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Please refrain to disclose of all description which are described in this document to the third parties.

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SUSS MICROTEC MABA6GEN4

- APPENXIDX FOR TENDER DOCUMENT -

 Tender SPEC MA6GEN4 for FTMC (LT)_Rev.01

FOR FTMC (LT)



29,05,2019

Y.Amano

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

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+ Material handling :

- ✓ W-2" ,W-3" , W-100mm
- ✓ Small pieces (S-3x3mm, 10x10mm, 20x20mm, 30x30mm)

+ Exposure /Optics:

- ✓ Optics UV400/MO/W-150mm
- ✓ Light uniformity $\pm 2.5\%$ on 150mm
- ✓ Lamp type: **UV-LED Light source**
- ✓ Light Intensity: $>45\text{mW/cm}^2$ /g-h-i-line broad band (Expected value)
 $>20\text{mW/cm}^2$ /i-line (Expected value)
- ✓ Resolution: down to $0,8\mu\text{m}$ L/S (Vacuum contact, W-100mm)
down to $3.0\mu\text{m}$ L/S (Proximity 20um, W-100mm)

+ Alignment:

- ✓ Full motorized stage
- ✓ TSA accuracy: $<+/-0,5\mu\text{m}$
- ✓ BSA accuracy: $<+/-1,0\mu\text{m}$
- ✓ Manual Alignment
- ✓ Auto alignment by Pattern recognition (Cognex "Vision-PRO")

Note: all process values above are in SUSS conditions!

- SEMI wafer
- AZ4110 /1,0umt
- SUSS alignment target
- Proximity mode for Alignment



- ✓ User interface: Windows 7
- ✓ User level setting: YES

- ✓ Footprint: 1173mm x1000mm
- ✓ Height: 1860mm
- ✓ Weight: 300Kg

SUSS MA/BA GEN4

- Base system-

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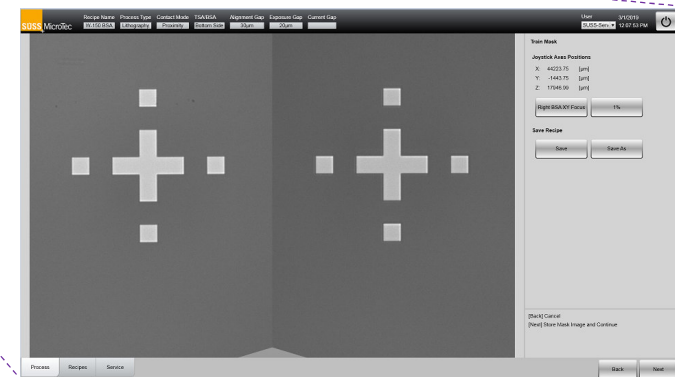
+ NOTE:



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Previous image photo



Alignment view is not full screen of 22\"

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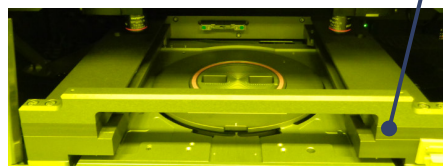
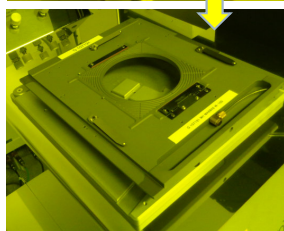
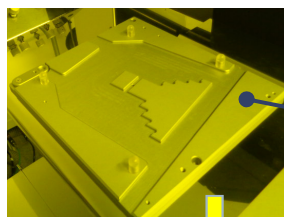
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+ Tool configuration /Base system:

POS.	QTY	PART #	DESCRIPTION	Internal comments
Base system				
1	1	100080604	SUSS MA/BA6 Gen4 MASK AND BOND ALIGNER	
2	1	100076129	TOUCH SCREEN MONITOR 22 INCH MA/BA GEN4	
3	1	100004202	IPC-TOUCHPEN	<=Added in New quotation
4	1	100088874	CONSTANT DOSE OPTION MA/BA Gen4	<=Added in New quotation
5	1	100075896	ADAPTER SYSTEM FOR MASKHOLDER MABA6	
6	1	100076243	MA/BA Gen4 CASSETTE TRAY	
7	1	100073969	MA/BA Gen4 VIBRATION ISOLATION AND DAMPING SYSTEM	
8	1	100080887	OPERATOR'S MANUAL MA/BA6 GEN4 FOR CLEANROOM	



8



6

5



2

1

7



22" Touch screen monitor

Alignment Stage

MA Movement range:	X: $\pm 5\text{mm}$
	Y: $\pm 5\text{mm}$
	$\theta: \pm 5^\circ$
Resolution:	0.1 μm

SUSS MA/BA GEN4-PRO

- Alignment stage &WEC system & Exposure mode-

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

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+ Tender contents / Exposure performance:

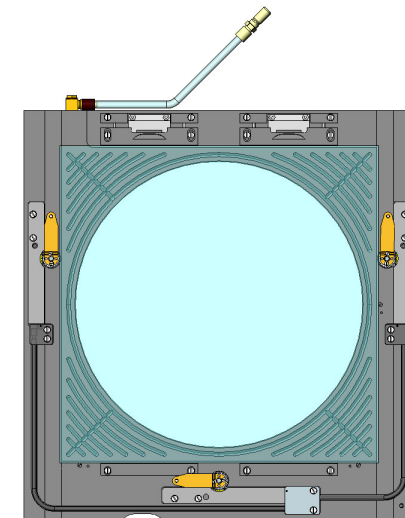
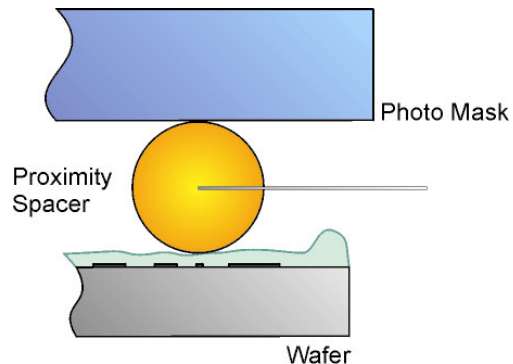
<p>Eksponavimo režimai Exposure mode</p>	<p>1. Turi būti instaliuoti sekantys režimai:</p> <ul style="list-style-type: none"> - vakuuminio kontakto (vacuum contact), - stipraus kontakto (hard contact), - silpno kontakto (soft contact), - bekontaktis (proximity). <p>2. Bekontakčiame režime atstumas tarp fotošablono ir padėklo reguliuojamas ne siauresniame nei nuo 1 iki 999 mkm intervale</p> <p>3. Vakuumo slėgis vakuuminio kontakto režime turi būti reguliuojamas.</p> <p>4. Maksimalus padėklo storis vakuuminio kontakto režimui ne mažiau 1,5 mm.</p> <p>5. Maksimalus padėklo storis kitiems režimams ne mažiau 5 mm.</p>	<p>1. The following modes are available in the machine:</p> <ul style="list-style-type: none"> - Vacuum contact mode - Hard contact mode - Soft contact mode - Proximity exposure mode <p>2. In proximity exposure mode, the distance (gap) between a photo mask and the wafer/substrates is adjusted 1 to 999 um</p> <p>3. The vacuum chamber pressure in the vacuum contact mode is adjustable.</p> <p>4. Maximum wafer/substrate thickness in Vacuum contact mode is up to 1.5mmt.</p> <p>5. Maximum wafer/substrate thickness in other exposure modes is up to 5.0mmt</p>
<p>Prietaiso ekspozicijos rezoliucija Device exposure resolution</p>	<p>1. Prietaiso pasiekama rezoliucija turi būti ne blogesnė kaip:</p> <ul style="list-style-type: none"> a) 0,8 mkm vakuuminio kontakto režime b) 1,5 mkm stipraus kontakto režime c) 2,5 mkm silpno kontakto režime d) 3 mkm bekontakčiame režime, kai atstumas tarp fotošablono ir padėklo 20±1 mkm <p>2. Pasiekama rezoliucija turi būti pademonstruota instaliavimo metu standartiniuose fotošablonuose.</p>	<p>1. The resolution would be following:</p> <ul style="list-style-type: none"> a) 0.8um in Vacuum contact mode b) 1.5um in Hard contact mode c) 2.5um in Soft contact mode d) 3.0um in Proximity with 20um gap <p>2. The above resolution must be demonstrated during installation as final acceptance with test mask of supplier.</p>

MA/BA GEN4 PRO – SUBSTRATE LEVELLING PRINCIPLE

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Proximity exposure by Spacer WEC

- + 3 proximity spacers for mask-wafer leveling & calibration of alignment or exposure gap
- + Spheres made from ceramic
- + No cleaning required
- + Customized positioning of proximity spacers possible
- + Precise diameter: $2000 \pm 1 \mu\text{m}$
- + Proximity gap: up to $999 \mu\text{m}$



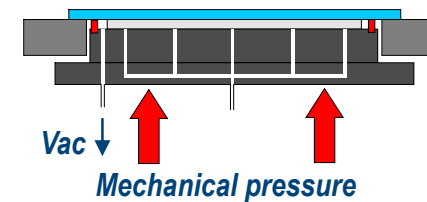
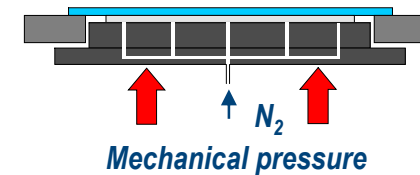
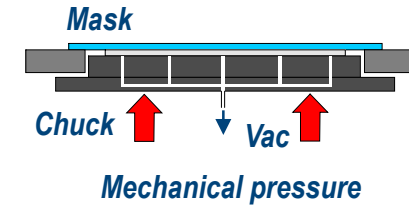
W-200 mask holder with proximity spacer

EXPOSURE MODES

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SÜSS Contact Exposure Modes

- + Soft contact
 - adjustable mechanical pressure
- + Hard contact
 - additional nitrogen pressure
- + Vacuum contact (sub-micron printing!)
 - evacuation air between mask and wafer
 - Maximum wafer/substrate thickness is <1.5mmt



Note:

Maximum wafer/substrate thickness for other exposure mode is up to <5.0mmt

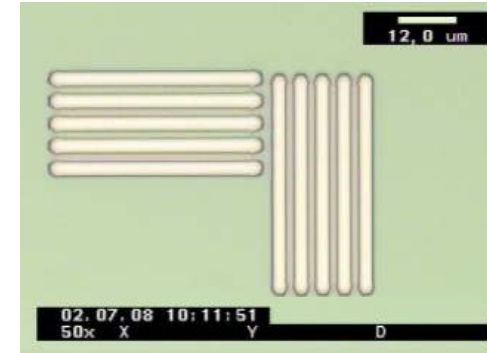
MA/BA GEN4 PRO – SUSS L/S RESOLUTION LIMITS

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UV400 Resolution Limits

UV400-HR				
Optics Type:	2"	4"	150mm	200mm
Vacuum Contact	0,7µm	0,8µm	1,0µm	1,5µm
Hard Contact	1,0µm	1,5µm	1,5µm	2,0µm
Soft Contact	2,0µm	2,5µm	2,5µm	3,0µm
Proximity [20µm]	3,0µm	3,0µm	3,0µm	3,5µm

(July 2008)



(2,5µm L/S resolution @ 20µm proximity exposure)

Achievable resolution depends on contact quality, optics type, wafer size, wafer flatness, resist type, clean room class and, therefore, might vary for different processes.

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

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+ Tender contents / Alignment stage:

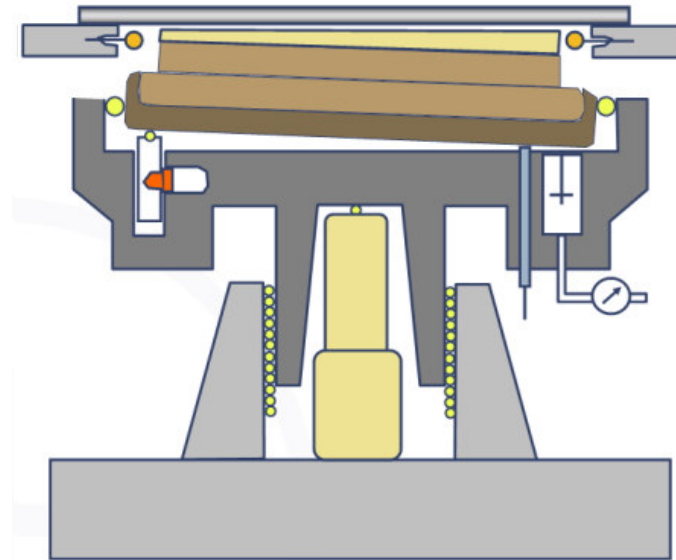
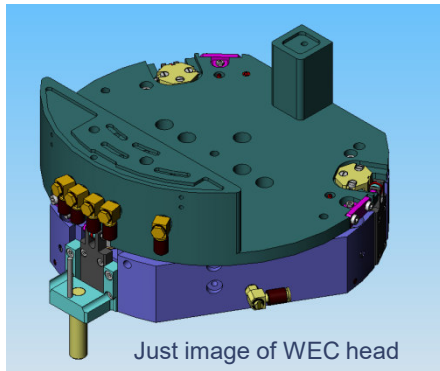
<p>Bandinių staliukas sutapatinimui Sample table for alignment (Process /Alignment stage)</p>	<ol style="list-style-type: none"> 1. Motorizuotas. 2. Judėjimas X ir Y kryptimis bei pasukimas Φ kampu apie statmeną staliukui ašį valdomi vairasvirte (joystick). 3. Maksimali eiga X ir Y kryptimis ne mažiau kaip ± 5 mm. 4. Staliuko žingsnis ne didesnis kaip 0,15 mkm. 5. Pasukimas Φ kampu ne mažiau kaip $\pm 5^\circ$. 6. Turi būti kampo tarp fotošablono ir padėklo kompensavimo sistema (Wedge Error Compensation) leidžianti pasiekti, kad skirtumas tarp jų lygiagrečių paviršių būtų ne didesnis kaip 6 mkm, o kartojant ne mažiau kaip 7 ekspozicijas skirtumas tarp šių verčių būtų ne didesnis kaip 4 mkm. 7. Kampo tarp staliuko ir padėklo kompensavimo sistemos aptarnavimo procedūros turi būti atliekamos įrangos eksploatavimo vietoje. 	<ol style="list-style-type: none"> 1. Motorized stage 2. Movement of aslinsmnt stage in the X, Y, Theta Φ-directions is controlled by a joystick. 3. Movement range in X and Y directions: $\leq \pm 5$ mm. 4. The minimum resolution of stage step: $\leq 0.15\mu\text{m}$. 5. Movement range in Theta Φ directions: $\leq \pm 5^\circ$. 6. The Wedge Error Compensation system makes prarell between a photo mask and wafer. <ul style="list-style-type: none"> • Range of the Parallelism: $< 6\mu\text{m}$ • The repeatability: $4\mu\text{m}$ (at least 7 exposures) 7. A maintenance of the Wedge Error Compensation system can be done onsite
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MA/BA GEN4 PRO – SUBSTRATE LEVELING PRINCIPLE

