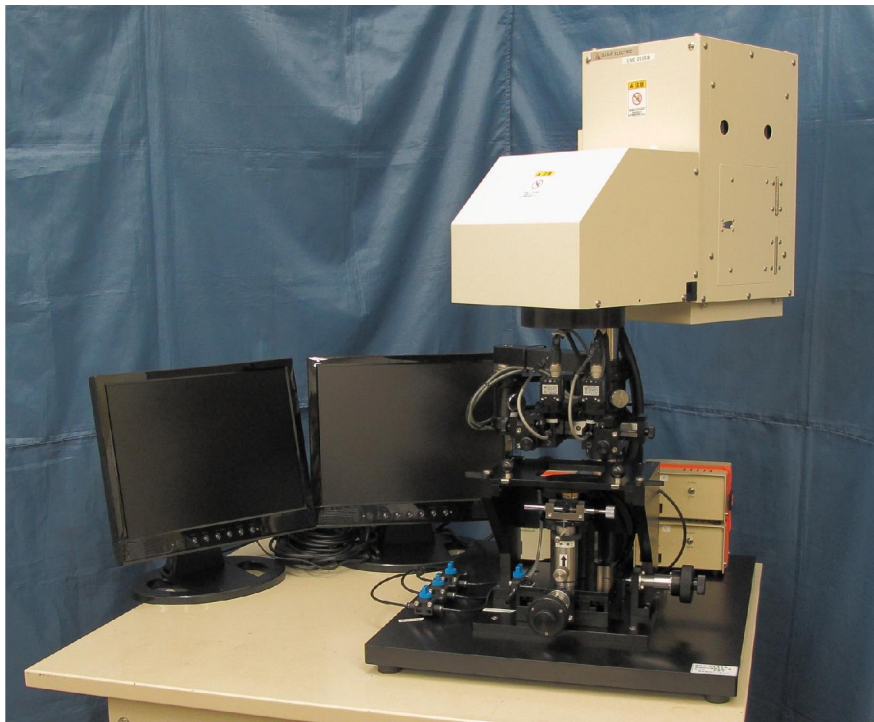


MASK ALIGNER LA410o

# Mask Aligner **LA410o**

## Specifications



(参考写真)

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*Semiconductor Peripheral Instruments*  
株式会社ナノテック  
*Nanometric Technology Inc.*

## 1. Production overview

High-precision Mask Aligner with the maximum exposure area of 4inch  $\phi$ (phi). Illuminance distribution of +/- 5% can be achieved with the lamp house using a high precision integrator lens. As an option, various sizes of masks specimens can be accommodated by changing adapters. Customization of the primary components such lamp house, microscope and alignment stage is possible.

### <Features>

- High-efficiency lamp house using an integrator lens.
- Ark monitor enabling beam axis adjustments without opening the shutter.
- Design rules of 1 to 3 $\mu$ m (depending on your environmental conditions)
- Accommodating max 4 inch  $\phi$ (phi) wafer.
- CCD camera and binocular microscope for monitor observation.
- High-precision alignment stage.

### <Options>

- Integrated light meter to automatically control exposure time following the changes in illumination.
- Filter to use a specific wavelength.
- Gap measuring sensor and display to set gap accurately.
- Compact size vacuum pump for specimens and masks.

## 2. Specification

(2) Exposure method : Contact (Proximity method is possible as installing Z-axis mechanism optionally)

The vacuum contact can be available by optionally installing the special holder with air pipes.

(3) UV Exposure light source

Optical method : Integrator lens method 250W manufactured by Sanei Electric corp.

(a) Light source unit : UVE-251S

(b) Exposure unit : EL-100

(c) Power source unit : UVC-251S

Effective exposure area : 100mm  $\phi$ (phi)

Exposure uniformity : within +/- 5%

Dominant wavelength : 365, 405 & 436nm

Wavelength selecting filter : possible to install a  $\square$ 50mm filter in the lamp house.

UV light intensity : approx. 20mW/cm<sup>2</sup> or more (at 365nm) measured by USHIO  
UIT-101 UV intensity meter

Parallelism : within 5 degree (in the effective exposure area)

UV Lamp : Super-high pressure mercury lamp L2501L 250W

Exposure ON / OFF : by a rotary solenoid

Adjustments of beam axis : in X, Y and Z axes with the Ark monitor enabling the  
adjustment without opening the shutter.

