



光掩膜行寬測量系統 (PLM-180)



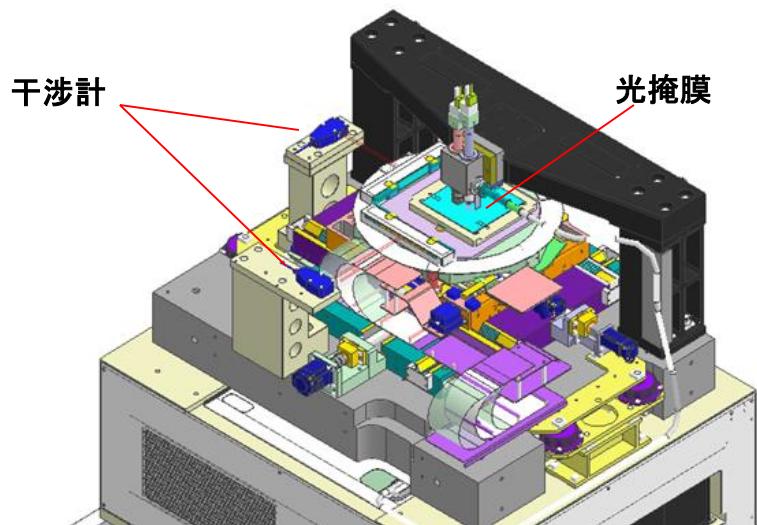
1. 主要規格

- ① 高解析度 i-line 顯微鏡單元 $\times 100$ ($NA=0.95$)
- ② 高精準度中空的工作台單元
 - X, Y 軸平台 with 雷射干擾計定位器
 - Z 軸(垂直移動) 平台
- ③ 重複性 $3\sigma \leq 10nm$ (Target spec. 5nm)
($\times 100$ Measurement at the center
of the camera detection area)
- ④ 工作台定位精度 $3\sigma \leq 100nm$ (Target spec. 50nm)
- ⑤ 測量行寬
 - $0.5 \sim 500\mu m$
 - $0.5 \sim 30\mu m$ (工作台不移動時)
 - $30 \sim 500\mu m$ (工作台移動時)



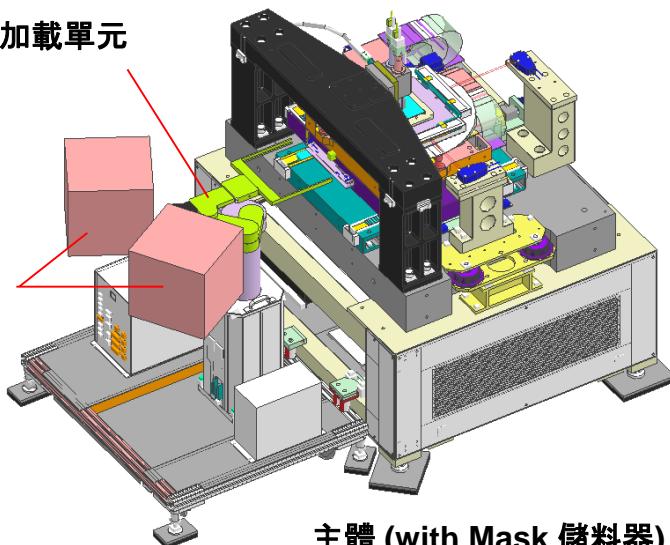
自動測量解決方案

2. 系統結構 1

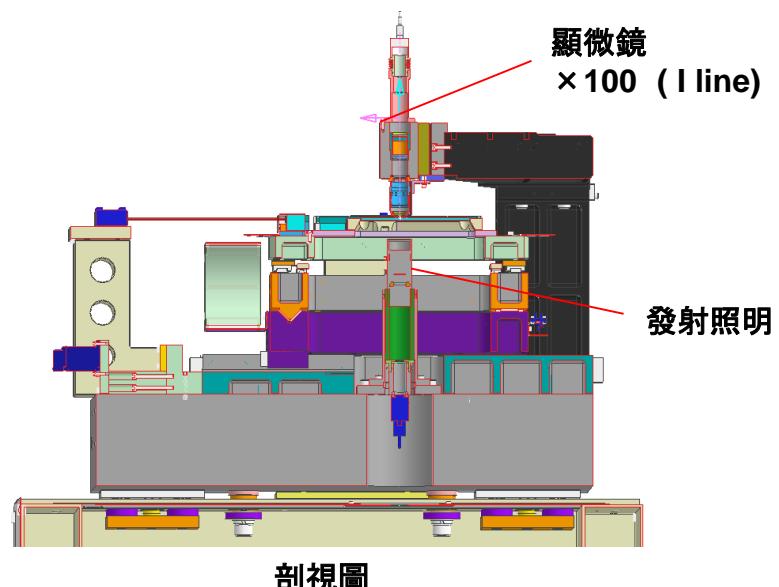


主體 (w/o 空氣調節單元)