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SUSS Proximity Wedge Error Compensation;

- Release of proximity spacer
- Z-axis movement
- WEC head clamping
- Z-axis down movement
- Extract proximity spacer
- Final gap setting



SUSS wedge error compensation and gap setting

- Automatic contact or proximity levelling
 - ✓ Max. Deviation from input data: $\leq \pm 5 \mu\text{m}$
 - ✓ Parallelism between Mask and Wafer: $\leq \Delta 6 \mu\text{m}$
 - ✓ Repeatability : $\leq \Delta 4 \mu\text{m}$
- Maintenance of the WEC head mechanism is possible onsite

Alignment Stage	MA-mode	BA-mode
Movement range:	X: $\pm 5\text{mm}$	X: $\pm 3\text{mm}$
	Y: $\pm 5\text{mm}$	Y: $\pm 3\text{mm}$
	$\theta: \pm 5^\circ$	$\theta: \pm 3^\circ$
Resolution:	0.1 μm	

SUSS MA/BA GEN4 - Exposure system-

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

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+ Tender contents / Exposure system:

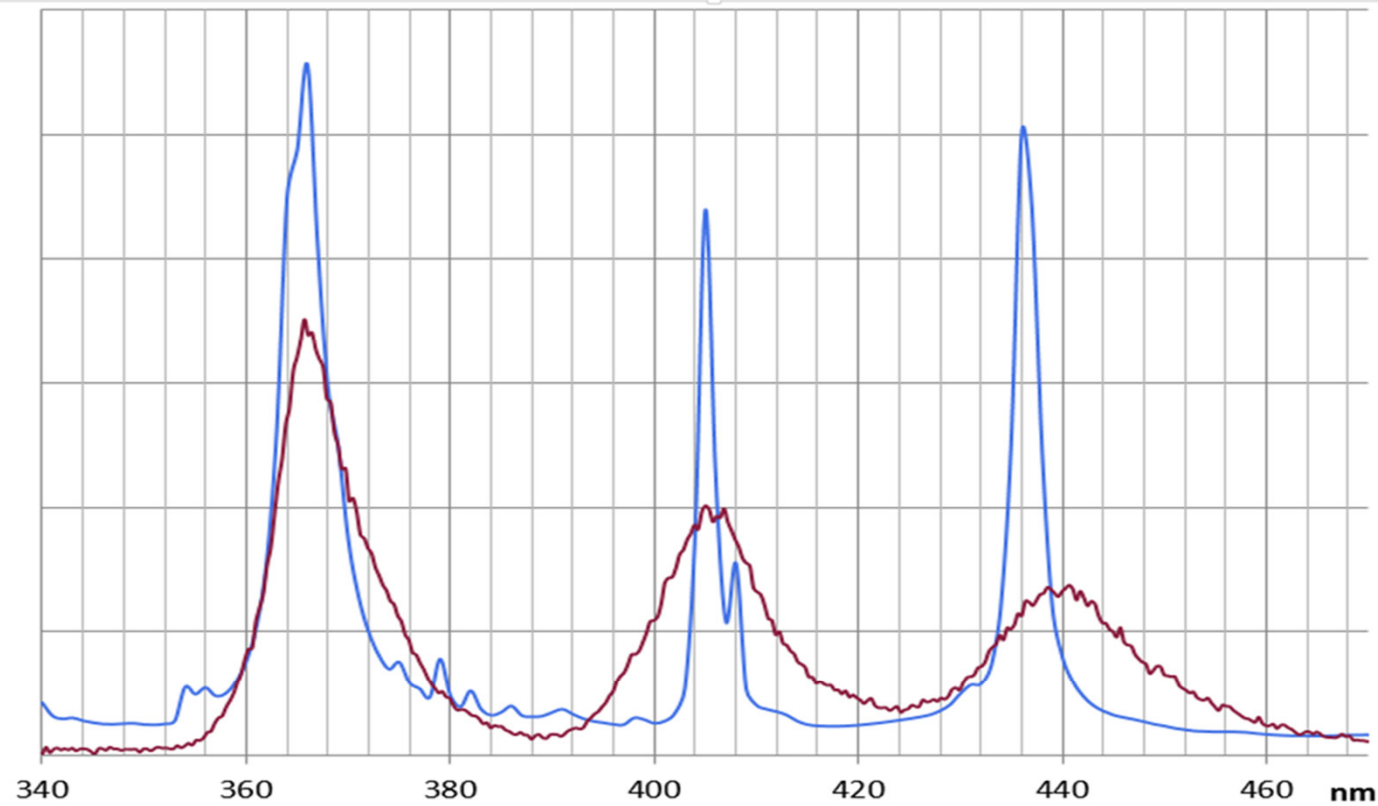
<p>Eksponavimo sistema Exposure system</p>	<ol style="list-style-type: none"> 1. UV LED šviesos šaltinis 2. Pasirenkami bangos ilgiai ekspozicijai yra būtini: <ol style="list-style-type: none"> 2.1. g-linija (436 nm), 2.2. h-linija (405 nm), 2.3. i-linija (365 nm). 3. Turi būti instaliuota galimybė naudoti ekspozicijai vieną iš instaliuotų bangos ilgių keičiant jo šviesos intensyvumą arba kelis instaliuotus bangos ilgius keičiant jų šviesos intensyvumą kiekvienam atskirai. 4. Turi būti pastovios ekspozicijos dozės palaikymas. 5. Turi būti lengvai keičiama krentančio šviesos srauto konfigūracija eksponavimo optinėje sistemoje tarp šviesos šaltinio ir eksponuojamo padėklo. 6. Turi būti lengvas perjungimas nenaudojant įrankių keičiant šviesos srauto konfigūraciją eksponavimui maksimalios rezoliucijos režime (high resolution configuration) vakuuminio kontakto ekspozicijos metu arba didelio tarpo eksponavimui (large exposure gap configuration) skirtam bekontakčio eksponavimo režimui kai yra didelis tarpas tarp fotošablono ir padėklo. 7. Šviesos intensyvumo tolydumas visame eksponuojamame plote ne blogesnis kaip $\pm 2,5\%$. 8. Testinės ekspozicijos režimas leidžiantis eksponuoti skirtingom ekspozicijos dozėmis ant to paties padėklo. 9. Turi būti pauzės nuo kontaktnio režimo įjungimo iki ekspozicijos nustatymas visiems kontaktiniams eksponavimo režimams. 	<ol style="list-style-type: none"> 1. UV LED light source 2. Optional wavelengths for exposure are: <ol style="list-style-type: none"> g-line (436 nm) h-line (405 nm) i-line (365 nm) 3. It is possible to select wavelength for the exposure from the 3lines (g-line, h-line, i-line) independenty by changing light intensity or several installed wavelengths 4. Constant-Dose contral mode is avaiable 5. The collimation angle in the optical system (between the light source and the exposed substrate) shall be easily changed by Illuminaiton filter plate design. 6. Exposure light condition can be switched easily (withou using a tooling) between <u>exposure in high resolution configuration</u> (for eaxple Contact mode)and <u>large exposure gap configuration</u> (For example large gap like 200um between the photo mask and the wafer /substrate). 7. uniformity of of light is $< \pm 2.5\%$ in 150mm dia.. 8. Test Exposure Mode allows you to display 6 different exposure doses on the same wafer. 9. There must be a pause to set the exposure mode to exposure for all contact exposure modes.
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SUSS MO Exposure optics can satisfy!!

MA/BA GEN4 - UV LED EXPOSURE SYSTEM

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+ Light spectrum:



- + 1 LED array per each line in spectrum
- + All arrays are adjustable between 10% and 100% separately
- + All settings are recipe controlled

MA/BA GEN4 - UV LED EXPOSURE SYSTEM

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+ Setting in the recipe:

- ✓ Each band g-line, h-line, i-line are selectable
- ✓ Lamp setting: 10-100% (Supplier recommendation: 15-80%)
- ✓ Adobe two settings are saved in a recipe

Exposure Configuration

CalibrationSet_Dummy

new CalibrationSet_Dummy

Light Source and Sensor Calibration

Comment

Calibration Date

Intensity Ical [mW/cm²]

Sensor Voltage Ucal [V]

G-Line [%]

H-Line [%]

I-Line [%]

52.50

6.830

50

50

100

Failed Rules | 0 Errors

NOTE: It is recommended to use with Constant Dose-mode in UV LED light source!

ADVANCED MASK ALIGNER LITHOGRAPHY – MO EXPOSURE OPTICS

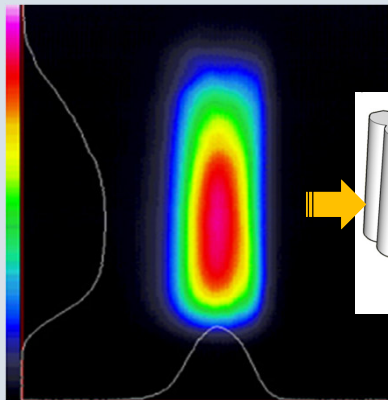
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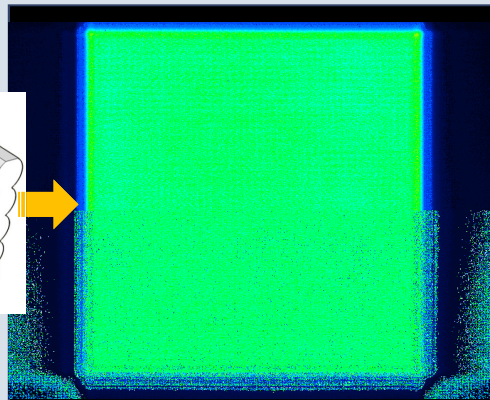
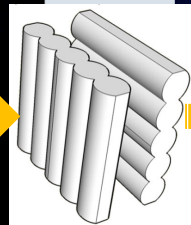
Features of MO Exposure Optics:

1

Improved light uniformity
(<2.5% @ 200mm dia.)

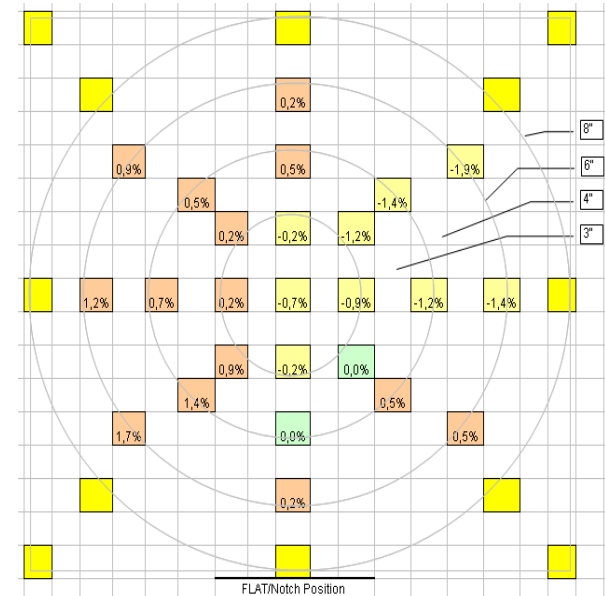


Light source



The light is homogenized in the plane!!

MO exposure optics is a Key function for using a LED allays!!



Exposure light uniformity: <2.0%
MA/BA6 MO Optics (HR-IFP)

ADVANCED MASK ALIGNER LITHOGRAPHY – MO EXPOSURE OPTICS

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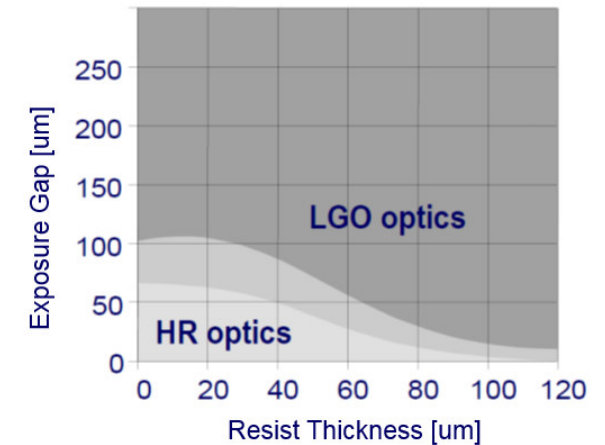
Features of MO Exposure Optics:

1

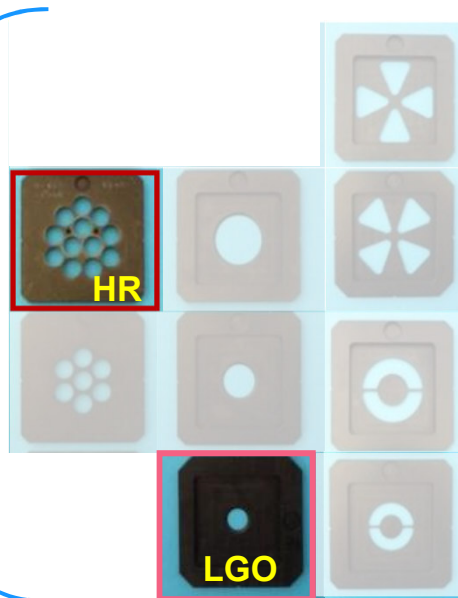
Improved light uniformity
(<2.5% @ 200mm dia.)