Exposure resolution : 1 to 3um approx for line & space.  
\*It changes due to various conditions at pre & after-process and materials  
used. It can not be guaranteed as mask aligner alone.

Cooling method : forced air by a cooling fan housed.

#### (4) Optical Observation unit

Method : Dual CCD & Monitor observation Microscope  
enabling to observe mask pattern and wafer surfaces simultaneously.

Microscope : 2sets of CCD Microscope type LWS-2-4-40-P manufactured by  
Luminus corp.

Total magnification : 100X approx. at 9inch by monitor size.

Lens magnification : 4X

WD : 40mm from microscope surface

Focus depth : 100um

Resolution : 4um approx.  
\*Alignment accuracy is +/- 2 to 3um, but can be varied due to  
conditions of object to be observed.

Viewing filed rang : 1.6mm horizontally (2 split at 0.8) x 1.2mm vertically  
\*The size of horizontal view is in half as the images from right & left  
CCD are displayed in one monitor screew.

Mount : Petty mount

Illumination : Coaxial illumination by high brightness red LED.

Focusing : right & left independent +/- 1.5mm manually.

Distance of O. lenses : 20 to 150mm in X (horizontal) axis manually.

Front / Rear positioning : right & left independent +/- 3mm in Y (vertical) axis manually.

Observation lighting adjustment : intensity of right & left independently

Microscope support : shunted by universal arm during exposure and exchanging masks or  
Specimens.

#### Image display

- 2sets of 1/2inch 41pixels monochrome CCD
- 1set of 8inch CRT monitor
- Wipe device of 2 CCD inputs to 1 monitor output

(5) Alignment stage

Mask alignment stage (mask fixed wafer travelling alignment)

X axis stroke : +/- 5mm manual (with fine & coarse adjusting knob)

Y axis stroke : +/- 5mm manual (with fine & coarse adjusting knob)

{Coarse : 0.8mm/rotation, Fine : 0.1mm/rotation (1/8 reducer)}

Z axis stroke / Coarse : 0 to 5mm pneumatic powered. Rising edge height by dial setting.

Contact pressure can be adjusted. Regulator & Gauge. Rise &

Decent speed can be set independently by an airspeed controller.

Z axis stroke / Fine : +/- 125um manually by fine adjusting knob

Gap measuring instrument : Mitsutoyo 1um resolution (included)

Direct-digital reading with 1um reading. Zero reset function.

$\theta$  (Theta) stroke : +/- 5 degree manually. Fine.

Level adjustment : spherical-sliding manually. Vacuum fixing.

(6) Specimen

Loading & Unloading : by manually on specimen holder according to specimen outline guide line indicated on the holder.

Fixing : 1 specimen holder can accommodate 2 kinds of specimen.

(6) Masks

Loading & Unloading : by opening and closing the mask holder manually.

Fixing : by vacuum.

Size : 5inch max. (1 holder on the delivery)

(7) Control

Control box : separated from the main unit.

Z axis air : by an electromagnetic valve with a regulator and pressure gauge.

Vacuum : by an electromagnetic valve for mask, specimen and spherical surface adsorption.

Microscope illumination : LED dimming photoelectric for right & left independently.

Exposure : by transmitting remote start/stop signals to the light intensity monitor.

(8) Utilities

Power sources : AC100V 5A for main power unit & 8A for exposure power unit  
Total 13A required for peripherals.

Please prepare 4 or more power strips with plugs for the main / exposure power and peripherals units. These power units do not correspond to 220V so that please prepare a step-down transformer.

Dry air : 6 to 9kg/cm<sup>2</sup>

Vacuum : 26.6×10<sup>3</sup> approx.

\*ULVAC Vacuum pump type DA-30S optionally available.

Dry air & Vacuum : Please prepare φ(phi) 6mm one-touch joint for tubes at the primary-side outlet.

(9) Exterior dimensions : 900(H) x 600(W) x 700(D) mm approx.

1) Desktop type. Anti-vibration rubber chips on the backside of base plate. No desk will be supplied.

