces / hour
- Fragmentation rate: ≤0.02%, (A type of film, statistics caused by automation)
- Up Time: ≥98.5%
- MTBF≥500 hours
- MTTR ≤ 1 hour
- Reserved MES interface to support data upload function

名称Item	电源输入 Power input	功率 power	外形尺寸 Overall dimensions	气源 pressure	环境温度Environment
参数 Parameters	AC 380V±5% / 3L+N+PE 50Hz±5%	12kW	L5200mm x W2200mm x H2300mm	0.7Mpa±0.1Mpa 400L/min 进气管D16	温度 Temp17°C-34°C 湿度 Humidity<80%

Thermal oxygen automation 热氧自动化

兼容硅片尺寸 Compatible with silicon size
 • 156*156±0.5mm ~ 188*188±0.5mm

兼容花篮 Compatible cassette
 • 100片, 可暂存2个花篮
 • 100 pieces, can temporarily store 2 flower baskets

石英舟规格 Quartz boat specifications
 • 石英舟1600片, 菱形插舟方式
 1600 pieces of quartz boat, diamond shaped boat

性能指标

- 上下料方式: 人工上下料花篮
- 上料在线方式: 机械机构摆放石英舟
- 产能: ≥8000 片/小时
- 破片率: ≤0.02%
- 开机率: ≥99%
- 吸盘: 50片陶瓷吸盘
- 舟顶尺材质: 优质陶瓷
- 分片机构: 风刀吹片方式
- 插片方式: 舟动, 机械手不动



Performance

Loading and unloading method: manual loading and unloading flower basket
 Online feeding method: The mechanical mechanism places the quartz boat;
 Capacity: ≥ 6000 pieces / hour

- Fragmentation rate: ≤0.02%
- Operating rate: ≥99%
- Suction cup: 50 ceramic suction cups,
- Boat top rule material: high quality ceramics
- Fragmentation mechanism: air knife blowing method

Inserting method: the boat moves, the robot does not move

名称Item	电源输入 Power input	功率 power	外形尺寸 Overall dimensions	气源 pressure	环境温度Environment
参数 Parameters	AC 380V±5%/3L+N+PE	12kW	L5200mm*W2200mm*H230	0.7Mpa±0.1Mpa	温度 Temp17°C-34°C
	50Hz±5%/63A		0mm	400L/min 进气管D16	湿度 Humidity<80%

PECVD loading and unloading

PECVD 上下料

主要功能要求 Main functional requirements

变节距缓存节距与石墨舟间距相等。

The variable pitch buffer pitch is equal to the graphite boat pitch.

兼容硅片尺寸 Compatible with silicon size

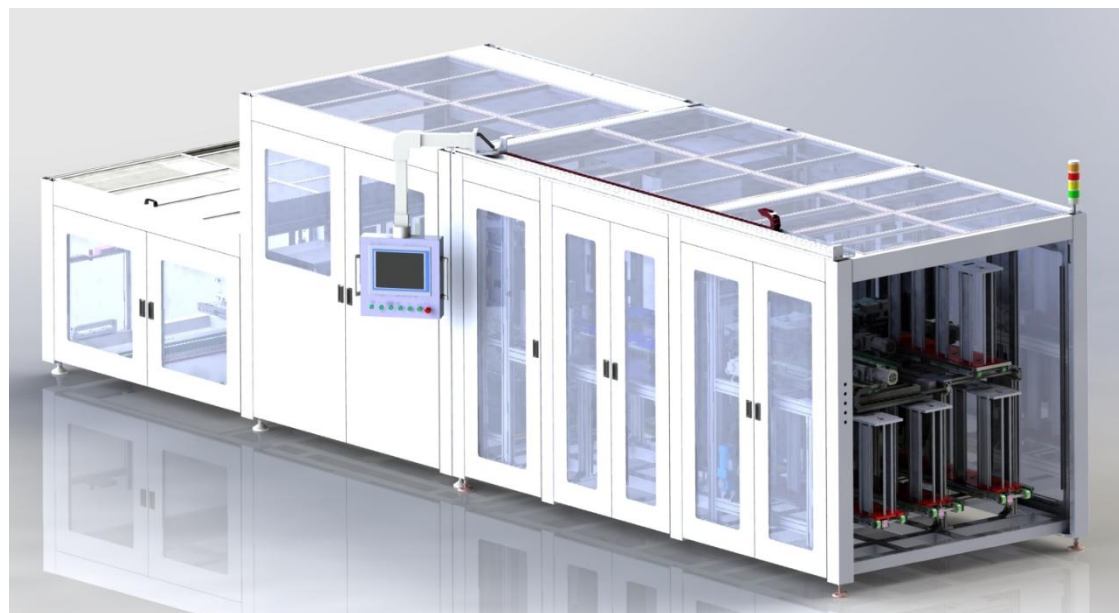
- 156*156±0.5mm ~ 188*188±0.5mm

兼容花篮 Compatible cassette

- 100片, 上料花篮轨道2道, 每道线体缓存5个花篮; 下料花篮2道, 缓存5个花篮
- 100 pieces, 2 rows of loading baskets, 5 flower baskets per line; 2 flower baskets, cache 5 flower baskets

