



A full range of Mask Aligners from 4 inch up to 12 inch

Mask Aligners



Mask Aligner systems

South Korea based Midas manufactures precision lithography equipment for MEMS, and semiconductor markets. The company is 20 years in business and offers field-proven Mask Aligners, including aligners with UV-LED light source. Aligner capability is from small to FPD, including full robotic & auto-align. A full featured laboratory for spin coating, developing and inspection of customer samples, supports you in your training and initial testing with a range of resists and developers. Did you know Midas mask aligners are well known for favorable pricing and superior customer support? SPS-Europe trained field-service engineer guarantees their local support in Europe.

Does your research organization want to work with state of the art technology mask aligners? The MIDAS MDA-series bench top mask aligner requires minimal cleanroom space and are capable of 1 micron resolution or better and alignment

precision. Auto levelling of mask and sample is a standard feature. The MDA aligners feature a dependable UV light source (optional: UV-LED), for collimated UV light in NUV or DUV.

- Easy operation & Installation
- PC Operation with PLC control
- Image grab & Data log
- More than 100 Program recipes

Easily develop your process on either small substrates, pieces or wafers up to 8". The Midas mask aligner is widely used for MEMS and optoelectronics applications, such as LED production. Special configurations for nonstandard substrates such as hybrids and high-frequency components for fragile III-V materials.

Are you handling Taiko wafers? Midas makes a special aligner for handling Taiko wafers.

Field-proven mask aligners – Asia and Europe installed base: ask us for references

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| | MDA-400LJ | MDA-400M | MDA-400M-6 | MDA-600S |
|-------------------------------|--|--|--|---|
| Type | Fully manual | Fully manual | PC / PLC control Manual | PC control semi auto |
| Mask size | Up to 5" x 5" | Up to 5" x 5" | Up to 7" x 7" | Up to 7" x 7" |
| Substrate size | Piece to 4" Ø | Piece to 4" Ø | Piece to 6" Ø | Piece to 6" Ø |
| UV lamp & Power | UV-LED & power supply | 350W & power supply | 350W & power supply | 350W & power supply |
| Uniform beam size | 125 mm Ø | 4.25" x 4.25" | 6.25" x 6.25" | 6.25" x 6.25" |
| Beam Uniformity | < ± 3% | < ± 3% | < ± 3% | < ± 5% |
| Beam wavelength | 365 nm only | 350 ~ 450 nm | 350 ~ 450 nm | 350 ~ 450 nm |
| 365nm Intensity | ~20mW/cm ² | ~30mW/cm ² | ~25mW/cm ² | ~25mW/cm ² |
| Alignment accuracy | 1 µm | 1 µm | 1 µm | 1 µm |
| Process resolution | 1 µm @ 1 µm PR thickness with vacuum contact | 1 µm @ 1 µm PR thickness with vacuum contact | 1 µm @ 1 µm PR thickness with vacuum contact | 1 µm @ 1 µm PR thickness with vacuum contact |
| Process mode | Soft, hard, vacuum contact & proximity | Soft, hard, vacuum contact & proximity | Soft, hard, vacuum contact & proximity | Soft, hard, vacuum contact & proximity |
| Substrate chuck moving | X,Y,Z & θ | X,Y,Z & θ | X,Y,Z & θ | X,Y,Z & θ |
| Options | etc. | Anti-Vibration table UV Intensity meter etc. | Anti-Vibration table IR BSA UV Intensity meter etc. | Anti-Vibration table CCD BSA UV Intensity meter UV-LED (365 nm) exposure module etc. |