2

SÜSS “High Resolution” and “Large Gap” optical setups in
one exposure optic

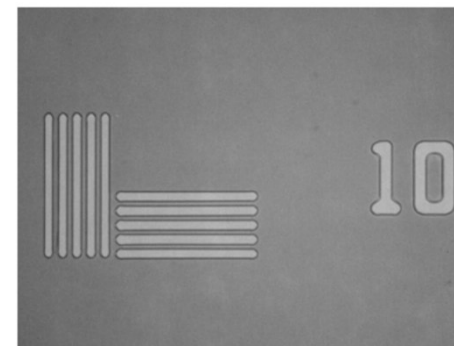


MO Exposure Optics
toolkit

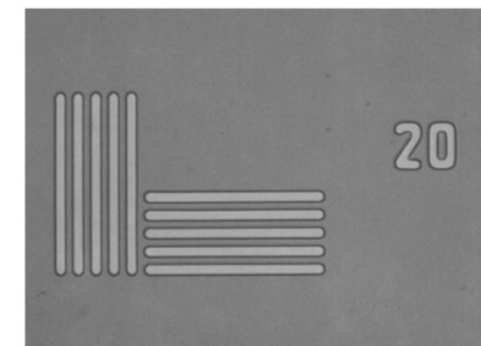


Optional IFPs
(Illumination Filter Plate)

LGO process example



10 µm Lines & Spaces



20 µm Lines & Spaces

200µm Exposure gap

Resist: TOK OFPR800LB, 1,0µmt

ADVANCED MASK ALIGNER LITHOGRAPHY – MO EXPOSURE OPTICS

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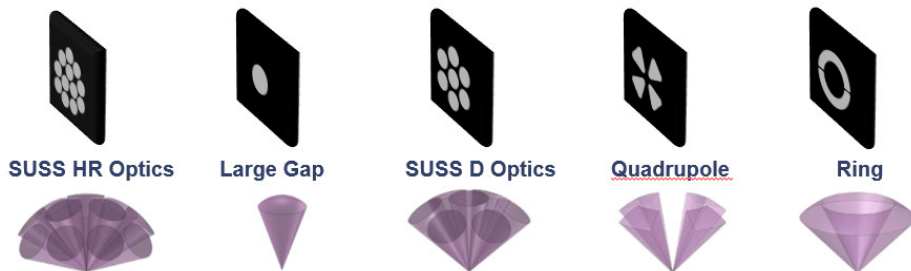
Features of MO Exposure Optics:

3

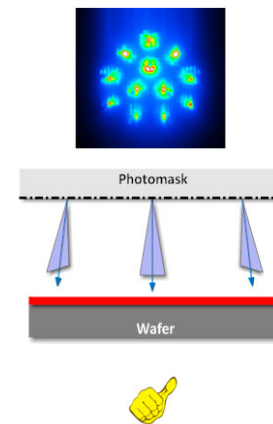
Telecentric mask illumination can uniform the collimated light to the all wafer area

4

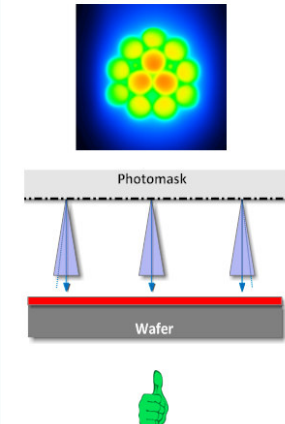
Flexible illumination settings via quick and easy IFP exchange



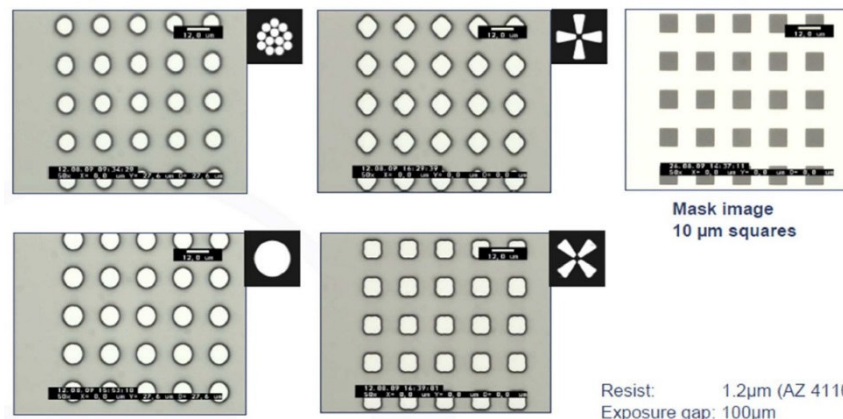
Conventional



MO Exposure Optics®



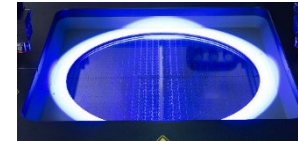
Process example;



CONSTANT DOSE FUNCTION

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Constant power

- + Lamp power is constant during all operations
- + Control of exposure time via recipe



No sensors



Repeated measurements and calculations for entry of exposure time in recipe



If lamp fails or gets older during long exposures no automatic adjustment of exposure time
-> dose too low

Constant dose

- + Sensors in light tube measure applied dose during exposure
- + Control of exposure time automatically via dose entry in recipe
- + Mandatory to use for LED exp. unit!



Exposure dose only needs to be entered once in recipe



No continuous measurements of intensity needed prior to exposure



Easy and accurate dose control

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

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+ Tool configuration /Exposure system:

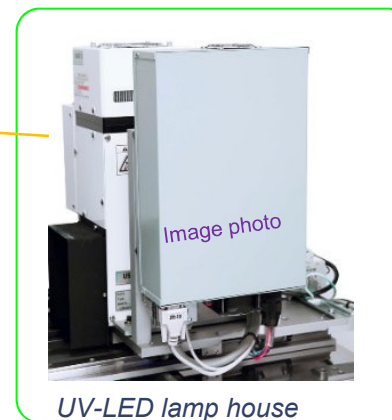
POS.	QTY	PART #	DESCRIPTION	Internal comments
Exposure system				
16	1	100080880	EXPOSURE UNIT LED LH UV400 MA/BA GEN4	
17	1	100080885	MO Exposure Optics UV400/LS/W-150 LED LH MA/BA Gen4	



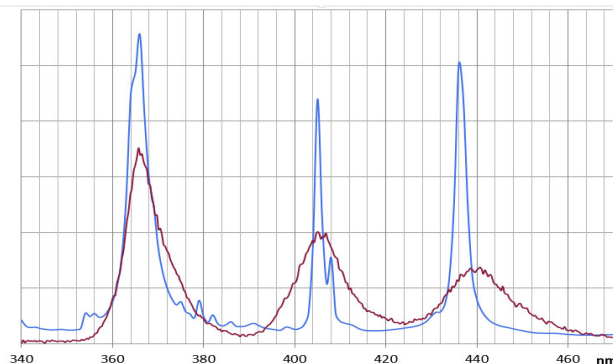
MO Exposure optics
(As standard!!)



Exposure unit + Optics



UV-LED lamp house



Spectra of Hg-lamp (blue line) and corresponding LED light source (red line).

- + Warranty period: 5,000hours (LED alleys)
- + Warranty period: 2years (for other parts /e.g. Fan unit, Controller board)
- + Light uniformity: <2,5% (MO exposure optics)
- + HR(High Resolution) -IFP + LGO (Large gap Optics)-IFP (IFP: Illumination Filter Plate)
- + Lamp setting: 10-100% (Supplier recommendation: 15-80%)
- + Using with Constant Dose-mode /P-365 (i-line), P-405 (g-h-i-line)

SUSS MA/BA GEN4 - Alignment system -

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

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+ Tender contents /Alignment system:

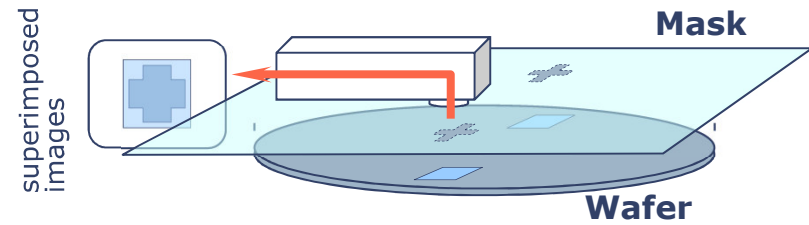
Viršutinės pusės sutapatinimas (TSA-top side alightment)	<ol style="list-style-type: none"> 1. Turi būti: vieno lauko ir suskaidyto lauko (split-field) režimai. 2. Mikroskopo vaizdas išvedamas į ne mažesnės įstrižainės kaip 22 coliai vaizduoklį naudojant didelės raiškos kameras. 3. Motorizuotas judėjimas X, Y ir Z kryptimis. 4. Maksimali eiga Y kryptimi ne mažiau ± 20 mm. 5. Motorizuoto judėjimo greičio reguliavimas. 6. Atstumas tarp laukų suskaidyto lauko režime keičiamas ne siauresniame kaip nuo 13mm iki 150 mm intervale. 7. Funkcija leidžianti keisti matomo lauko dydį nekeičiant fokuso. 8. Mikroskopo apšvietimas naudojant LED šviesos šaltinį su filtru neleidžiančiu apšviesti fotorezisto. 9. Sutapatinimo tikslumas ant Si padėklo ne daugiau kaip $\pm 0,5$ mkm. 10. Dvigubo fokuso funkcija leidžianti tapatinti bekontakčiame režime su tarpu tarp fotošablono ir padėklo. 11. Rankinis sutapatinimas naudojant vairasvirte arba automatinis sutapatinimas naudojant programinę įrangą. 	<ol style="list-style-type: none"> 1. Single-field and split-field modes are available. 2. The microscope image is displayed in a 22" TFT monitor and has Digital high resolution camera is used in the Microscope 3. Motorized movement in X, Y and Z(Focus) directions. 4. Movemant range for Y-direction is ± 20 mm. 5. Motorized stage has speed control 6. Objective separaiton (X-direction) is 13mm to 150mm 7. Filed of view size can be switched 1x, 2x, 4x, 8x as digital zoom with keeping same DOF (Depth of Focus) 8. Microscope illumination is white LED light source with yellow filter 9. Alignment accuracy is $\pm 0.5\mu m$ by SEMI Si wafers 10. Dual focus function allows to alignment with large alignment gap between photo mask and wafer/substrate up to 999μm. 11. Manual alignment by joystick and Automatic alignment by pattern recognition software both are available.
Apatinės pusės sutapatinimas (BSA-Bottom side alightment)	<ol style="list-style-type: none"> 1. Mikroskopo vaizdas išvedamas į ne mažesnės įstrižainės kaip 22 coliai monitoprių naudojant didelės raiškos kameras. 2. Motorizuotas judėjimas X ir Y kryptimis. 3. Maksimali eiga Y kryptimi ne mažiau ± 20 mm. 4. Motorizuoto judėjimo greičio reguliavimas. 5. Atstumas tarp laukų suskaidyto lauko režime keičiamas ne siauresniame kaip nuo 15 mm iki 150 mm intervale. 6. Funkcija leidžianti keisti matomo lauko dydį nekeičiant fokuso. 7. Mikroskopo apšvietimas naudojant LED šviesos šaltinį su filtru neleidžiančiu apšviesti fotorezisto. 8. Sutapatinimo tikslumas ant Si padėklo ne daugiau kaip ± 1 mkm. 9. Rankinis sutapatinimas naudojant vairasvirte arba automatinis sutapatinimas naudojant programinę įrangą. 	<ol style="list-style-type: none"> 1. The microscope image is displayed in a 22" TFT monitor and has Digital high resolution camera is used in the Microscope 2. Motorized movement in X, Y directions. There is internal focus also 3. Movemant range for Y-direction is ± 20 mm. 4. Motorized stage has speed control 5. Objective separaiton (X-direction) is 15 mm to 150 mm 6. Filed of view size can be switched 1x, 2x, 4x, 8x as digital zoom with keeping same DOF (Depth of Focus) 7. Microscope illumination is white LED light source with yellow filter 8. Alignment accuracy is $\pm 1.0\mu m$ by SEMI Si wafers 9. Manual alignment by joystick and Automatic alignment by pattern recognition software both are available.

MA/BA GEN4 PRO – ALIGNMENT METHODS

confidential

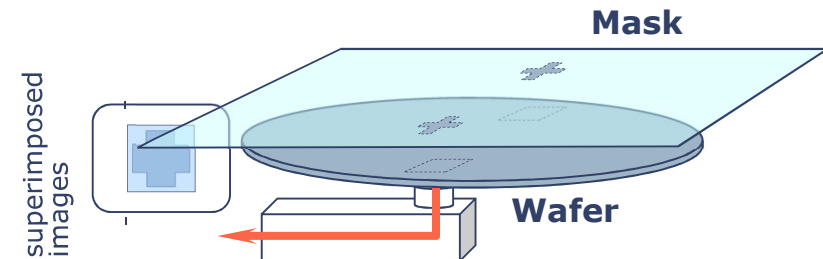
+ Top Side Alignment (TSA)

- Mask to wafer alignment with mask clear field (transparent area)



+ Bottom Side Alignment (BSA) /Option

- Alignment of backside wafer targets to grabbed mask target positions or to a grabbed image



MA/BA6 GEN4 – TOP-SIDE MICROSCOPE (TSA)

confidential

+ Top-Side Microscope

- Digital microscopes and camera
- Large field of view
- Highest resolution

Technical Specification

Objectives	2.5x/0.08	5x/0.15	10x/0.30
Optical resolution [μm]	4,0	2,1	1,1
DOF [μm]	64	17	11
Field of view horizontal [mm]	4,06	2,03	1,01
Field of view vertical [mm]	3,04	1,52	0,76
Camera pixel/ μm	0,63	1,26	2,53

Benefits

- + The SÜSS digital cameras used in MA/BA Gen4 series allow a very large field of view which is comparable to the direct view of former machines
- + No mechanical magnification switch needed due to highest resolution of microscope/camera – magnification via digital zoom



Top-Side Microscope TSA

- X separation: 29-150mm
 - ✓ With standard objective 5x
 - ✓ Single microscope can move -10mm from center for Single filed alignment
- Y: $\pm 20\text{mm}$
- Digital camera

Field of View for TSA Microscope (5x)