性能指标

- 上下料方式: 上料完空花篮自动流到下料皮带线上。
- 吸盘: 26片吸盘, 材质氧化锆
- 产能: ≥8000 片/小时
- 破片率: ≤0.05%
- 石墨舟: 石墨舟通过载具从工艺设备出口进入插片机入口。
- 硅片下料线体具有膜厚检测, 在线色差检测预留工位。



Performance

Loading and unloading method: The empty flower basket automatically flows to the blanking belt line.

Capacity: ≥ 8000 pieces / hour

Fragmentation rate: ≤0.05%

Graphite boat: The graphite boat passes through the carrier from the exit of the process equipment into the inlet of the inserter.

The silicon wafer blanking body has a film thickness detection and a line color difference detection reserved station.

名称Item	电源输入 Power input	功率 power	外形尺寸 Overall dimensions	气源 pressure	环境温度Environment
参数 Parameters	AC 380V±5%/3L+N+PE 50Hz±5%/80A	20kW	5400mm*8290mm*2350mm	0.7Mpa±0.1Mpa 500L/min 进气管 D16	温度17°C-34°C 湿度<80%

Offline rewinding machine 离线倒片机（花篮导叠片盒）

兼容硅片尺寸 Compatible with silicon size
 • 156*156±0.5mm至188*188±0.5mm

功能要求 Functional requirements
 硅片传输采用步进模式
 Wafer transfer in step mode

兼容花篮 Compatible cassette
 • 花篮有正反检测功能，可满足100片及150片花篮作业。
 • The flower basket has positive and negative detection functions to meet 100 and 150 baskets.

性能指标
 • 上下料方式：人工上下料花篮
 • 产能：≥8000片/小时
 • 破片率：≤0.02%
 • 开机率：≥98%
 • 吸盘方式：伯努利吸盘
 • 支持MES（通讯方式SeCS/OPC）
 • 预留维护空间



Performance

Loading and unloading method: manual loading and unloading flower basket
 Capacity: ≥8000pieces / hour
 Fragmentation rate: ≤0.02%
 Operating rate: ≥98%
 Suction cup method: Bernoulli suction cup
 Support MES (communication method SeCS/OPC)
 Reserve maintenance space

名称Item	电源输入 Power input	功率 power	外形尺寸 Overall dimensions	气源 pressure	环境温度Environment
参数 Parameters	AC 380V±5%/3L+N+PE 50Hz±5%/63A	5kW	L2600*W2000*H2100mm	0.7Mpa±0.1Mpa33 00L/min进气管D16	温度 Temp0 ~ 40°C

Cleaning and texturing automation

清洗制绒自动化

兼容硅片尺寸 Compatible with silicon size

- 156*156±0.5mm ~ 188*188±0.5mm

花篮 cassette

- 100片, 可暂存8个花篮, 上花篮有花篮防反检测功能
- 100 pieces, can temporarily store 8 flower baskets, and the basket has anti-reverse detection function