| | MDA-80MS | MDA-12SA | MDA-60FA | MDA-12FA |
|-------------------------------|--|--|--|--|
| Type | PC control Semi auto | PC control Semi auto | Fully automatic | Fully automatic |
| Mask size | Up to 9" x 9" | Up to 14" x 14" | Up to 7" x 7" | Up to 14" x 14" |
| Substrate size | Piece to 8" x 8" | Piece to 8" x 8" | 4" ~ 6" | 8" ~ 12" |
| UV lamp & Power | 1 kW & power supply | 2KW/5 kW & power supply | 350W/500W & power supply | 2KW/5 kW & power supply |
| Uniform beam size | 9.25" x 9.25" | 14.25" x 14.25" | 6.25" x 6.25" | 14.25" x 14.25" |
| Beam Uniformity | 3,5% | 5% | 3% | 5% |
| Beam wavelength | 350 ~ 450nm | 350 ~ 450nm | 350 ~ 450nm | 350 ~ 450nm |
| 365nm Intensity | 20 ~ 30mW/cm ² | 20 ~ 70 mW/cm ² | 20 ~ 30 mW/cm ² | 20 ~ 70 mW/cm ² |
| Alignment accuracy | 1 µm | 1 µm | 0.5 µm | 0.5 µm |
| Process resolution | 1 µm @ 1 µm PR thickness with vacuum contact | 1 µm @ 1 µm PR thickness with vacuum contact | 1 µm @ 1 µm PR thickness with vacuum contact | 1 µm @ 1 µm PR thickness with vacuum contact |
| Process mode | Soft, hard, vacuum contact & proximity | Soft, hard, vacuum contact & proximity | Soft, hard, vacuum contact & proximity | Soft, hard, vacuum contact & proximity |
| Substrate chuck moving | X,Y(manual), Z, θ (motorized) | X,Y,Z & θ (motorized) | X,Y,Z & θ (motorized) | X,Y,Z & θ (motorized) |
| Options | CCD BSA UV Intensity meter etc. | CCD BSA UV Intensity meter etc. | CCD BSA UV Intensity meter etc. | CCD BSA UV Intensity meter etc. |
| Frame | Anti-Vibration system | Anti-Vibration system | Anti-Vibration system | Anti-Vibration system |
| Pre-aligner | | | ±50 µm | ±50 µm |

4" UV LED Mask Aligner



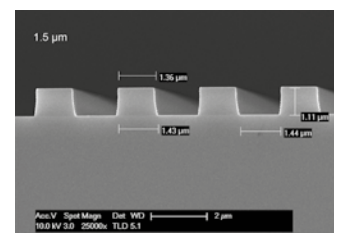
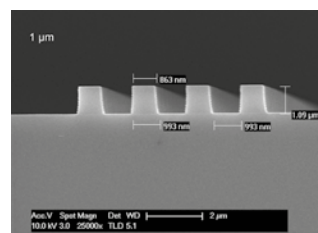
The MDA-400LJ is a mask aligner specially designed for university and research institutes. The system is equipped with a maintenance-free 365 nm LED light source (50,000 hours lifetime) and therefore ideal for resist processing.

Mask aligner with UV light mask light sources use significantly less energy compared to conventional mercury vapor lamps. The lights of the Midas mask aligner do not need to warm-up and cool-down. No need for the cooling fan, filters or shutter. The LED light source is only switched on during the actual exposure process. LED mask have a much longer life-time. In terms of health, safety and environmental protection, the LED technology provides a significant improvement in the mask alignment.

Options:

- Anti-Vibration table
- UV Intensity Meter
- UV-LED (365 nm) Exposure Module

| Item | Specifications |
|-----------------------|---|
| Substrate size | Up to 4" also available for 6" |
| Light source | UV LED |
| Resolution | 1 μm with 1 μm thin PR @ Si Wafer |
| Alignment accuracy | $\pm 1 \mu\text{m}$ |
| I-line beam intensity | About 10mW/cm ² |
| Process mode | Soft, Hard, Vacuum contact & Proximity |



SEM 1 μm high pattern, generated with DPR-i5500 Photo resist, processed MDA400LJ with the UV LED lightsource.

Long LED lamp life time of >50,000h,
it can be used at least 5 ~ 10 years.



4" Manual Mask Aligner



Our manual control MDA-400M series standard feature UV Light source 350 nm to 450 nm, 365 nm Intensity: 20-30 mW/cm² and a beam size of 6.25" x 6.25" (3% beam uniformity for 4" wafers) and automatic exposure system. The unit comes with a Dual CCD zoom microscope with 19" LCD monitor: magnification; 5X-20X digital CCD.