Mask 加載單元



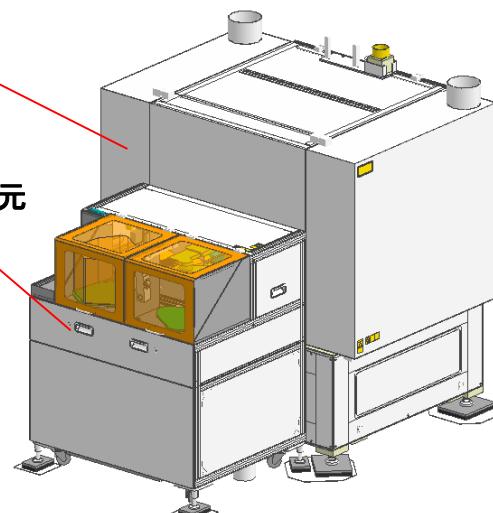
主體 (with Mask 儲料器)



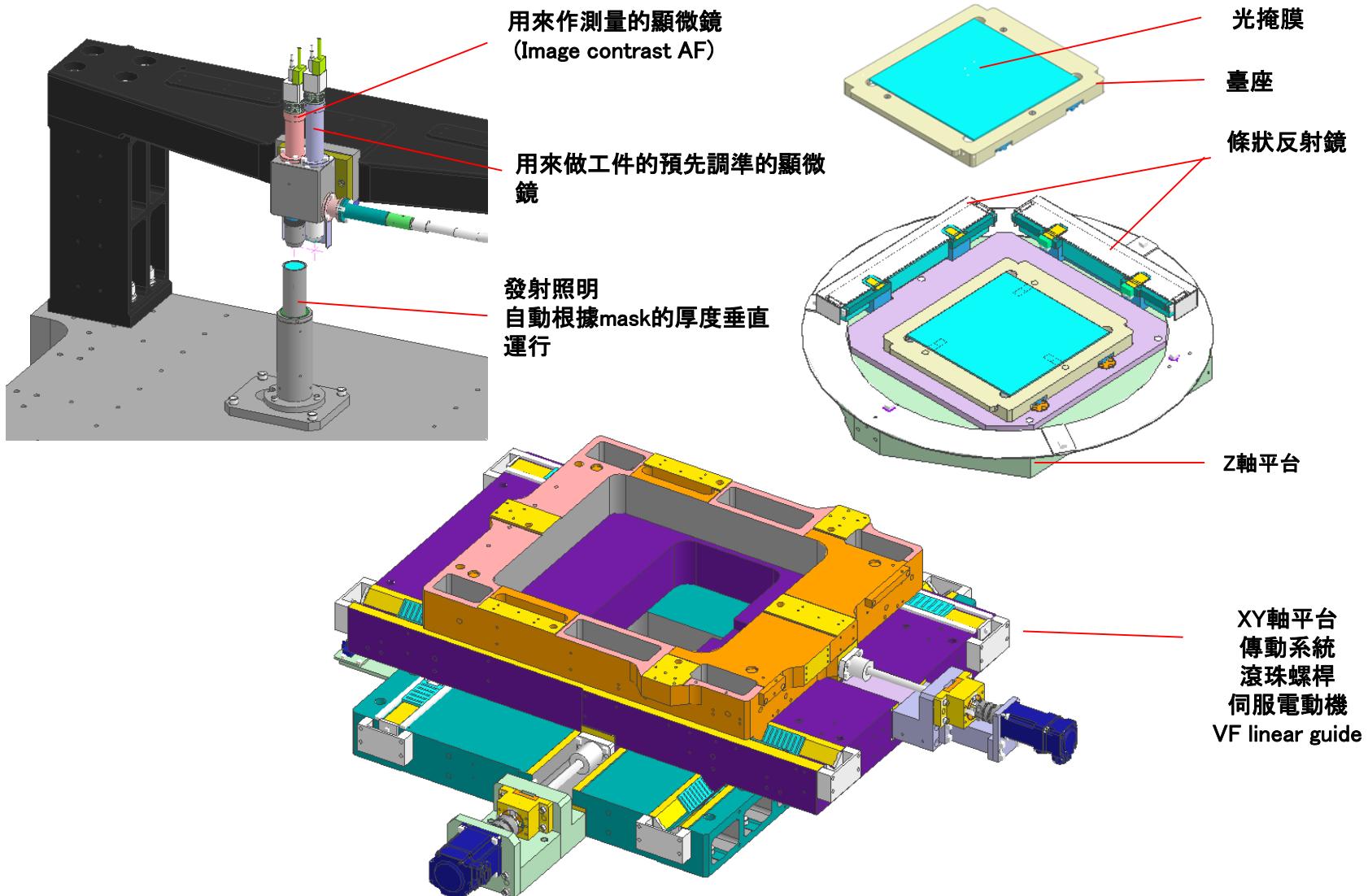
剖視圖

主體

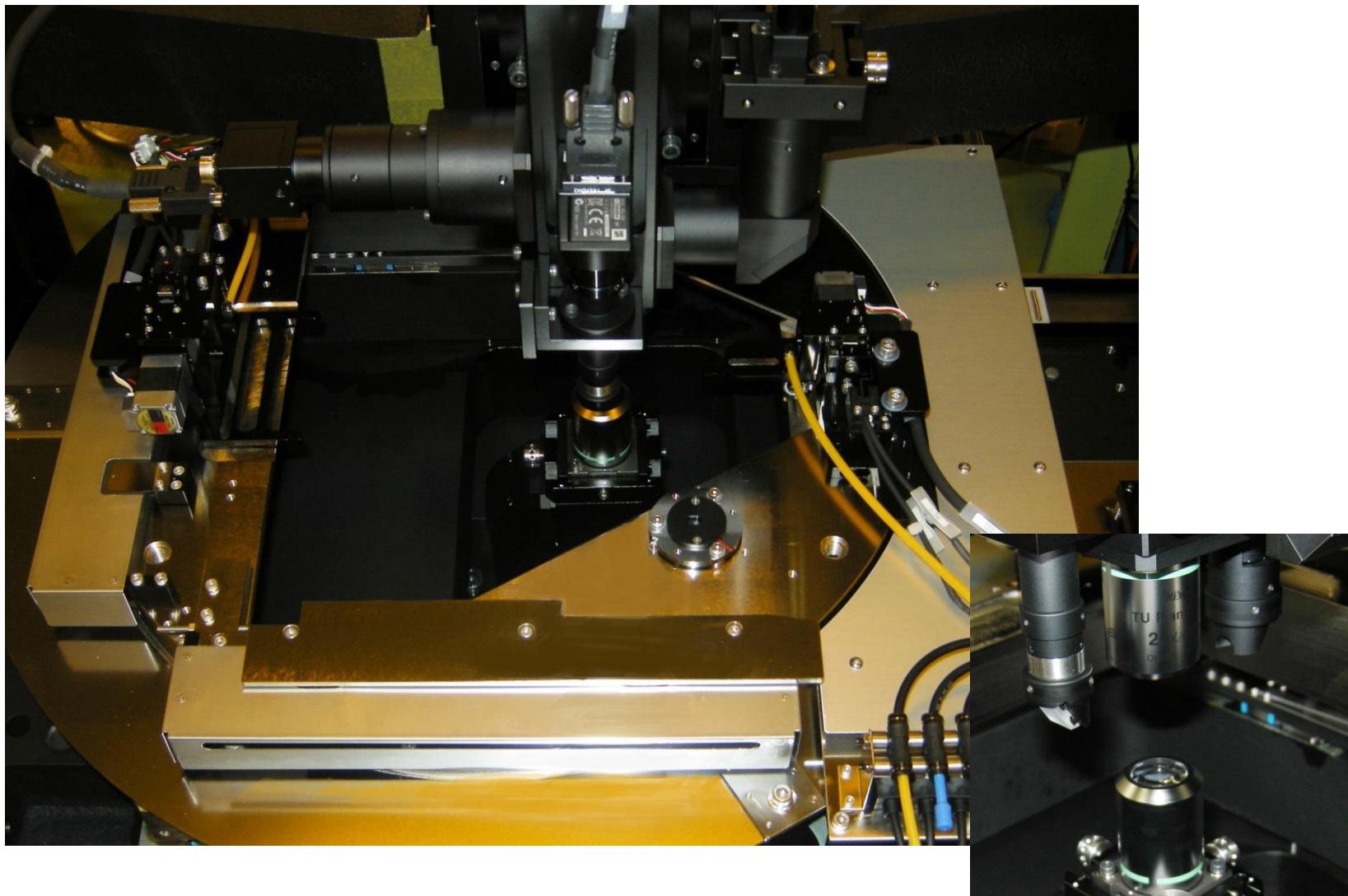
Mask 加載單元