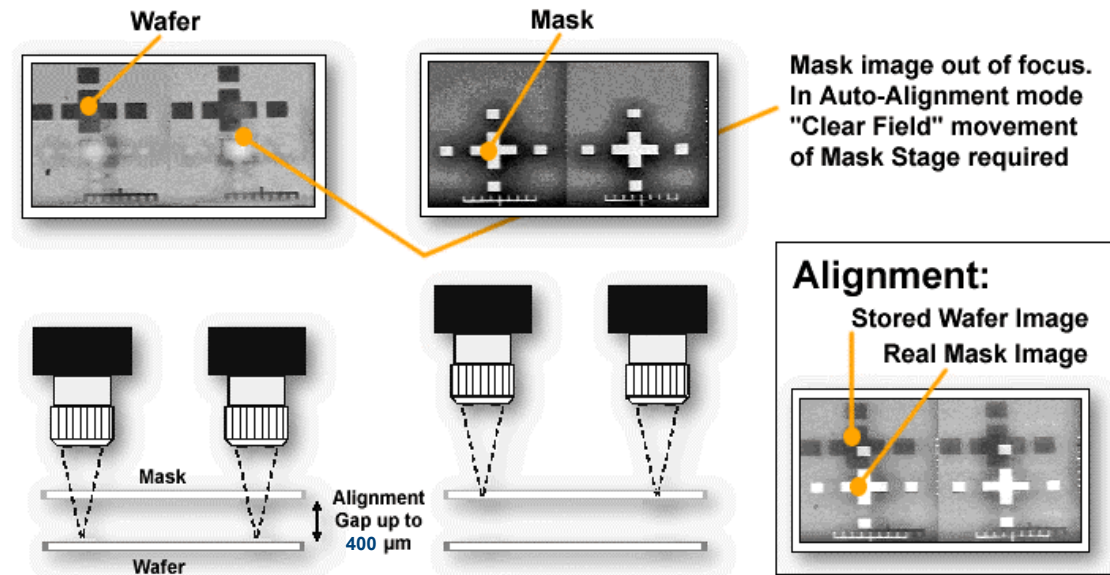
Zoom	X [μm]	Y [μm]	Resolution
1x	1500	2000	0,8 μm .pixel
2x	750	1000	
4x	375	500	
8x	188	250	

Camera resolution: 1944 x 2592 pixel, pixel size: 2.2 μm^2

MA/BA GEN4 SERIES – LARGE GAP ALIGNMENT

confidential

- + TSA alignment gaps up to 999 μ m



Featuring

- + Allows accurate alignment on high topography material, for thick resist applications and for large mask-wafer separation
- + Alignment of real mask image to stored wafer image (or vice versa)
- + Allows large substrate / mask separation (up to 999 μ m)
- + No cross hair required

MA/BA GEN4 SERIES – TSA / OFF-SET OBJECTIVE (OPTION)

SÜSS MicroTec

confidential

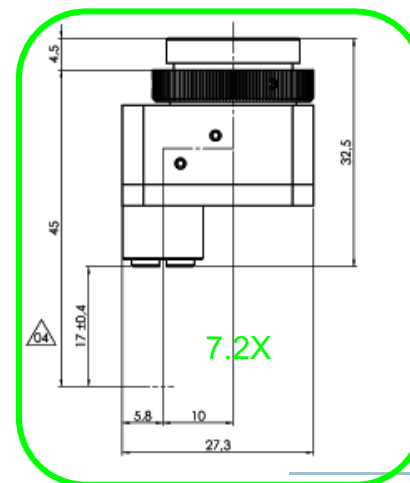
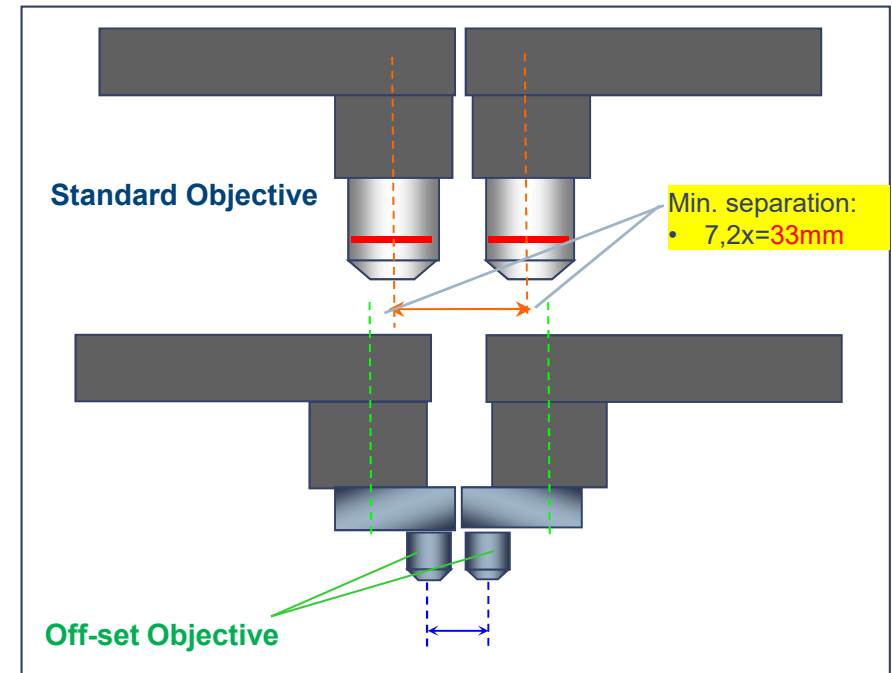
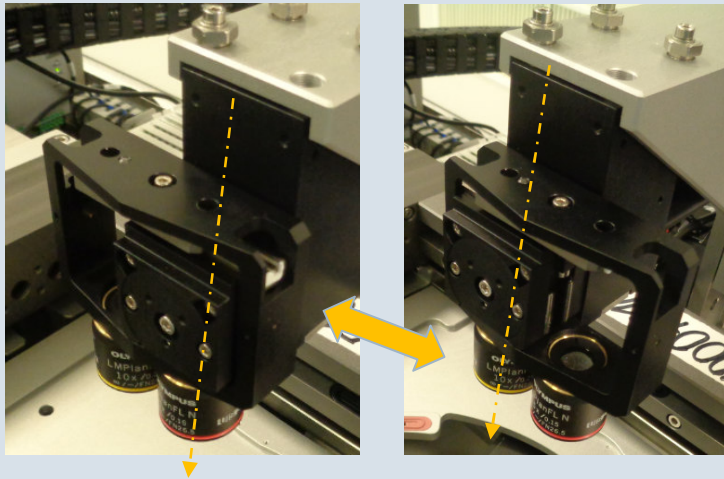
+ Off-set Objective for “Piece substrate”

Minimum separation in X = 29mm to 150(200)mm

Minimum Separation with Off-set Objective

G112796: 7.2X (10mm Off-set) → 12-13mm

“Objective slider (100074228)” is required to order!!
(Optional)



MA/BA GEN4 SERIES – BOTTOM-SIDE ALIGNMENT

confidential

+ SUSS MA6GEN4 /Advantage of New BSA Microscope

- New BSA microscope with Digital camera has a high resolution and wide FoV (=Field of view).
 - ➔ No mechanical/optical magnification switch in a microscope anymore
- On the monitor, only a part of the image is displayed depending on the zoom setting (1x, 2x, 4x, 8x), so the DoF (=Depth of focus) is same for the each zoom size.
- Resolution is depended on the displayed monitor resolution, but the FoV size is not changed by mechanical/optical magnification switch, so resolution is kept better than formal microscope
- The FoV size 1x, 2x, 4x, 8x are switched by button in GUI monitor as “zoom size”.
 - ➔ It's like a simple 4-magnification switch, and 4variations of zoom size makes the alignment process comfortable No mechanical/optical magnification switch in a microscope anymore
- Grabbed mask-image size is also changed for selected zoom size (FoV).
 - ➔ the zoom size can be changed for alignment after a grab image procedure



MA8GEN4-PRO

Field of View for BSA Microscope

Mag.	X [um]	Y [um]
Low	2320	3090
High	720	960

Field of View for BSA Microscope

Zoom	X [um]	Y [um]
1x	2140	2850
2x	1070	1425
4x	535	713
8x	268	356

MA8GEN4

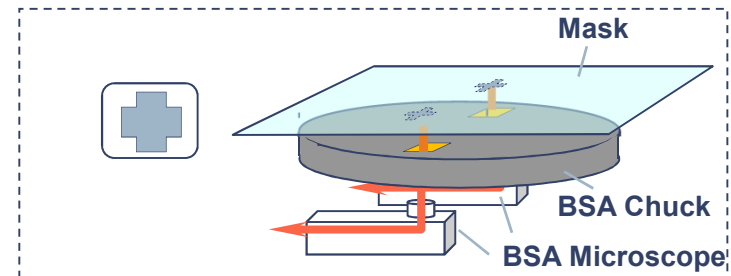


MA/BA GEN4 SERIES – BSA PROCEDURE

confidential

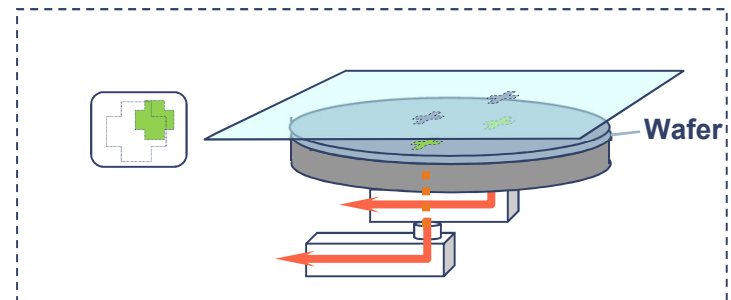
1. Mask Target Search and Image Grabbing

Mask Target



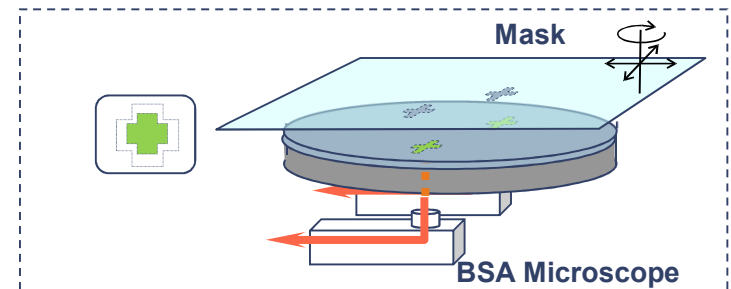
2. Wafer Loading

Wafer Target
With superimposed
mask target



3. Wafer Alignment to grabbed mask target image

Wafer Target
With
superimposed
mask target

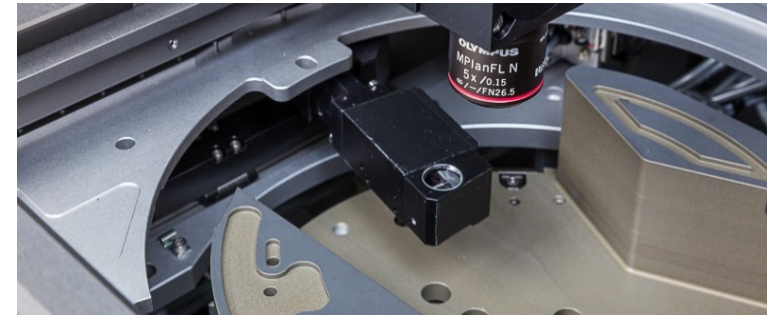
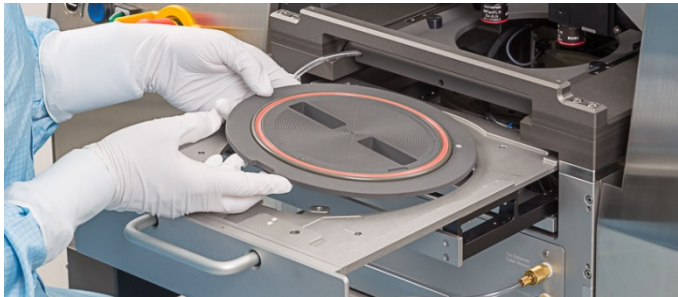
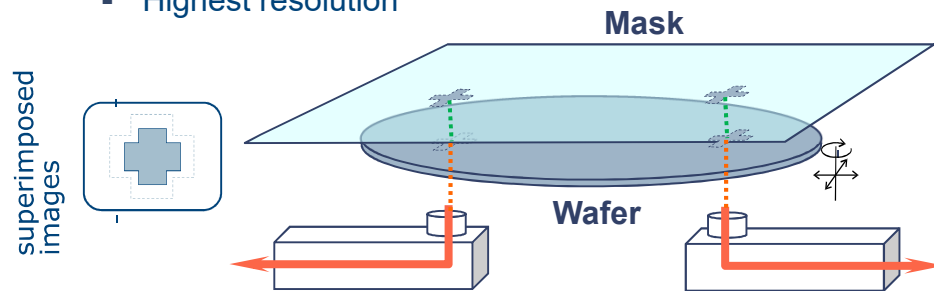


MA/BA6 GEN4 – BOTTOM-SIDE ALIGNMENT (BSA)

confidential

+ Bottom-Side Microscope

- Digital microscopes and camera
- Large field of view
- Highest resolution



Bottom-Side Microscope BSA

- X separation: 15-150mm
 - Min. separation: 29mm with TSA Mic
- Y: ± 20 mm
- Focus: 11mm
- Digital camera

Field of View for BSA Microscope

Zoom	X [μ m]	Y [μ m]	Resolution
1x	2140	2850	1,1 μ m.pixel
2x	1070	1425	
4x	535	713	
8x	268	356	

Camera resolution: 1944 x 2592 pixel, pixel size: 2.2 μ m²

SÜSS Performance

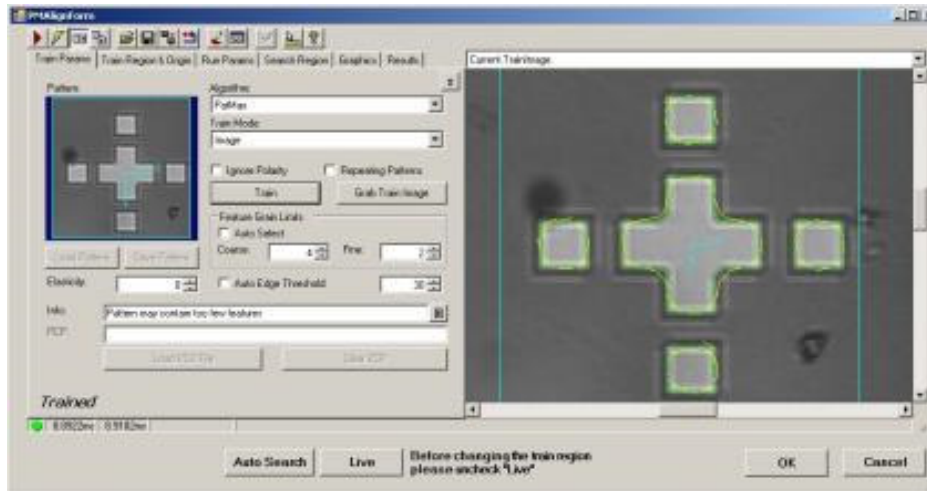
- + $\pm 1.0 \mu$ m standard BSA with manual operation
- + No mechanical magnification switch
- + Wafer thickness up to 7mm
- + Available modes: manual, assisted and auto alignment
- + Field upgrade for bottom-side alignment system

AUTO ALIGNMENT

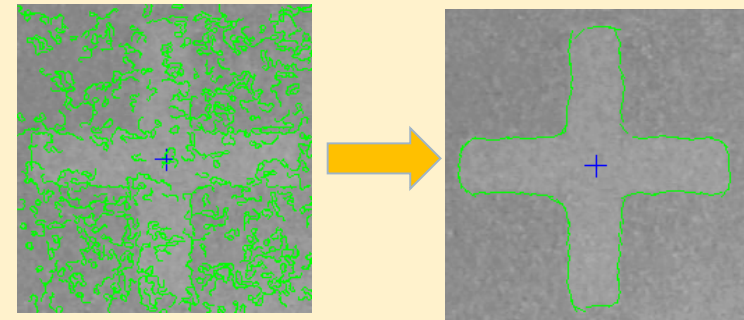
confidential

SÜSS MicroTec

+ Pattern recognition system Cognex “Vision-PRO:



Cognex Vision Pro Editor



➤ In pattern recognition, the graphical feedback makes you understand easily why a pattern does not work!!