Contact modes include Soft, Vacuum Hard and Proximity. The Vacuum and Hard Contact are adjustable with an alignment accuracy of <1.0 micron.

Resolutions:

- Vacuum Contact : 0.8 μm (Thin PR@Si Wafer)
- Hard Contact : 1.5 μm
- Soft contact : 2 μm
- With 20 μm Proximity : 5 μm

Options:

- Anti-Vibration table
- UV Intensity Meter
- UV-LED (365nm) Exposure Module

Options MDA-400M-6

- IR BSA Backside Alignment Option
Uses infrared - wavelength 900~1000 nm

| Item | Specifications |
|----------------------|--|
| Substrate size | Up to 4" also available for 6" |
| Light source | 350W |
| Resolution | 1 μm with 1 μm thin PR@Si Wafer |
| Alignment accuracy | ± 1 μm |
| 365nm beam intensity | > max. 30mW/cm ² |
| Process mode | Soft, Hard, Vacuum contact & Proximity |

We support training and initial testing with a range of resists and developers, and sample wafers.

6" Semi-Automatic Mask Aligner



For users of both thick high aspect ratio photoresists and thin high resolution photoresists: The MDA-600S can process from 0.8 μm and high aspect ratio PR to approximately 170 μm thickness without additional optics. That should suit users varying needs, without any system changes.

The Model MDA-600S is a semi-automatic bench top mask aligner that requires only a square meter of your cleanroom space. (1256 x 1151 x 1600 mm (W*D*H)). It offers an economic alternative for R&D, or small-scale pilot production. Semi-automatic mask aligner system for 6" features auto exposure, leveling and Z-axis stage motion. The loading, unloading and aligning of your wafer is done manually.

The alignment module incorporates micrometers for X, Y, and Z-axis. Alignment accuracy $\pm 0.5 \mu\text{m}$. This mask Aligner is a flexible, economic solution for any entry-level mask alignment and UV exposure application.

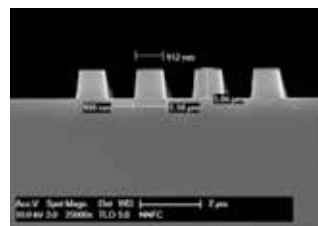
Options:

- Back-side Alignment Module (CCD camera)
- Nanoimprint Kit

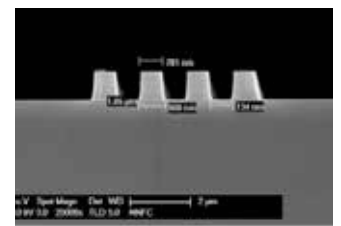
Options:

- Vacuum Contact : 1 μm
- Hard Contact : 2 μm
- Soft contact : 3 μm

| Item | Specifications |
|----------------------|---|
| Substrate size | Up to 6" also available for 8" |
| Light source | 350W |
| Resolution | 0.8 μm with 1 μm thin PR @ Si Wafer |
| Alignment accuracy | < 1 μm |
| 365nm beam intensity | > max. 30mW/cm ² |
| Process mode | Soft, hard, vacuum contact & proximity |



1 um pattern



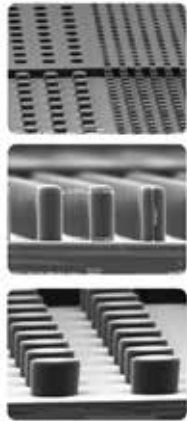
0.8 um pattern

SEM 1 & SEM 2 reference (MDA-600S). For reference the depth of field is 0.24 ~ 0.02 mm.

Optional CCD Optical BSA uses
CCD camera only



Semi Automatic Mask Aligners



The MDA-80MS is a higher alignment accuracy and more flexible process of all applications. This is good piece to 8 inch process for research and reliable. This stabilized system will give you a reduction of experimental hours of all time

- Easy operation & Installation
- PC Operation with PLC control
- Image grab & Data log
- More than 100 Program recipes

The MDA-12SA represents the next generation of Full-Field lithography systems. This model offers a semi-automatic mask aligner platform with a higher overlay accuracy and more reliable operation the conventional systems. It is great for Ceramic, Probe Card and WLP applications. The MDA-12FA has a higher production and user friendly controls.