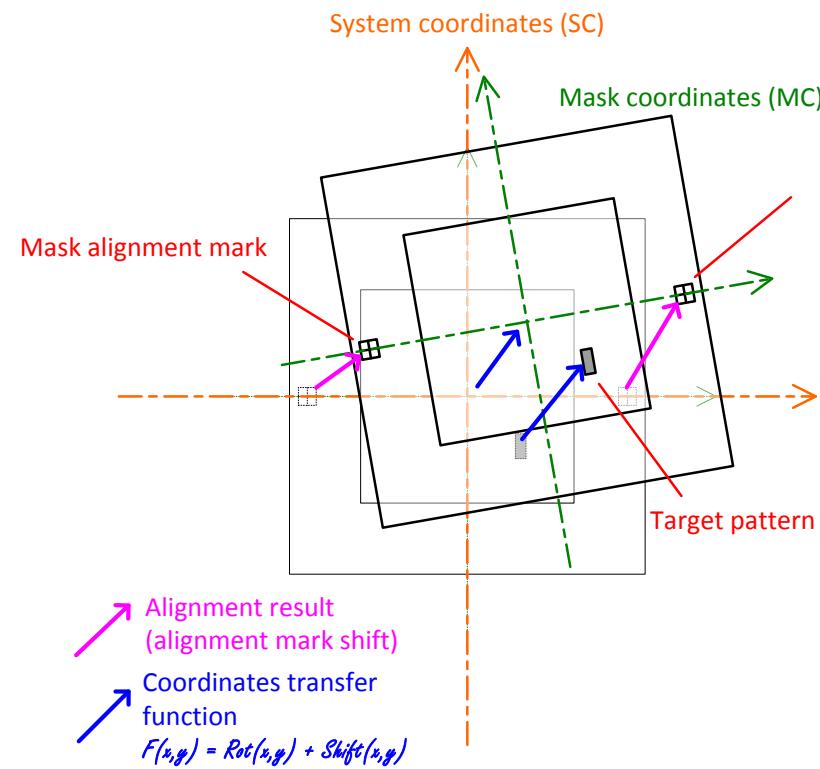
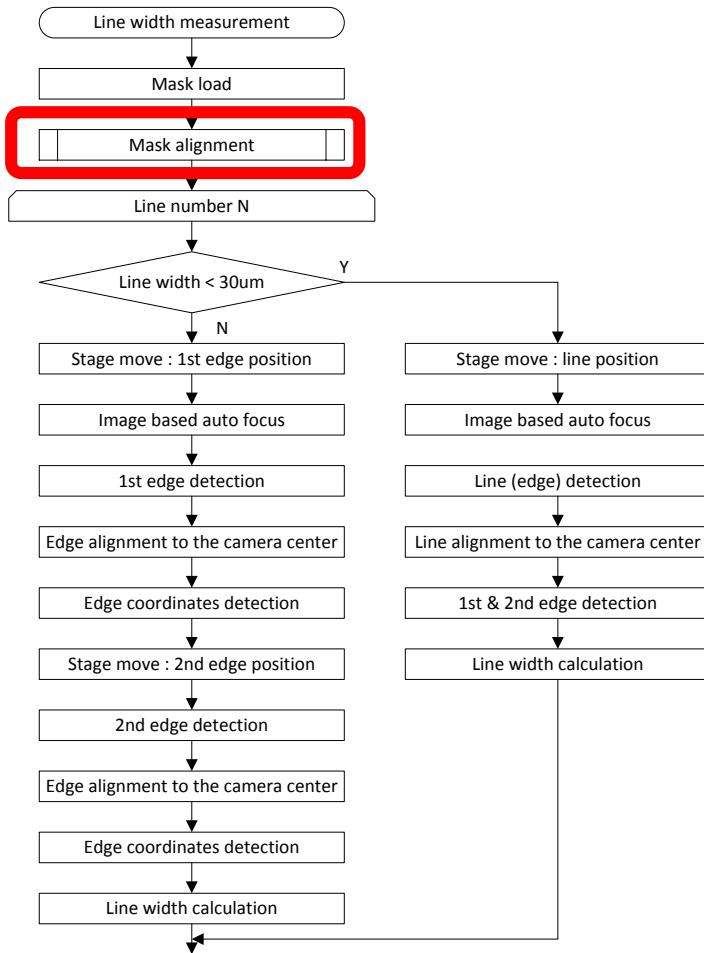
2. 系統結構 2