<Features>

- ✓ Clear GUI structure
- ✓ User guidance
- ✓ Safe interaction
- ✓ Visual feedback



lead to...

- Faster process training
- Lower failure risk

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

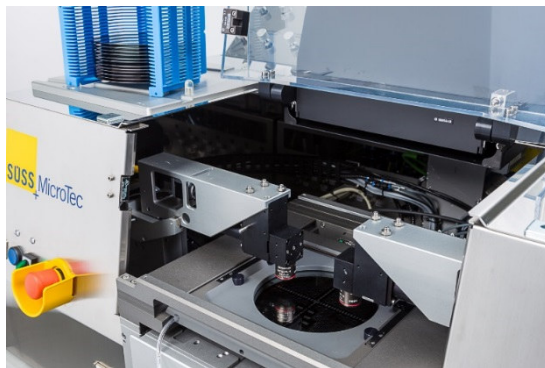
confidential

SÜSS MicroTec

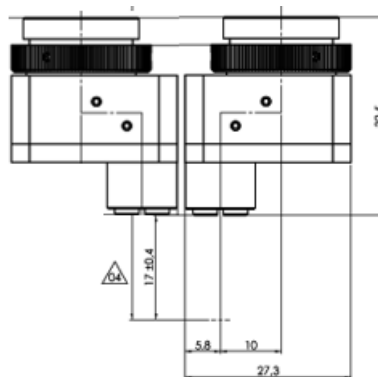
Confidential!!!

+ Tool configuration /Alignment system:

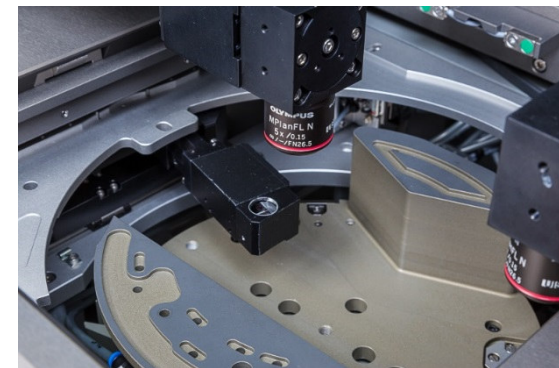
POS.	QTY	PART #	DESCRIPTION	Internal comments
Alignment system				
9	1	100075288	ALIGNMENT SYSTEM TSA/BSA MA/BA Gen4	
10	1	100074228	MICROSCOPE SET TSA-D TL100/LL MA/BA Gen4 WITH OBJECTIVE SLIDER	
11	2	G145984	SINGLE OBJECTIVE UMPL FL 5X/0.15	
12	1	G112796	OFFSET OBJECTIVE 7.2X/0.15 WITH AN OFFSET OF 10MM	
13	1	100072334	MICROSCOPE SET BSA MA/BA Gen4	
14	1	100076066	MICROSCOPE RAIL BSA MA/BA Gen4	
15	1	100085859	AUTO ALIGNMENT MA/BA GEN4	<=Added in New quotation (it was in Option)



- TSA Microscope /with Digital camera
- Objective sliders (5x<=>7,2x)
- 5x Olympus objectives
- 7,2x Objectives (for Small pieces)

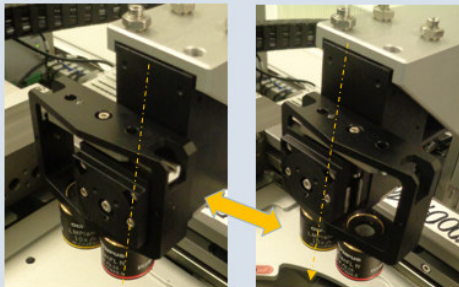


7,2x Objectives



- BSA Microscope /with Digital camera

"Objective slider (100074228)" is required to order!! (Optional)



MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

confidential

SÜSS MicroTec

Confidential!!

+ Tool configuration /Alignment system:

POS.	QTY	PART #	DESCRIPTION	Internal comments
Alignment system				
9	1	100075288	ALIGNMENT SYSTEM TSA/BSA MA/BA Gen4	
10	1	100074228	MICROSCOPE SET TSA-D TL100/LL MA/BA Gen4 WITH OBJECTIVE SLIDER	
11	2	G145984	SINGLE OBJECTIVE UMPL FL 5X/0.15	
12	1	G112796	OFFSET OBJECTIVE 7.2X/0.15 WITH AN OFFSET OF 10MM	
13	1	100072334	MICROSCOPE SET BSA MA/BA Gen4	
14	1	100076066	MICROSCOPE RAIL BSA MA/BA Gen4	
15	1	100085859	AUTO ALIGNMENT MA/BA GEN4	<=Added in New quotation (it was in Option)

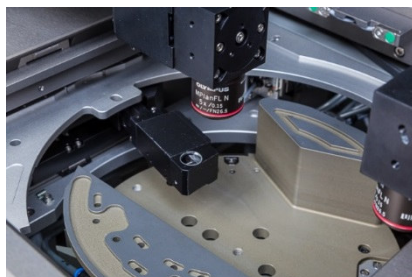


Field of View for TSA Microscope (5x)

Zoom	X [um]	Y [um]	Resolution
1x	1500	2000	0,8µm / pixel
2x	750	1000	
4x	375	500	
8x	188	250	

TSA Over view area:
(TSA Mic. with **5x** objectives)

- X separation: 33-150mm
- Y direction: +/-20mm



Field of View for BSA Microscope

Zoom	X [um]	Y [um]	Resolution
1x	2140	2850	1.1µm / pixel
2x	1070	1425	
4x	535	713	
8x	268	356	

TSA Over view area:
(TSA Mic. with **7,2x**)

- X separation: 13-150mm
- Y direction: +/-20mm

BSA Over view area:
(When TSA Mic.is sliding out)

- X separation: 15-150mm
- Y direction: +/-20mm

Camera resolution: 1944 x 2592 pixel, pixel size: 2.2µm²

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

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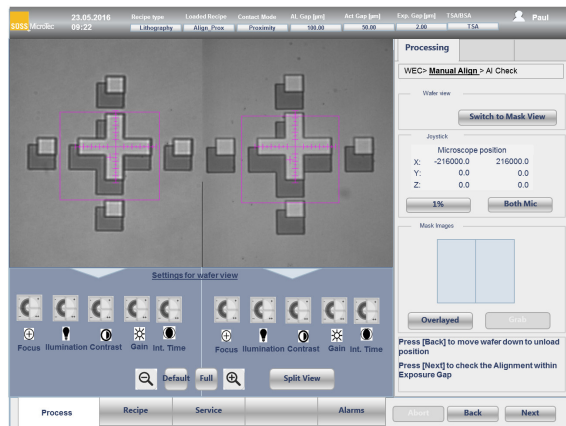
SÜSS MicroTec

Confidential!!

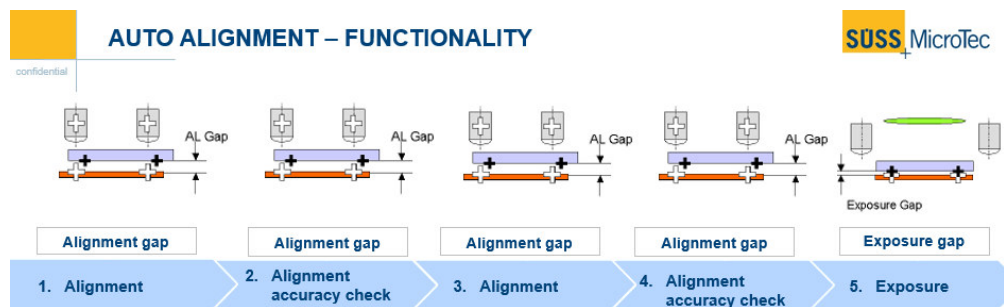
+ Tool configuration /Alignment system:

POS.	QTY	PART #	DESCRIPTION	Internal comments
Alignment system				
9	1	100075288	ALIGNMENT SYSTEM TSA/BSA MA/BA Gen4	
10	1	100074228	MICROSCOPE SET TSA-D TL100/LL MA/BA Gen4 WITH OBJECTIVE SLIDER	
11	2	G145984	SINGLE OBJECTIVE UMPL FL 5X/0.15	
12	1	G112796	OFFSET OBJECTIVE 7.2X/0.15 WITH AN OFFSET OF 10MM	
13	1	100072334	MICROSCOPE SET BSA MA/BA Gen4	
14	1	100076066	MICROSCOPE RAIL BSA MA/BA Gen4	
15	1	100085859	AUTO ALIGNMENT MA/BA GEN4	<=Added in New quotation (it was in Option)

Pos,15 Auto alignment



AUTO ALIGNMENT – FUNCTIONALITY



- + Aligns live wafer target to saved mask target in alignment gap (1.)
- + Checks alignment accuracy in alignment gap (2.)
- + Repetition of procedure if necessary (3. + 4.)
- + Exposure in exposure gap after last alignment check (5.)

SUSS MA/BA GEN4

- Tooling (Chuck & Mask-holder) -

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

confidential

SÜSS+MicroTec

Confidential!!!

+ Tender contents / Tool kit:

Padėklų laikikliai Substrate holders (Chuck stages)	1. Turi būti keičiami nenaudojant įrankių. 2. Turi turėti padėklų pozicionavimo žymes. 3. Skirti kvadratiniams bandiniams 3x3mm, 10x10mm, 20x20mm, 30x30mm dydžio ir apskritiems padėklams 2", 3" ir 100mm skersmens. 4. Skirti viršutinės ir apatinės pusės sutapatinimui.	1. Chuck stage can be changed without using tools. 2. Pre-alignment mark for wafer /substrates. 3. Stage type for... For square samples 3x3mm, 10x10mm, 20x20mm, 30x30mm size For W-2" , W-3" and W-100mm diameter each 4. For Top side alignment and Bottom side alignment
Fotošablonų laikikliai Photo mask holders	1. Skirti 4x4" ir 5x5" fotošablonams su kiauryme tinkama 2" ir 3" skersmens apskritiems padėklams eksponuoti. 2. Skirti 5x5" ir 6x6" dydžio fotošablonams su kiauryme 4" skersmens padėklams eksponuoti. 3. Specialios formos laikiklis 4"x4" dydžio fotošablonui su reguliuojama pozicija leidžiantis eksponuoti viename šablone esančius ne mažesnius kaip 20x20 mm dydžio piešinius vienas ant kito naudojant viršutinės pusės sutapatinimą.	1. Mask-holders are designed for 4x4" and 5x5" photo mask size with opening area for W-2 "and 3" diameter wafers. 2. Mask-holder is designed for 5x5"and 6x6" photo mask size with opening area for W-100mm diameter wafers. 3. Special Shape Holder for 4 "x4" Photo mask with Adjustable position for 20x20 mm size

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

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SÜSS MicroTec

Confidential!!

+ Tool configuration /Tool kit:

POS.	QTY	PART #	DESCRIPTION	Internal comments
Tooling kit for W-2" + W-3" + W-100mm				
18	1	G107191	MASK HOLDER MA6/BA6/BL/PROX/CONT/M-5-6/W-100	<=W-100mm MH for Spacer WEC
19	1	G107190	MASK HOLDER MA6/BA6/BL/PROX/CONT/M-3,5-5/W-3	<=W-3" MH for Spacer WEC
20	1	100059267	CHUCK MA6/BA6/VAC/BSA/GLASS/W-2/W-3/W-100/GL-WEC/3VA/SPEC	<=Designed VAC chuck is cheaper than a new designed CONT chuck
21	1	G115069	EXPOSURE TEST DIAL 100MM	

Pos.18: Mask-holder



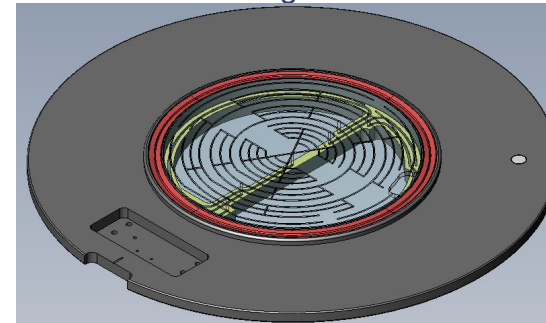
- For W-100mm wafer
- Proximity flag/spacer for W-100mm
- Mask size: 5x5", 6x6"

Pos.19: Mask-holder



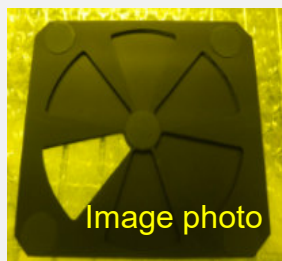
- For W-3" wafer
- Proximity flag/spacer for W-3"
- Mask size: 3,5x3,5", 4x4", 5x5"

Pos.20: Chuck stage



- Stage size for W-2", -3", -100mm wafer (SEMI)
- 3ways switching
- With Vacuum seal lip
- With BSA openings under glass plate
- Pre-alignment by hair line grooves

Pos. 21: test exposure dial



6conditions of exposure results can be patterned on a wafer in Test exposure mode!