- PC Operation with PLC control
- Image grab & Data log
- Motorized joystick control
- Microscope position control system
- Enable Ceramic substrate for Bump

| Item | Specifications |
|------------------------|--|
| Type | PC control semi auto |
| Mask size | Up to 9" x 9" |
| Substrate size | Piece to 8" x 8" |
| UV lamp & power | 1kW & power supply |
| Uniform beam size | 9.25" x 9.25" |
| Beam uniformity | 3,5% |
| Beam wavelength | 350 ~ 450 nm |
| 365nm intensity | 20 ~ 30mW/cm ² |
| Alignment accuracy | 1 μm |
| Process resolution | 1 μm @ 1 μm PR thickness with vacuum contact |
| Process mode | Soft, Hard, Vacuum contact & Proximity |
| Substrate chuck moving | X,Y (Manual), Z, θ (motorized) |
| Frame | Anti vibration table |
| Options | CCD BSA, UV Intensity meter, etc. |

| Item | Specifications |
|------------------------|--|
| Type | PC control Semi auto |
| Mask size | Up to 14" x 14" |
| Substrate size | Piece to 8" x 8" |
| UV lamp & power | 2KW/5 kW & power supply |
| Uniform beam size | 14.25" x 14.25" |
| Beam uniformity | 5% |
| Beam wavelength | 350 ~ 450 nm |
| 365nm intensity | 20 ~ 70mW/cm ² |
| Alignment accuracy | 1 μm |
| Process resolution | 1 μm @ 1 μm PR thickness with vacuum contact |
| Process mode | Soft, Hard, Vacuum contact & Proximity |
| Substrate chuck moving | X,Y,Z & θ (motorized) |
| Frame | Anti-bibration system |
| Options | CCD BSA, UV Intensity meter, etc. |

Fully Automatic Mask Aligners



The MDA-60FA is a brand new model and represents next generation of Full-Field lithography systems. The brand new Full Auto Aligner platform offers a higher Overlay Accuracy and more reliable operation. It is great for LED. This Machine has a higher productivity and includes user friendly controls.

- PC Operation with PLC control
- Image grab & Data log
- Microscope position control system
- Auto Align mark searching function

| Item | Specifications |
|------------------------|--|
| Type | Full automatic |
| Mask size | Up to 7" x 7" |
| Substrate size | 4" ~ 6" |
| UV lamp & power | 350W/500W& power supply |
| Uniform beam size | 6.25" x 6.25" |
| Beam uniformity | 3% |
| Beam wavelength | 350 ~ 450 nm |
| 365nm intensity | 20~30mW/cm ² |
| Alignment accuracy | 0.5 μm |
| Process resolution | 1 μm @ 1 μm PR thickness with vacuum contact |
| Process mode | Soft, hard, vacuum contact & proximity |
| Substrate chuck moving | X,Y,Z, & θ (motorized) |
| Frame | Anti-vibration system |
| Options | CCD BSA UV Intensity meter etc. |



The MDA-12FA represents the next generation of Full-Field lithography systems. This model offers a full automatic mask aligner platform with a higher overlay accuracy and more reliable operation the conventional systems. The MDA-12SA has a higher production and user friendly controls.

- PC Operation with PLC control
- Image grab & Data log
- Microscope position control system
- Auto Align mark searching function

| Item | Specifications |
|------------------------|--|
| Type | Full automatic |
| Mask size | Up to 14" x 14" |
| Substrate size | 8" ~ 12" |
| UV lamp & power | 2KW/5 kW & power supply |
| Uniform beam size | 14.25" x 14.25" |
| Beam uniformity | 5% |
| Beam wavelength | 350 ~ 450 nm |
| 365nm intensity | 25~70mW/cm ² |
| Alignment accuracy | 0.5 μm |
| Process resolution | 1 μm @ 1 μm PR thickness with vacuum contact |
| Process mode | Soft, hard, vacuum contact & proximity |
| Substrate chuck moving | X,Y,Z, & θ (motorized) |
| Frame | Anti-vibration system |
| Options | CCD BSA UV Intensity meter etc. |



Ionizing Air Pencil

Model 3080 pencil type ionizer

Quickly and easily, remove dust that adheres to surfaces such as silicon wafers and masks. An Ø1.5 mm air outlet and concentrated fast airflow are most suitable to effectively remove microscopic dust particles. The internal safety circuit cuts off HV power when it detects an abnormality in the HV circuit. A low voltage cable (modular) for easy and simplified operation connects pen and controller.