堆叠料盒 Stacking box

自动化切换, 400片, 堆叠分片风刀双侧开

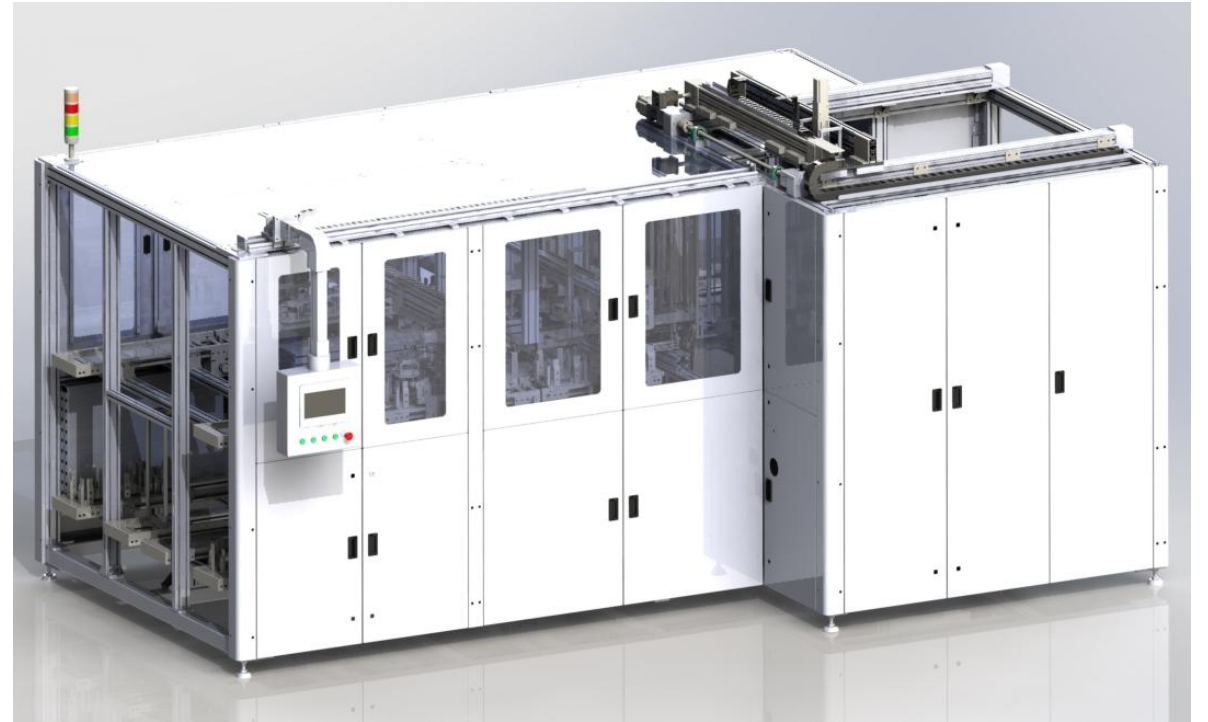
Automatic switching, 400 pieces, stacked sliced air knife open on both sides

料盒控制 Cartridge control

- 上料机料盒升降需要单独控制
- Feeder box lifting needs to be controlled separately

性能指标

- 上料在线方式: 机械机构摆放花篮
- 产能: ≥8500 片/小时
- 破片率: ≤0.02% (A类片)
- 开机率: ≥99%
- 升降机构: 升降机构有硅片插不齐检测及整片功能
- 传输方式: 需要步进传输



Performance

Online feeding method: mechanical mechanism placed flower basket

Capacity: ≥ 8500 pieces / hour

Fragmentation rate: ≤0.02%,(A type of film)

Operating rate: ≥99%

Lifting mechanism: lifting mechanism has silicon chip insertion detection and whole film function

Transmission method: step transmission is required

名称Item	电源输入 Power input	功率 power	外形尺寸 Overall dimensions	气源 pressure	环境温度Environment
参数 Parameters	AC 380V±5%/3L+N+PE 50Hz±5%/80A	20kW	2900mm*2750mm*1920mm	0.7Mpa±0.1Mpa 400L/min进气管D16	温度 Temp17°C-34°C 湿度 Humidity<80%

Etching and loading

刻蚀上下料

兼容硅片尺寸 Compatible with silicon size

- 156*156±0.5mm ~ 188*188±0.5mm

兼容花篮 Compatible cassette

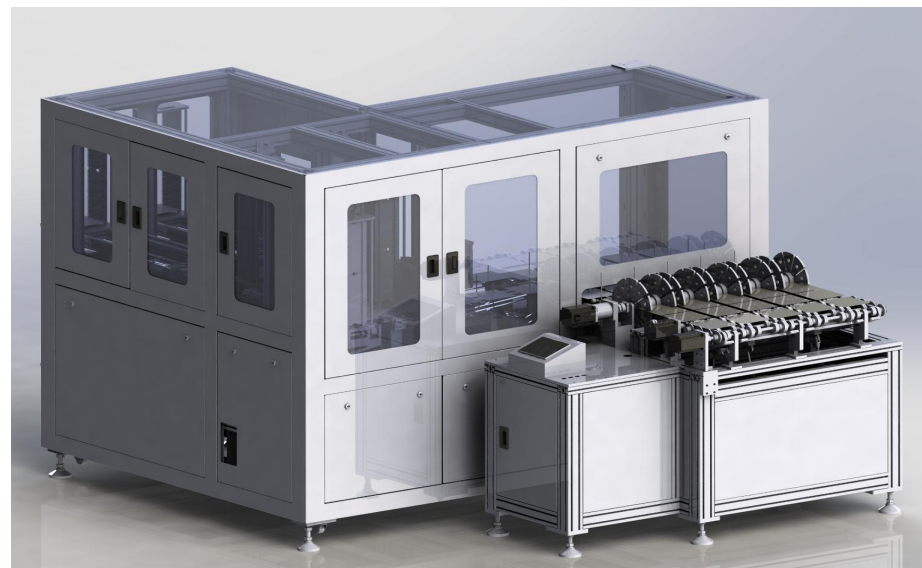
- 100片, 可暂存5个花篮
- 100 pieces, can temporarily store 5 flower baskets