Note:

- Same exposure mode
- Difference exposure time

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

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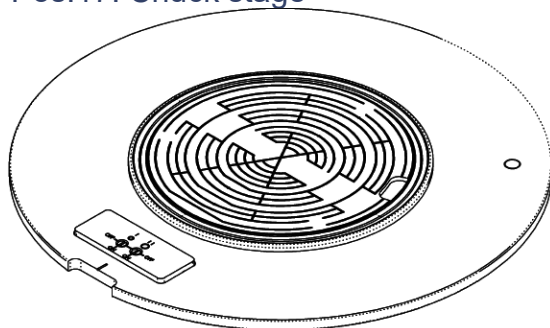
SÜSS MicroTec

Confidential!!

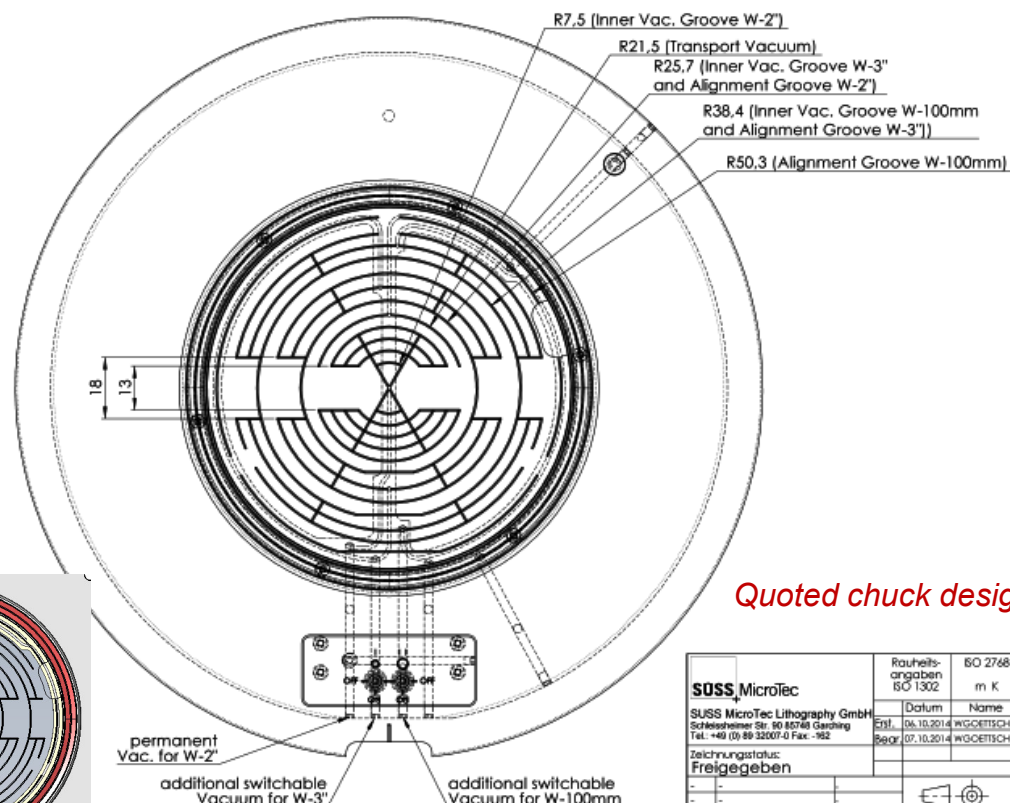
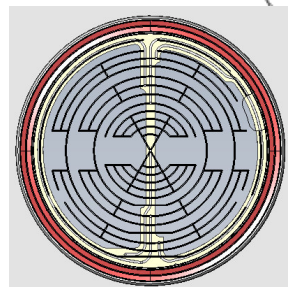
+ Tool configuration /Tool kit:

POS.	QTY	PART #	DESCRIPTION	Internal comments
Tooling kit for W-2" + W-3" + W-100mm				
18	1	G107191	MASK HOLDER MA6/BA6/BL/PROX/CONT/M-5-6/W-100	<=W-100mm MH for Spacer WEC
19	1	G107190	MASK HOLDER MA6/BA6/BL/PROX/CONT/M-3,5-5/W-3	<=W-3" MH for Spacer WEC
20	1	100059267	CHUCK MA6/BA6/VAC/BSA/GLASS/W-2/W-3/W-100/GL-WEC/3VA/SPEC	<=Designed VAC chuck is cheaper than a new designed CONT chuck
21	1	G115069	EXPOSURE TEST DIAL 100MM	

Pos.17: Chuck stage



- Stage size for W-2", -3", -100mm wafer (SEMI)
- 3ways switching
- With Vacuum seal lip
- With BSA openings under glass plate
- Pre-alignment by hair line grooves



Quoted chuck design!!

SÜSS MicroTec		Rauheits- angaben ISO 1302	ISO 2768 m K
SÜSS MicroTec Lithography GmbH Schleissheimer Str. 80 85748 Garding Tel.: +49 (0) 89 32007-0 Fax: -162		Datum	Name
Zeichnungsstatus: Freigegeben		01.10.2014	WGOETTSCH
		Revis.	07.10.2014 WGOETTSCH

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

confidential

SÜSS MicroTec

Confidential!!

+ Tool configuration /Tool kit:

POS.	QTY	PART #	DESCRIPTION	Internal comments
Tooling kit for W-2" + W-3" + W-100mm				
18	1	G107191	MASK HOLDER MA6/BA6/BL/PROX/CONT/M-5-6/W-100	<=W-100mm MH for Spacer WEC
19	1	G107190	MASK HOLDER MA6/BA6/BL/PROX/CONT/M-3,5-5/W-3	<=W-3" MH for Spacer WEC
20	1	100059267	CHUCK MA6/BA6/VAC/BSA/GLASS/W-2/W-3/W-100/GL-WEC/3VA/SPEC	<=Designed VAC chuck is cheaper than a new designed CONT chuck
21	1	G115069	EXPOSURE TEST DIAL 100MM	

Exposure mode	W-2"	W-3"	W-100mm
Soft contact mode	OK	OK	OK
Hard contact mode	OK	Possible , but not so good condition because of combination chuck	Possible , but not so good condition because of combination chuck
Vacuum contact mode	Possible , but not so good condition because of combination chuck	Possible , but not so good condition because of combination chuck	OK
Proximity exposure With Contact WEC	OK	OK	OK
Proximity exposure With Spacer WEC (By Proximity flags)	Need a mask holder for W-2" in Option (Pos.32) → Page 24	OK with W-3" mask-holder (Pos.18)	OK with W-100mm mask- holder (Pos.18)

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

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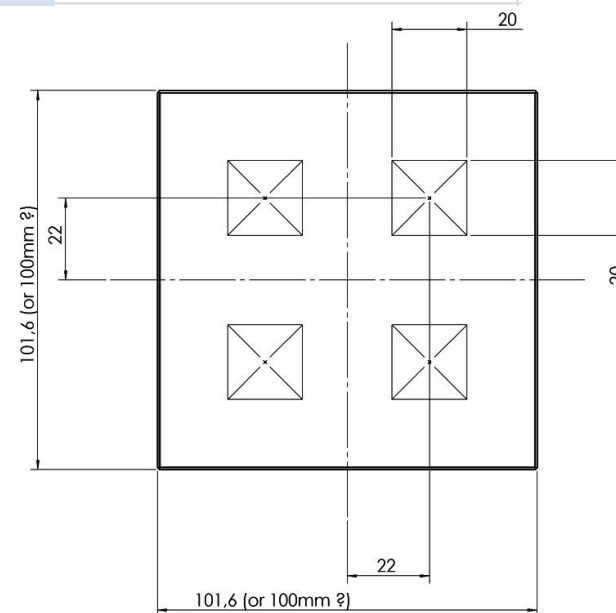
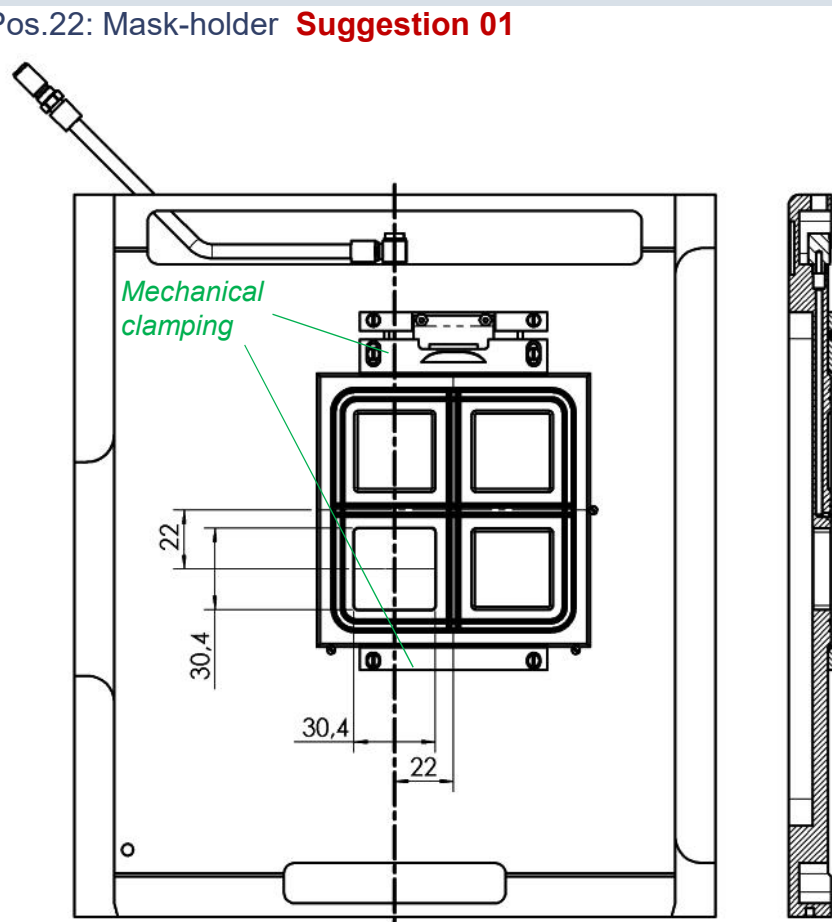
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+ Tool configuration /Tool kit:

POS.	QTY	PART #	DESCRIPTION	Internal comments
Tooling kit for 3x3mm, 10x10mm, 20x20, 30x30mm				
22	1	999993	P MASK HOLDER MA6/BA6/BL/CONT/M-4-5/S-30MM/SHIFT SPEC	<=Added in New quotation (it was in Option) Design must be fixed!!
23	1	999992	P CHUCK MA6/BA6/VAC/BSA/GLASS/S-3-10-20-30mm/3VA/SPEC	<=Design must be fixed!!

Pos.22: Mask-holder **Suggestion 01**



Note for this design...

- **Mask size is 4x4"** with using Mechanical clamping
(If the mechanical clamp is removed, it is possible to attach 5x5" mask also, but it is depended on the mask layout!!)
- **Layout of the mask design must be following to above...**

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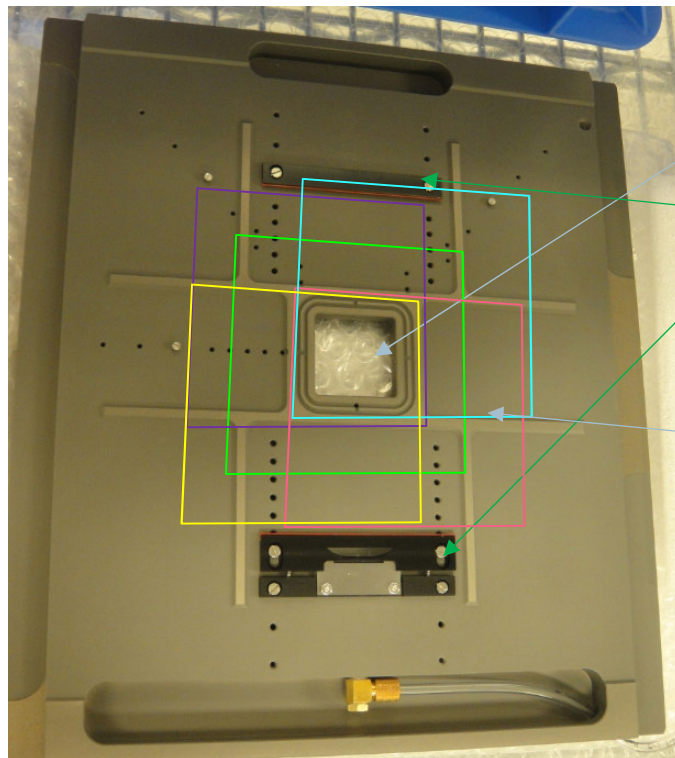
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+ Tool configuration /Tool kit:

POS.	QTY	PART #	DESCRIPTION	Internal comments
Tooling kit for 3x3mm, 10x10mm, 20x20,, 30x30mm				
22	1	999993	P MASK HOLDER MA6/BA6/BL/CONT/M-4-5/S-30MM/SHIFT SPEC	<=Added in New quotation (it was in Option) Design must be fixed!!
23	1	999992	P CHUCK MA6/BA6/VAC/BSA/GLASS/S-3-10-20-30mm/3VA/SPEC	<=Design must be fixed!!

Pos.22: Mask-holder **Suggestion 02**



Vacuum groove is just around 30x30mm opening

Mechanical clamp can be removed by 6screws

4x4" mask or 5x5" mask can be loaded with free shift!!

Example drawing for 25x25mm!!

Note for this design...