3. 中空的工作台單元



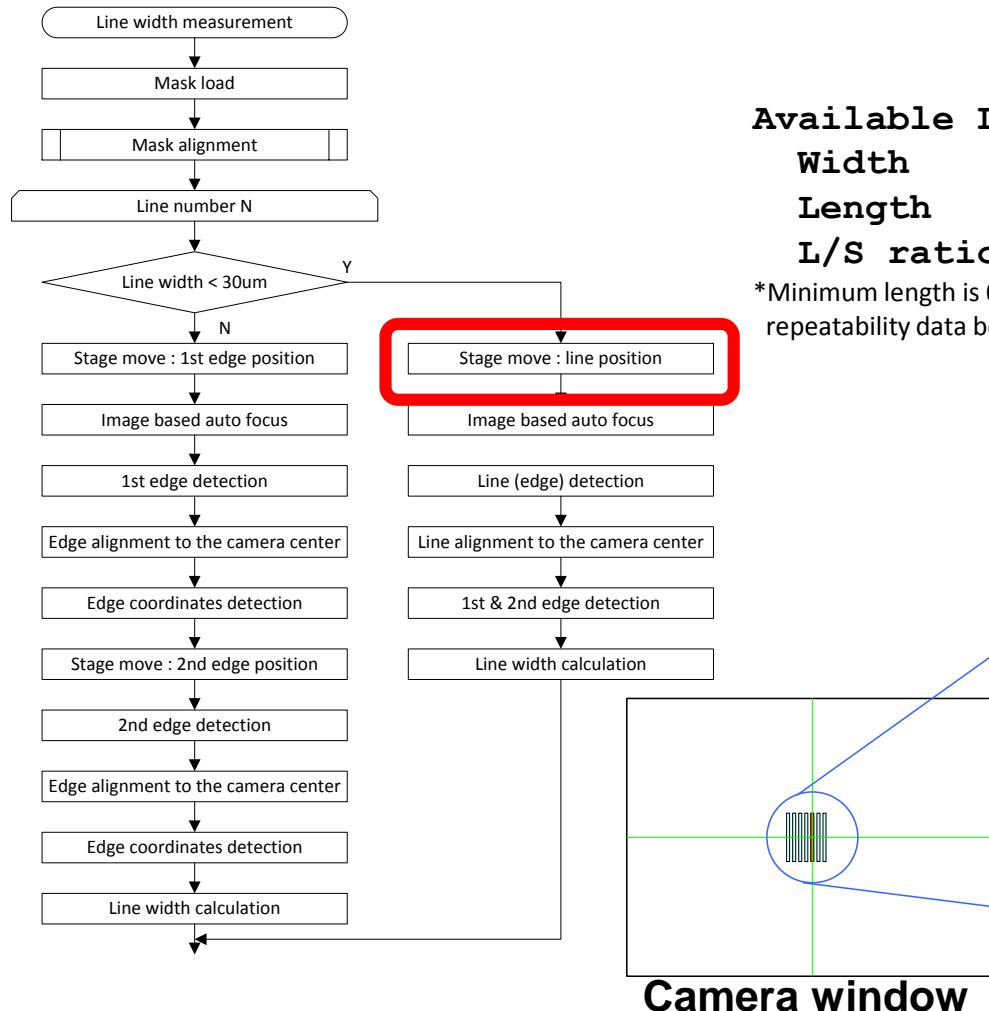
掩膜對準



座標轉換功能(from MC to SC) is calculated from the alignment result of both mask alignment marks.

Based on the mask alignment, mask coordinates of the each line pattern can be converted to the system coordinates (XY stage coordinates).