2) Extra space necessary around the main unit for maintenance.

3) Weight : 150kg or less

### **3. System configuration**

(1) Main unit (Desktop type)

(2) Alignment stage

(3) Lamp house

(4) Power supply for Exposure light source

(5) 2sets of CCD Microscope

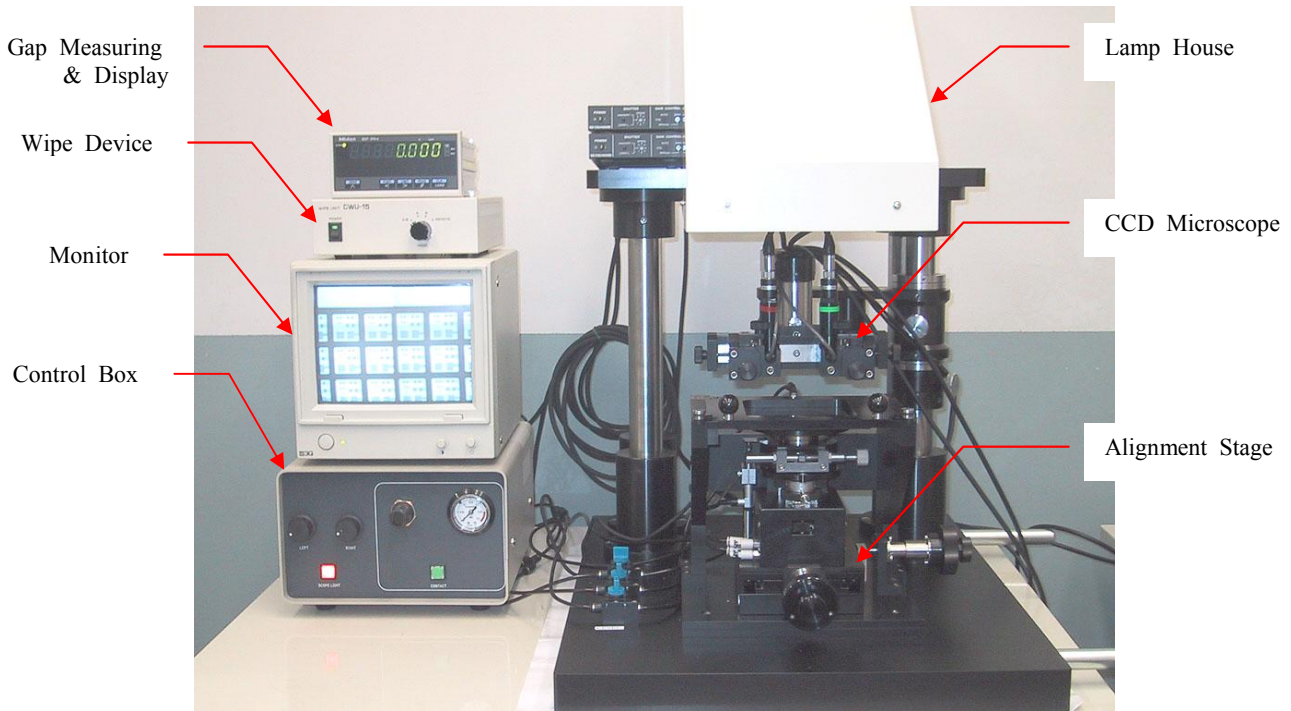
(6) 2sets of Camera controller

(7) Monitor

(8) Wipe device

(9) Gap measuring device (sensor and display) optionally available

(10) Vacuum pump (option)



This photo is for reference only. Dimensions, UV light source, control box and etc are different from this specification.

## 5. Warranty

Either one-year period of beginning at the date of completion of the final acceptance test, or 5,000hrs from the acceptance. The warranty does not cover problems caused by improper handling or act of God, and worn-out or lost accessory tools.

## 6. Buy-off test & Shipping

The buy-off test is carried out along with our standard test procedure at our site. The shipping (exportation) is carried out subject to the receipt of an export license from the proper government authorities. We reserve the right to be free from the contract without any penalty if the license is not granted.

## 7. Documents supplied on the delivery

- 1) Results of buy-off test
- 2) Operation manual