The pencil-type air ionizer can help remove static electricity on a material or object. The device is an ideal tool to clean parts and assemblies, not only in the Semiconductor market but also in the Medical and Electronic Industries.



| Model 3080-pencil type ionizer | |
|--------------------------------|--|
| Input voltage | DC24V (using an AC adaptor: AC90V-AC264V 50/60Hz) |
| Input current | 0.5A max |
| Gas pressure | 0.3 MPa max (pressure speed control is adjustable) |
| Purge gas | Air or nitrogen |
| Emitter material | Polysilicon |
| Ambient temperature | 10 °C-40 °C |
| Ambient humidity | 35 % RH-65 % (non-condensing) |
| Weight of pen | 130 g |
| Weight of controller | 750 g |



ESD-safe particle remove

Wafer Mask Storage Boxes

We offer three types of clean compacts: basic clean, standard clean and advanced clean.

Overall Cleanliness:

- All edges are deburred by hand eliminating flash particles that can break off during handling and shipment
- All boxes are cleaned and packaged in an ultra clean environment
- Double bagged in ultra clean packaging
- No end-user cleaning required



| UMH specifications | | | | |
|--------------------|---|--------------------------------------|--------------------------------------|-----------------|
| | UMH-01AS | UMH-02AS | UMH-03AS | UMH-UT-AS |
| Material | Anti-static Acrylic (Also available in polycarbonate) | | | |
| Length | 7.90" 200 mm | 9.20" 232 mm | 7.90" 200 mm | 5.00" 127 mm |
| Width | 7.25" 184 mm | 8.40" 213 mm | 7.25" 184 mm | 6.20" 157 mm |
| Height | 1.14" 28.8 mm | 1.60" 40 mm | 1.60" 40 mm | 0.60" 15 mm |
| | Holds the following reticle or photomask sizes: | | | |
| | 5" x 5" x .090" (single pellicle) 6" x 6" x .250" | 6" x 6" x .250" 7.25" x .150" | 5" x 5" x .090" (double pellicle) | 3" x 5" x .090" |

Gasket Seal:

- Clean continuous silicone rubber seal
- Prevents external particles from reaching sensitive reticles

Side Latches:

- Along with the gasket, the side slide latches guarantee a positive seal
- Eliminates the need for tape sealing box during shipment

Transparent:

- Reticle can be identified and inspected through the box

Acrylic:

- 92% Acrylic material provides extra strength for reticle protection

Stainless Steel Pins:

- Hinge pins will never corrode or break

Permanent Anti-Static:

- Not a topical coating
- Will not slough

- Does not cause haze on box, reticle or pellicle
- Surface Resistivity 1010 Ω2/sq
- Static decay rate <2.0 seconds

Strong Support Struts:

- 16 molded in supports provide a snug fit for reticle
- 15 degree slope at point of reticle contact to reduce contamination sources
- Will not mar chrome surface

Positive Latch:

- Helps operators insure reticles are safe from accidental box openings

Ergonomics:

- Easy reticle access, accommodates your favorite mask pick tool

Stacking Feet:

- Pins and cups are well defined in lid and bottom



Wafer & Mask Picks

Our line of photolithography mask & reticle picks and handling wafer picks equipment are the result of years of work with semiconductor companies and mask shops to provide a non-contaminating secure means of handling photo masks. With the stringent cleanliness requirements for submicron applications today, SPS-Europe mask handling tools have become indispensable.