行寬測量



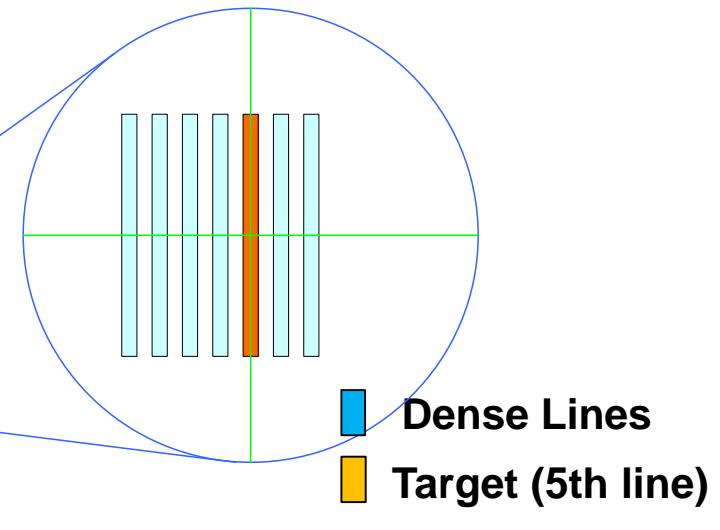
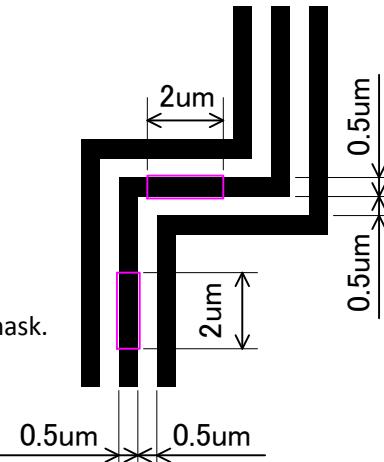
Available Line

Width : 0.5um min

Length : 2.0um min*

L/S ratio: 50%

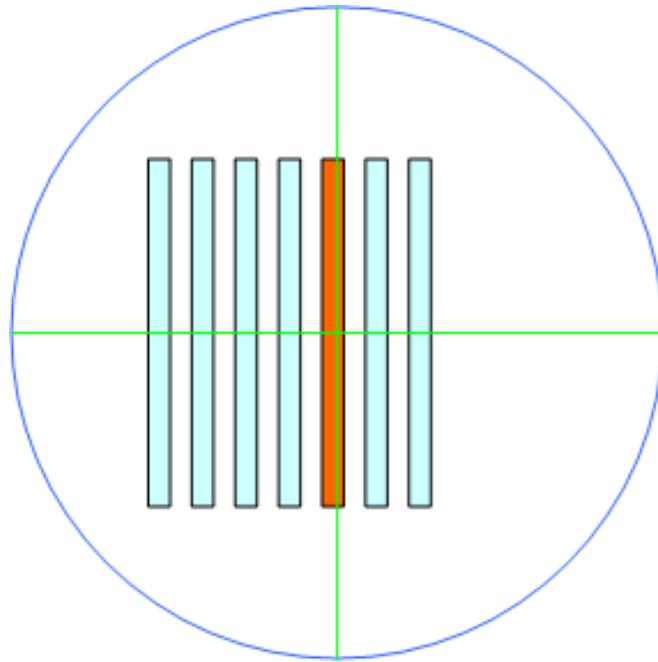
*Minimum length is 0.5um but we don't have repeatability data because we don't have such mask.



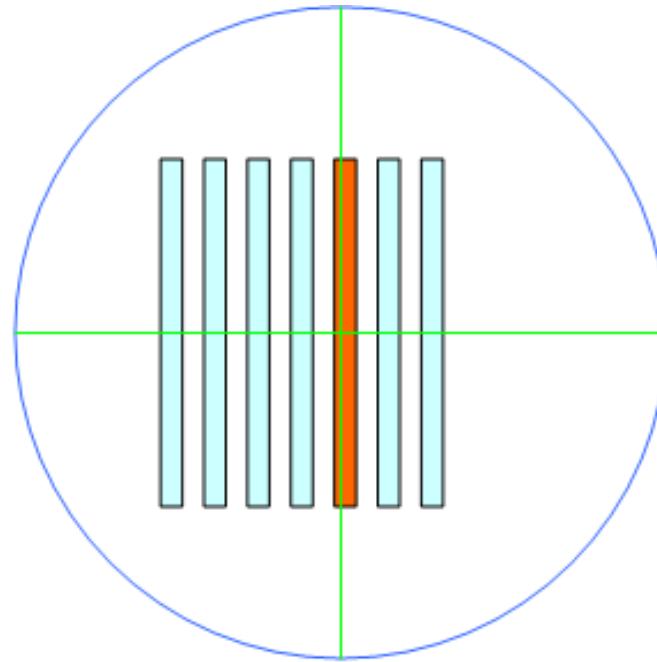
藉由使用配有雷射干擾計精確的XY平台，每一條線都可以被調準至照相機中心($3\sigma=0.1\mu m$).