匹配AGV

- 花篮上料、花篮下料匹配AGV小车, 下层线体高度450mm, 上层线体高度1160mm
- The flower basket loading and flower basket blanking match the AGV trolley, and the lower layer body height is 450mm. Upper line body height 1160mm

性能指标

- 上下料在线方式: 人工摆放花篮
- 产能: ≥5000 片/小时
- 破片率: ≤0.02%
- 开机率: ≥99%
- buffer: 上下料都要有缓存, 上料缓存数量30片, 下料100片
- 传输方式: 上料采用步进传送方式; 有花篮阻挡, 到位检测
- 翻片: 下料需带翻片功能, 翻片前滚轮预留两个硅片以上的距离
- 距离操作SOP: 需要有设备操作指导书及维修SOP



Performance

Online loading and unloading: artificial placement of flower baskets

- Capacity: ≥ 5000 pieces / hour
- Fragmentation rate: ≤0.02%
- Operating rate: ≥99%
- Buffer: There must be a cache for loading and unloading. The number of loading buffers is 50, and 100 pieces are blanked.
- Transmission method: Feeding adopts the transmission mode; there is flower basket blocking, in-position detection
- Flip: The material needs to be turned with the turning function. Before the turning, the roller reserves the distance of two wafers.
- Distance Operation SOP: Equipment Operation Guide and Maintenance SOP are required

名称Item	电源输入 Power input	功率 power	外形尺寸 Overall dimensions	气源 pressure	环境温度Environment
参数 Parameters	AC 380V±5%/3L+N+PE 50Hz±5%/30A	7kW	2760mm*2200mm*1990mm	0.7Mpa±0.1Mpa 200L/min进气管D12	温度 Temp17°C-34°C 湿度 Humidity<80%

Etching and loading 刻蚀上下料（3+2）

主要功能要求

Main functional requirements

叠片盒出料后有buffer，可以保证切换堆叠盒时出片正常
There is a buffer after the lamination box is discharged, which can ensure that the film is released when the stacking box is switched.

兼容硅片尺寸

Compatible with silicon size

- 158.75*158.75±0.5mm ~ 188*188±0.5mm

兼容花篮

Compatible cassette

- 100片和120片，2道下料花篮通道，可暂存5个花篮
- 100 pieces and 120 pieces, 2 lanes of flower basket passage, can temporarily store 5 flower baskets

性能指标

- 上料方式：叠片盒上料方式
- 下料方式：带翻片功能，花篮收片
- 产能：≥4500 片/小时
- 破片率：≤0.02%
- 开机率：≥98%
- 卡片次数：每班卡片及赌片次数≤3
- 传输方式：上料采用步进传送方式；有花篮阻挡，到位检测



Performance

Feeding method: lamination box feeding method

Cutting method: with flap function, flower basket

Capacity: ≥ 5000 pieces / hour

- Fragmentation rate: ≤0.02%
- Operating rate: ≥98%
- Number of cards: number of cards per game and gambling number ≤3
- Transmission method: Feeding adopts the transmission mode; there is flower basket blocking, in-position detection

名称Item	电源输入 Power input	功率 power	外形尺寸 Overall dimensions	气源 pressure	环境温度Environment
参数 Parameters	AC 380V±5%/3L+N+PE	7kW	上料:	0.7Mpa±0.1Mpa	温度 Temp 0°C-40°C
	50Hz±5%/30A		3010mm*806mm*1802mm	200L/min 进气管	
			下料:	D12	
			2903mm*2066mm*2107mm		

Wafer laser half Scribing machine 电池片激光半片划片机

设备功能 Device function

- 对太阳能电池片进行激光划片
- Laser scribing of solar cells

兼容硅片尺寸 Compatible with silicon size

- $156*156\pm 0.5\text{mm} \sim 188*188\pm 0.5\text{mm}$

激光品牌: 英国SPI光纤激光器

Laser brand: SPI fiber laser in UK

性能指标

- 产能: 7000片/小时
- 切割深度: $\pm 10\%$
- 切割精度: $\leq 0.1\text{mm}$
- 进料整片料盒: 5个
- 出片半片料盒: ≥ 4 个
- 破片率: $\leq 0.05\%$, (A类片, 统计由自动化造成的碎片)
- Up Time : $\geq 98.5\%$
- MTBF ≥ 500 小时
- MTTR ≤ 1 小时
- 预留MES接口, 支持数据上传功能



名称Item	电源输入 Power input	功率 power	外形尺寸 Overall dimensions	气源 pressure	环境温度Environment
参数 Parameters	AC 380V $\pm 5\%$ / 3L+N+PE 50Hz $\pm 5\%$	12kW	L2800mm x W1700mm x H2000mm	0.7Mpa ± 0.1 Mpa 400L/min 进气管D16	温度 Temp17 $^{\circ}$ C-34 $^{\circ}$ C 湿度 Humidity<80%