Features

- Tangential edge-grip only: no front or back face contact.
- Compatible with most square reticles with pellicle and round masks with flats.
- Minimal moving parts for simple cleaning and low particle generation.
- Lightweight, economical and easy-to-use trigger-type gripping mechanism.
- V-type grippers allow masks with beveled edges to be loaded from flat surfaces.
- Various gripper widths and V-groove depths allow customizing for each application.

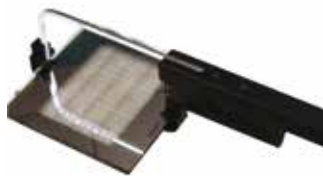
MPS1 style

General usage mask handling tool.



MPV1 style

For handling masks between mask cassettes.



MPC MPH style

Horizontal offset version of MPH.



MPH90 style

90 degree handle version of MPH.

MPH style

General usage mask handling tool.



MPH

"corner-corner" Special application mask handling corner grip tool.



MCP

Mechanical edge grip handling.

Spin Processor & Coaters

POLOS SPIN150i and SPIN200i

The versatile, high-quality natural polypropylene POLOS SPIN150i and SPIN200i single substrate SPIN processors are specifically designed for R&D and low volume production. Suitable for all typical SPIN processes: cleaning, rinse/dry, coating, developing and etching. Systems are also available in all-PTFE construction for specialist applications.

These well-proven models are ideal for processing a wide range of substrates from small fragments with a diameter of 5 mm up to 160 mm / 260 mm or square samples with dimensions 100 x 100 mm or 150 x 150 mm. Systems capable of up to 450 mm diameter are available.



System benefits:

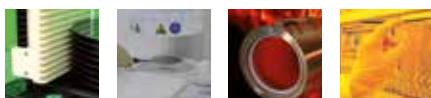
- High-speed acceleration up to 0 - 12.000 rpm in 0.3 sec.*
- A detachable touch screen control panel for use outside a glove box. (uses CAT5 cable)
- Programmable CW & CCW rotation enables specialist processes such as 'puddle' develop and/or etch.
- Engineering plastics, high quality seamless fabrication.
- Lid and Bowl liner sets in anti- static PET.

* Depending on substrate size and chuck type

The units are operated via an easy to use, detachable colour touch-screen that offers intuitive programming and recipe storage. A variety of nozzles, megasonic cleaning and dispense lines can be added as options.



Systems also available for: Up to 450 mm wafers



POLOS Precision Bake Plate

The modular setup of this new table top hotplate enables easy plate (chuck) exchange and upgradeable options, making this a versatile and affordable tool for R&D and pilot lines. The POLOS hotplate is available for processing single substrate. A precision digital temperature controller enables adjustable temperature steps of 1°C up to 230°C. It is suitable for soft bake as well as hard bake processes, and curing of photo resist or epoxy or any other work requiring precise temperature control.

Standard models for substrate sizes 150 and 200 mm.



Features

- Diagnostic serial interface (RS232)
- Precision temperature controlling system.
Uniform temp.: +/- 0,5 °C
- Digital temperature controller: adjustable in steps of 1 °C
- Countdown timer (1-999 sec.) with acoustic alert

Options

- Hinged lid
- Proximity pins
- Lifting pins
- Vacuum bake

Operational environments

The system is designed for an ambient temperature of 10 °C - 40 °C.

| Measurement & weight | HL150S | HL200S |
|----------------------------|--------------------|--------|
| Weight | 12 kg | 12 kg |
| Dimensions device | 450 x 320 x 135 mm | |
| Dimensions with Hinged Lid | 450 x 320 x 200 mm | |



Almost 30 years of quality service and products

For almost 30 years SPS-Europe has offered quality products and services as a one-stop shopping point for front-end semiconductor manufacturers and related industries. We supply a range of industry leading products used worldwide for Wafer Handling, Wet Processing, Photolithography, OEM Replacement parts and the Solar industry. Dedication towards our customers and flexibility

in finding the right solution, combined with solid application knowledge and fast supply logistics, are the keywords of our service. SPS-Europe B.V. is a full-service distributor offering full-time service engineer support for the systems we supply. We manufacture our own SPIN150™ and POLOS™ spin coating systems - widely installed across the world.

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