- **Mask is not fixed by mechanical clamping, so if facility VAC is off, mask is down to stage...**

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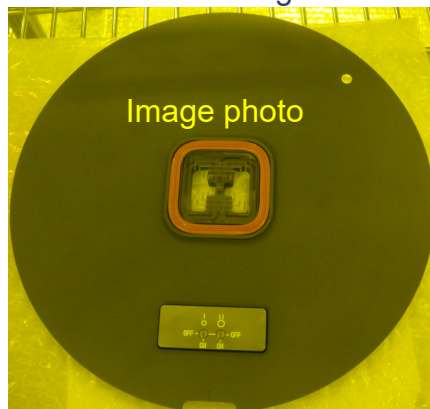
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+ Tool configuration /Tool kit:

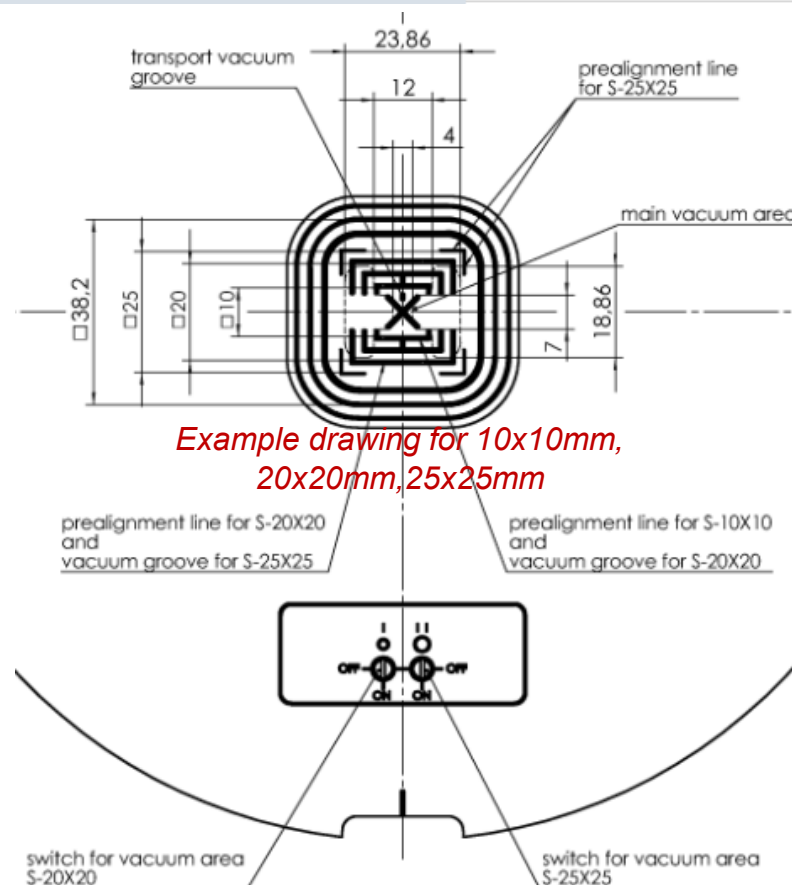
POS.	QTY	PART #	DESCRIPTION	Internal comments
Tooling kit for 3x3mm, 10x10mm, 20x20mm, 30x30mm				
22	1	999993	P MASK HOLDER MA6/BA6/BL/CONT/M-4-5/S-30MM/SHIFT SPEC	<=Added in New quotation (it was in Option) Design must be fixed!!
23	1	999992	P CHUCK MA6/BA6/VAC/BSA/GLASS/S-3-10-20-30mm/3VA/SPEC	<=Design must be fixed!!

Pos.23: Chuck stage



- Stage size for S-3x3mm, 10x10mm, 20x20mm, 30x30mm
- 3way vacuum switch
- With Vacuum seal lip
- With BSA openings on Glass plate
- Pre-alignment hair line groove
- SPEC design!!

Note: Minimum BSA separation is 14mm, of target separation is less 15mm, BSA doesn't work. Single BSA mode is not developed in GEN4 yet!!



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+ Tool configuration /Tool kit:

POS.	QTY	PART #	DESCRIPTION	Internal comments
Tooling kit for 3x3mm, 10x10mm, 20x20mm, 30x30mm				
22	1	999993	P MASK HOLDER MA6/BA6/BL/CONT/M-4-5/S-30MM/SHIFT SPEC	<=Added in New quotation (it was in Option) Design must be fixed!!
23	1	999992	P CHUCK MA6/BA6/VAC/BSA/GLASS/S-3-10-20-30mm/3VA/SPEC	<=Design must be fixed!!

Function	3x3mm	10x10mm	20x20mm	30x30mm
Soft contact mode	Possible	Possible	Possible	Possible
Hard contact mode	Possible	Possible	Possible	Possible
Vacuum contact mode	Un-known Substrate size might be too small for chamber	Possible	Possible	Possible
Proximity exposure	Possible with Contact WEC only	Possible with Contact WEC only	Possible with Contact WEC only	Possible with Contact WEC only
WEC mode	Contact WEC only!! (No Spacer WEC)	Contact WEC only!! (No Spacer WEC)	Contact WEC only!! (No Spacer WEC)	Contact WEC only!! (No Spacer WEC)
TSA	Possible With Single filed mode	Possible With Single filed mode	Possible If target separation is >13mm If Not, Single filed mode	Possible If target separation is >13mm If Not, Single filed mode
BSA	N.A. Single BSA is required S/W is not available	N.A. Single BSA is required S/W is not available	Possible If target separation is >15mm	Possible If target separation is >15mm

SUSS MA/BA GEN4 - Other accessories-

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

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+ Tender contents /Other part:

Saugos funkcijos Safety features	1. Turi būti užraktas neleidžiantis atidaryti UV šaltinio jam esant įjungtam. 2. Motorizuotos dalys turi būti uždengtos, apsaugant nuo operatoriaus netyčinio kontakto su jomis.	1. There is interlock for UV light system /If covers are not closed, UV light would be not turned ON... 2. Motorized parts must be covered to protect operators.
Darbo vietos reguliavimo galimybės Workplace control capability	Prietaiso valdymo įrankiai turi reguliuotis ribose leidžiančiose prietaiso operatoriui dirbti prietaisu sėdint arba stovint.	A height of the control panel (operation panel) can be adjusted depending on a situation of operator is sitting or standing.
Prietaiso instaliavimo galimybės Device installation capability	Prietaiso konfigūracija turi leisti jį pastatyti ir naudoti patalpos kampe priglaudžiant dvi prietaiso sienes prie patalpos sienų.	Back side of the machine and Left side of machine doesn't need service area.
Programinė įranga Software	Programinė įranga skirta: 1) prietaiso rankiniam valdymui 2) automatizuotam sutapatinimui 3) rankiniam sutapatinimui 4) eksponavimui pastovios ekspozicijos dozės režime 5) eksponavimui pastovaus ekspozicijos laiko režime 6) šviesos šaltinių ekspozicijos metu šviesos intensyvumo valdymui	Software for: 1) Manual machine 2) with Automatic alignment 3) with Manual alignment 4) with Constant Dose exposure mode (Exp.dose is constant) 5) with Contact Power exposure mode (Exp.time is constant) 6) During light exposure, intensity is checked
Priedai Accessories	1. Būtinai visi priedai, užtikrinantys prietaiso veikimą pvz., kompiuteris, monitorius, vakuumo pompa ir pan. 2. Antivibracinis stalas prietaiso pastatymui. 3. Šviesos intensyvumo matuoklis ir apsauginiai UV akiniai. 4. Testinis fotošablonas prietaiso rezoliucijai testuoti.	1. All the accessories which need for process are included... (Computer, Monitor, Vacuum pump) 2. Anti-vibration table is included 3. Light intensity meter and protective UV glasses are included 4. Test Photo maske (5x5" mask) for resolution test and alignment test is included.

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

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+ Tender contents /Other part:

Įrangos pakuotė transportavimui Equipment packaging for transportation	Įranga transportavimui turi būti nuvalyta ir supakuota švariose patalpose į pakuotę skirtą išpakuoti instaliavimui švariose patalpose.	Equipment would be packed for transportation with considering to un-packing and install in to a clean rooms.
Elektros maitinimas Power supply	Viso įrenginio maitinimas turi būti suderintas su standartiniu elektros tinklu 1 fazės 220/240 V, 50 Hz arba 3 fazių 380/400 V, 50Hz.	The power supply is ok as... Single phase 220/240V /50 Hz
Dokumentacija Documentation	Standartinis techninis aprašymas ir eksploataavimo instrukcijos.	Operation manual and safety installation manual are included
Mokymai ir prietaiso funkcijų demonstravimas Training and demonstration of device features	Turi būti ne mažiau kaip dviem pirkėjo atstovams pademonstruotos prietaiso funkcijos, sutapatinimo tikslumo viršutinės ir apatinės pusės sutapatinimo režimams ir eksponavimo rezoliucijos visiems prietaiso eksponavimo režimams atitikimas techniniams reikalavimams gamintojo patalpose. Praveisti prietaiso visų funkcijų naudojimo ir prietaiso priežiūros mokymai.	Technical resuslt for following would be shown before ship out the machine and after install the mahcine... <ul style="list-style-type: none"> • Light uniformity • Resolution resuslt by W-100mm • Top side alignment resuslt • Bottom side alignment resuslt <p>Operation training onsite (1day) is included Training for preventive maintenance is available in factory.</p>
Instaliavimas Installation	Instaliavimas, testavimas ir funkcijų demonstravimas yra būtini. Instaliavimo metu turi būti pademonstruotas viršutinės pusės sutapatinimo tikslumo ir ekspozicijos rezoliucijos skirtingais režimais atitikimas reikalavimams.	Installation by our engineer and testing above are included. Exposure resolution test in different modes will be demonstrated. <ul style="list-style-type: none"> • Proximity 20um • Soft contact • Hard cotnact • Vacuum contact

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

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+ Tool configuration /External UV light measurement tooling kit:

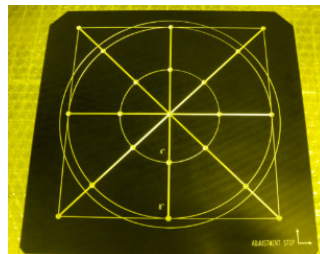
POS.	QTY	PART #	DESCRIPTION	Internal comments
External UV intensity measurement system				
24	1	G207355	SUSS UV OPTOMETER CASE CPL.	
25	1	G187080	SUSS UV LIGHT MEASURING PROBE 365/405NM for UV OPTOMETER	
26	1	100059248	UV EYE PROTECTION GLASSES	
27	1	G300409	POSITION DIAL FOR LIGHT SENSOR [MA6-8GEN3-4]	



UV Opto-meter (Pos.24)



Eye-glasses (Pos.26)



Intensity measuring plate (Pos.27)

UV light probe (Pos.25)

- For g-h-i-line (P-405) + i-line (P-365)
/2ch in 1 probe

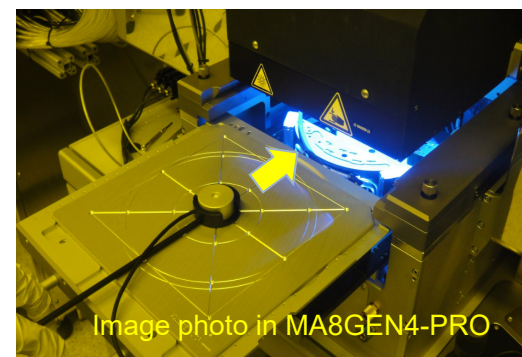


Image photo in MA8GEN4-PRO

MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

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+ Tool configuration /External UV light measurement tooling kit:

POS.	QTY	PART #	DESCRIPTION	Internal comments
5x5" Test mask (for Resolution test and Alignment test)				
28	1	100007694	SUSS AL/RES TEST MASK / 5X5X0.090 INCH / QUARTZ / CD	
Training credits				
29	6	TCL-0019	TRAINING CREDIT MA/BA Gen4	



Test mask (Pos.28)

- 5x5" /0.12"
- Quartz
- Up to 1,0um resolution
- TSA BSA evaluation possible

TRAINING CREDIT MA/BA Gen4 (Pos.29)

- + Training on SUSS equipment in SMT-L in Garching
- + This 6credits valid for 3days /2persons
- + Main purpose is for maintenance training
(Basic operation training is included in installation cost)
- + validity 18 months after FAT
(We recommend to do this training with PAT)

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+ Tool configuration /Installation cost:

POS.	QTY	PART #	DESCRIPTION	Internal comments
Installation cost				
30	1	G204012	DOUBLE LAYER CLEANROOM PACKING	
31	1	INST-EU-MABA GEN4	INSTALLATION MA/BA GEN4 / EU	

Installation cost (Pos.31)

- Service engineer x1 visit onsite, and the travel cost is included
- Assembling, Adjustment, Standard test protocol for FAT would be done by the engineer
- Process support, and Customer's process test are not included in this item

If you need additional test (e.g. realizing test of demo), we need to quote an application support cost!

- Installation takes 5days usually + **FAT process + Operation training**
- Transport cost of the machine is not included in this item /**Shipping condition is FCA!!**

SUSS MABA6GEN4 -Options-

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MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

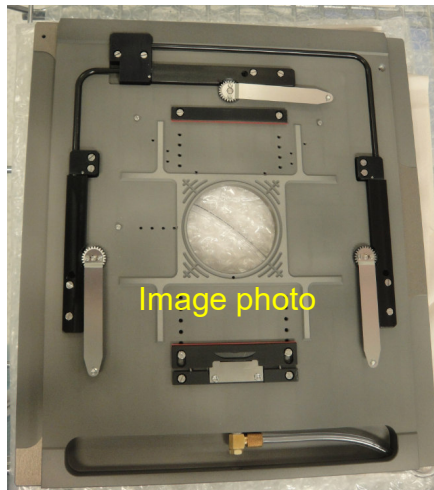
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+ Tool configuration /OPTION:

POS.	QTY	PART #	DESCRIPTION	Internal comments
<u>Options</u>				
<u>Mask-holder for W-2"</u> (For using spacer WEC)				
32	1	G191109	MASK HOLDER MA6/BA6/BL/PROX/CONT/M-2.5-5/W-2	

Pos.32: Mask-holder



- For W-2" wafer
- Proximity flag/spacer for W-2"
- Mask size: 2,5x2,5", 3x3" 4x4", 5x5"

NOTE:

- + If WEC (Wedge Error Compensation) with Spacers (x3) is required for W-2" wafers!!
- + If Contact WEC is OK for W-2", Mask-holder in Pos.19 is OK to use for W-2" process!!