目標定位

Target position with minus (-) direction stage error and plus (+) direction stage error.



X stage error = -0.1um

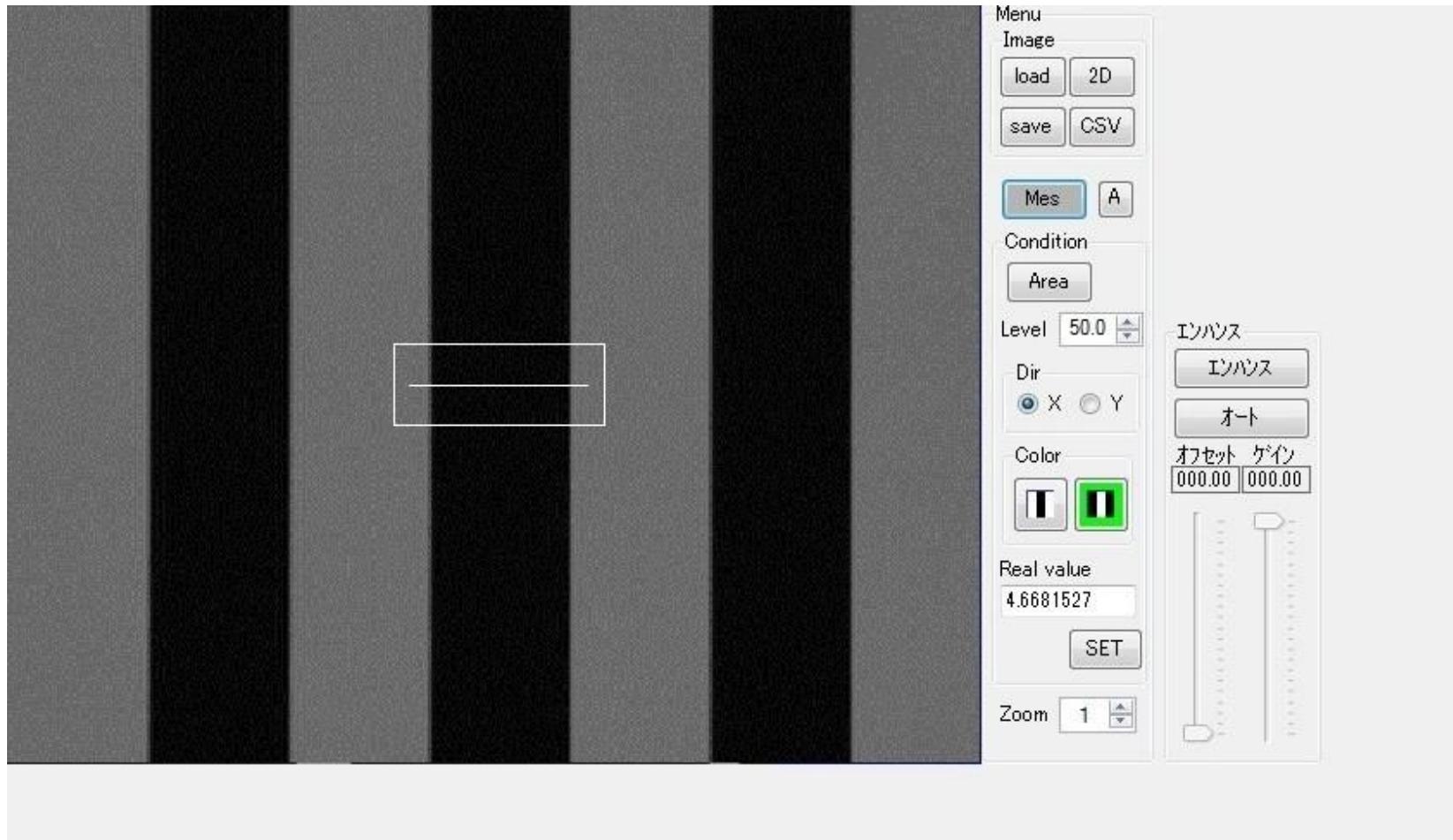


X stage error = +0.1um

As the stage error (0.1um) is smaller than the target size (0.5um), the target is always in the center of the camera window.