19	1	G107190	MASK HOLDER MA6/BA6/BL/PROX/CONT/M-3,5-5/W-3
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MABA6GEN4 /TOOL CONFIGURATION /FTMC (LT)

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+ Tool configuration /OPTION:

POS.	QTY	PART #	DESCRIPTION	Internal comments
<u>Options</u>				
<u>Vacuum pump</u>				
33	1	G206200	VACUUM PUMP (DOUBLE MEMBRANE) 220V/50HZ CPL	
	-			



, Electrical data

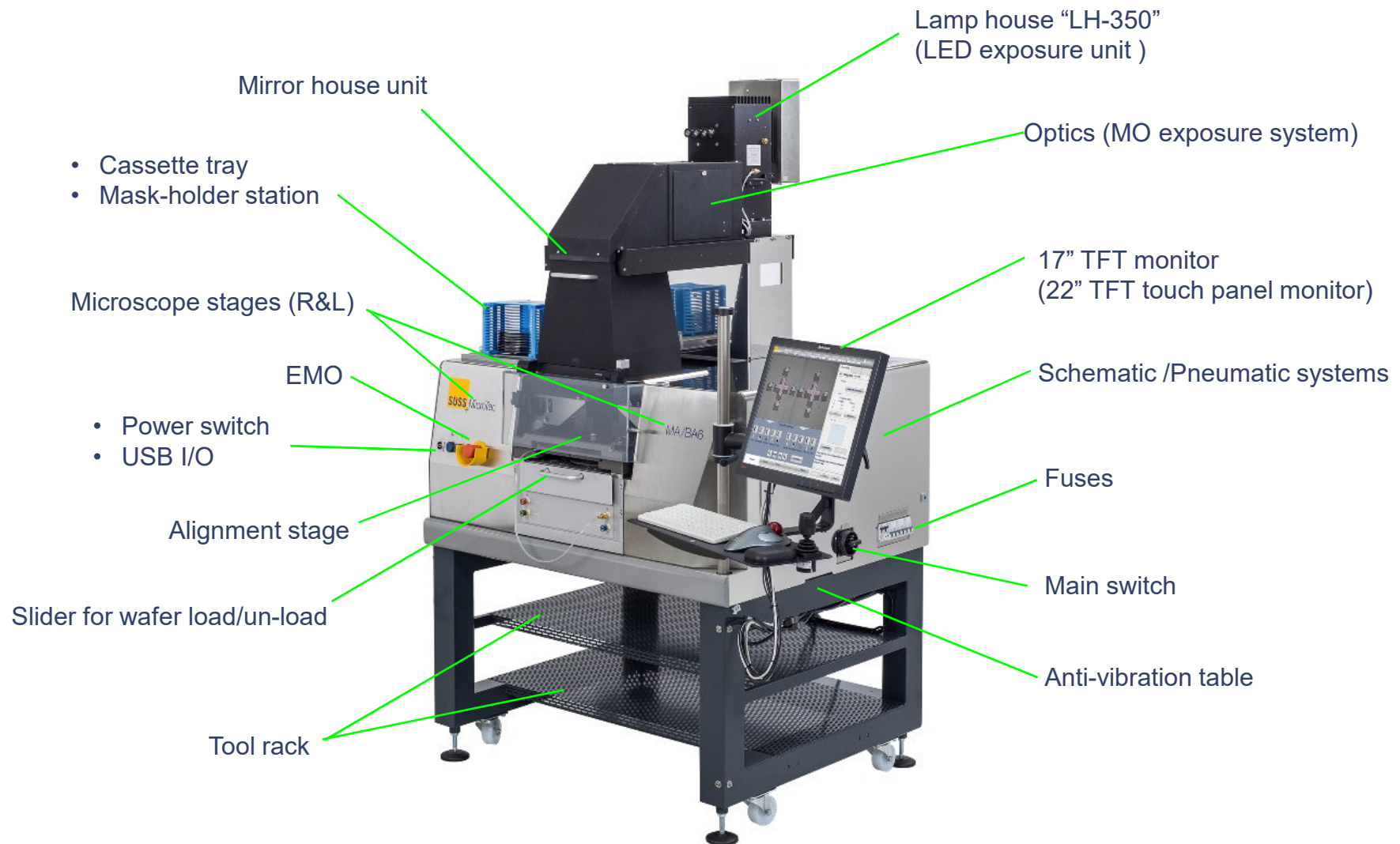
- AC 230V/50Hz
- Motor protection type: IP 44
- Current (I max): 1.9 A
- Power: 320W

SUSS MA/BA GEN4

- System overview-

MA/BA GEN4 SERIES – TOOL OVERVIEW

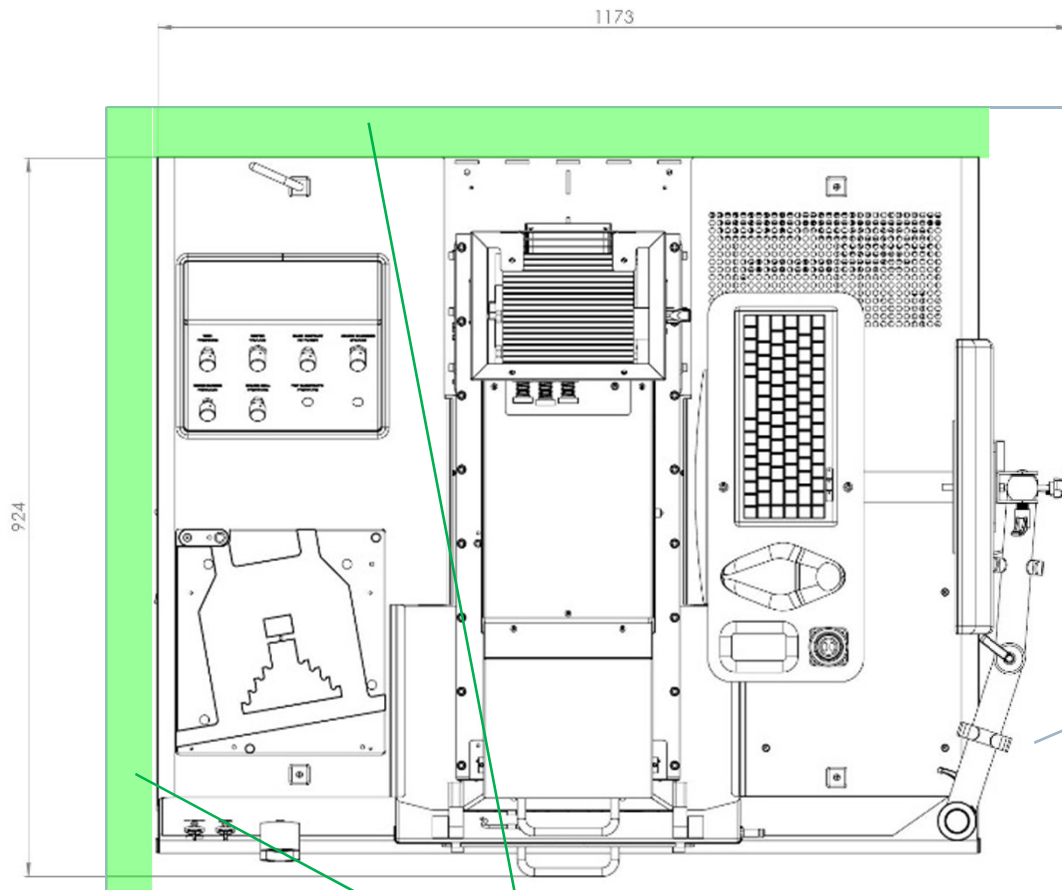
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MA/BA GEN4 SERIES – TOOL OVERVIEW

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+ Foot print



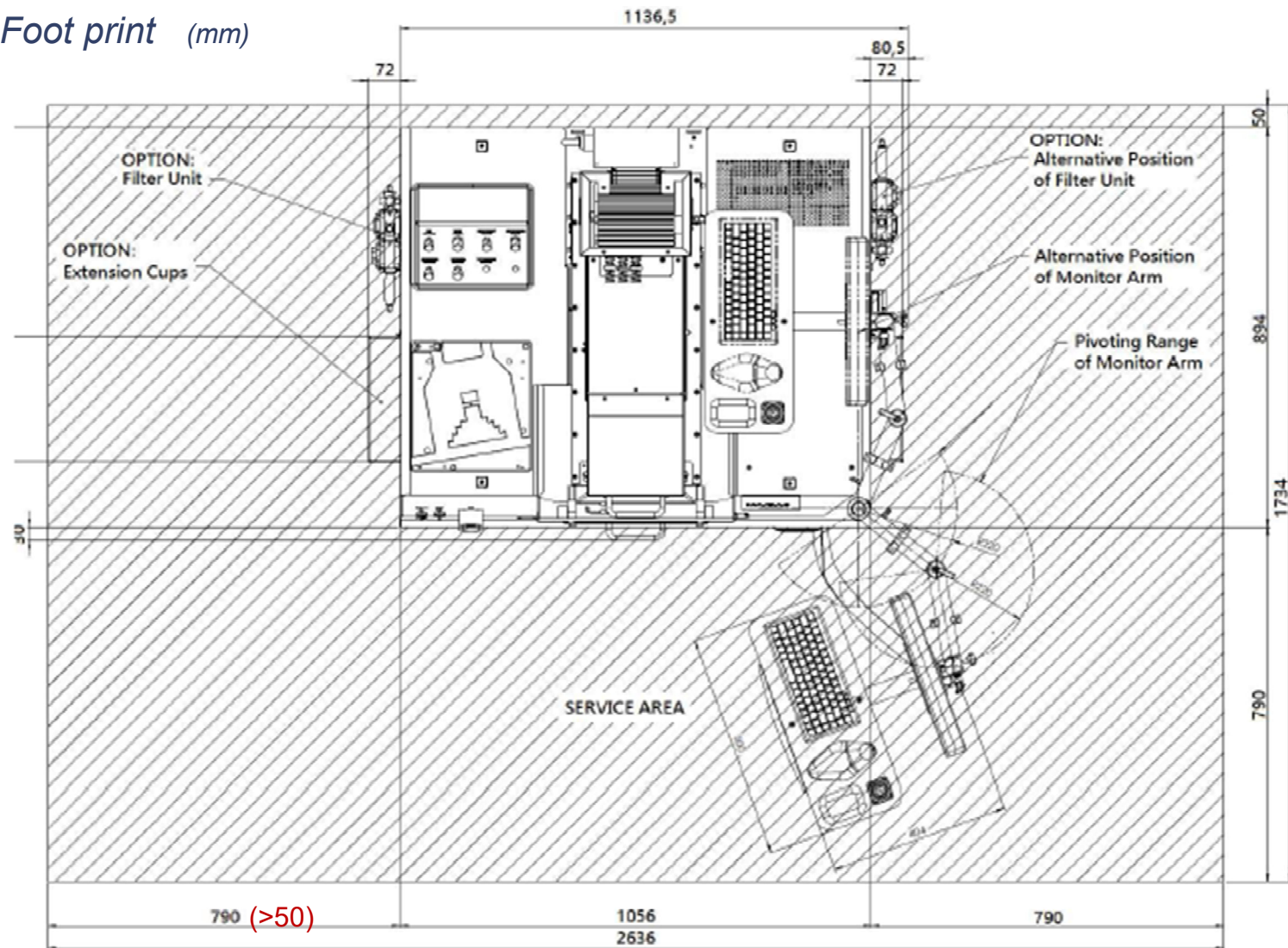
Maintenance area is not required against this 2sides!!



MA/BA GEN4 SERIES – TOOL OVERVIEW

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+ Foot print (mm)



MA/BA GEN4 SERIES – IMPROVED ERGONOMICS

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Improved ergonomics

- ✓ Operation standing or sitting
- ✓ Tool-free tooling exchange
- ✓ Easy access to all sub-assemblies
- ✓ Cassette tray for wafer cassette storage
- ✓ Height adjustable control unit (monitor, keyboard, joystick, mouse)
- ✓ Movable parts for easy tool exchange
- ✓ Comprehensive user manual



MA/BA GEN4 SERIES – SERVICE FRIENDLINESS

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Service Friendliness

- ✓ Easy access to all sub assemblies
- ✓ Service software for preventive maintenance
- ✓ Plug & play PLC modules for easy and fast exchange
- ✓ Remote access via internet on demand
- ✓ State-of-the-art electronics
- ✓ Maintenance access via internet



Reliable and robust system



Quick and efficient preventive maintenance



- **High uptime**
- **Optimized cost of ownership**

MA/BA GEN4 SERIES –UTILITY

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GRAPHICAL USER INTERFACE

Windows 7

Storage of Recipes

Remote Access Available

UTILITIES

Vacuum $<-0.8 \text{ kPa}$

Compressed Air $0.6-0.8 \text{ MPa}$

Nitrogen $>0.5 \text{ MPa}$

POWER REQUIREMENTS

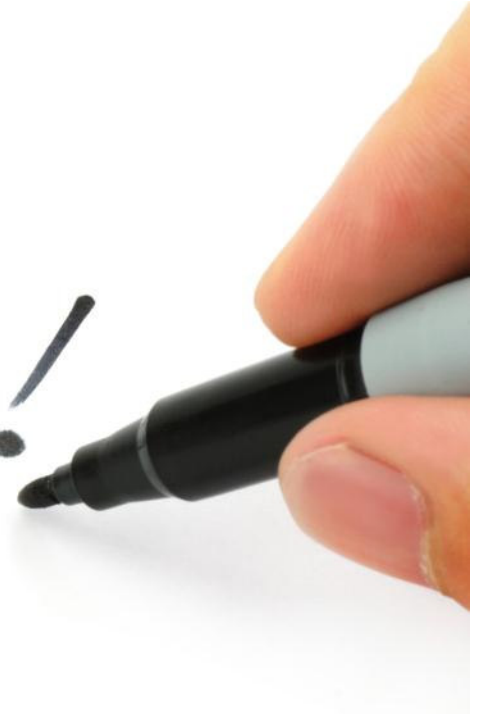
Power voltage AC $230 \text{ V} \pm 10 \%$
frequency $50-60 \text{ Hz}$



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Thank you!



SÜSS MicroTec SE
Schleissheimer Str. 90
85748 Garching

www.SÜSS.com