Pattern search is not necessary.

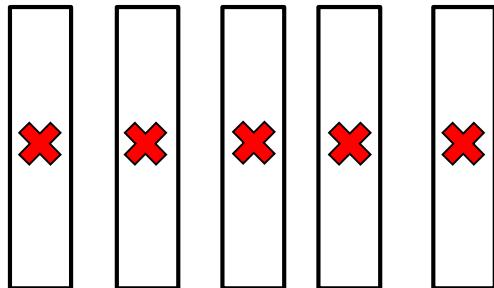
4. GUI Image



5. 平台定位精度

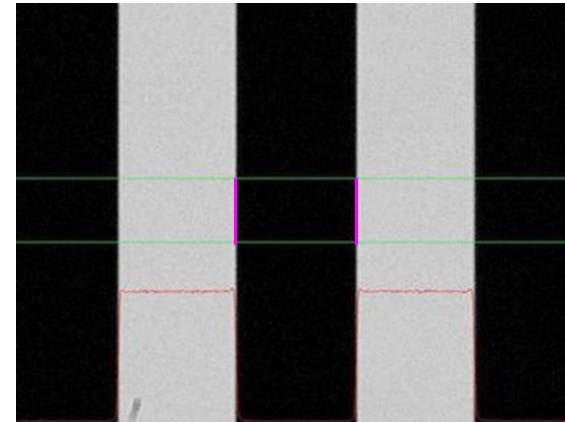
平台定位精度

$3\sigma \leq 100\text{nm}$

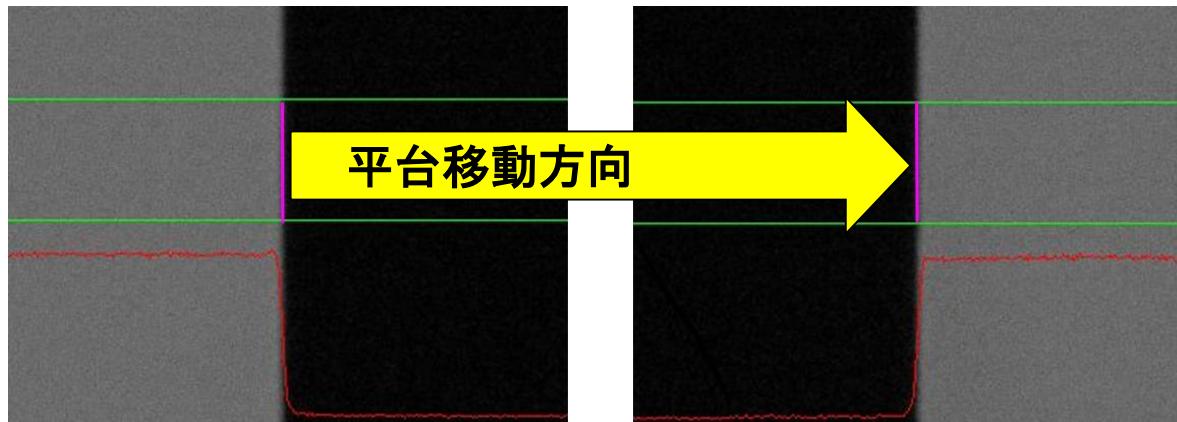


0.5 $\mu\text{mL/S}$

① 在攝影機偵測區域的中心測量時(工作台不移動時): 0.5~30 μm



② 工作台移動時測量: 30~500 μm



6. 規格

系統結構

- 顯微鏡單元 Microscope(i-line) × 100 (測量用)
Microscope × 10 (調準用)
- 自動對焦單元 圖像匹配自動對焦
- 照明單元 i-line, 可見光
- 工作台單元 X,Y,Z ,Mask 支架
- 掩膜儲料器, 自動加載單元 (選購)

規格

- 測量行寬 0.5~30μm (工作台不移動時)
30~500μm (工作台移動時)
- 重複性 $3\sigma \leq 10\text{nm}$ (Target spec 5nm)
(× 100 工作台不移動時)
- 工作台定位精度
 $3\sigma \leq 100\text{nm}$ (Target spec 50nm)
(工作台移動時)
- 光掩膜大小 5 inch (5009,5018), 6 inch (6009,6012,6025)
7 inch(7012)