EXPOMAT AEX-II®

High speed precision exposure machine with automatic optical CCD-camera-registration for HDI inner layer, outer layer and solder mask

Smallest footprint 2,45x1,25m (96,5"x49,2")

Swiss Quality

- Double sided optical registration with 2 or 4 xy-driven cameras for multiple target detection
- Double sided exposure of solder mask, outer layer and inner layer in one machine without having to reconvert the machine
- Alignment accuracy ± 2µm after vacuum
- Registration accuracy ± 5µm
- Repeatability accuracy ± 2µm
- Fast job changing time ≤ 30 second
- Statistical process control with output of registration results and film dimensions
- Equipped with different features possible
- 2.0 kw cold light with high resolution
- 6.0 kw mhl-lamp with optimised reflector system switchable to 4.0 and 2.0 kw
- 8.5 kw mhl-lamp with optimised reflector system switchable to 5.5 and 2.5 kw
- Automatic film cassette exchange with storage for interruption-free automatic production
- Up to 240 inner layer/h at max. 5µm
- Up to 200 outer layer/h at max. 5µm
- Up to 180 solder mask/h at max. 15µm

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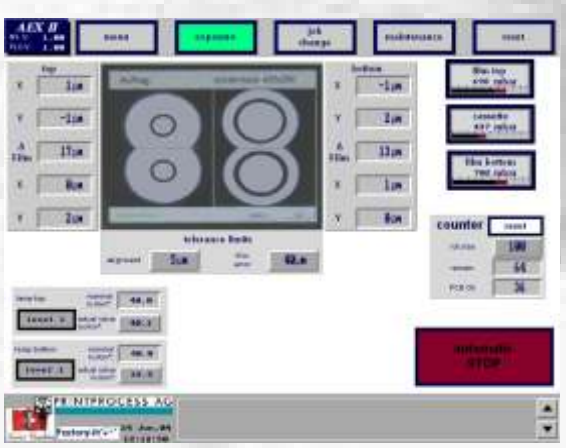
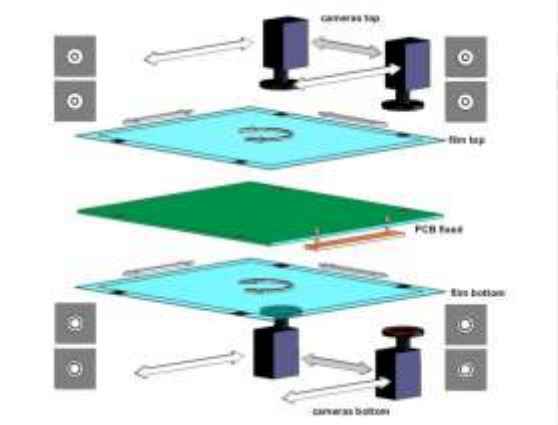
EXPOMAT AEX-II



- Easy input and memorization of up to 120 different job through touch panel (online optional).
- Job data with memorizing of alignment accuracy, max. film error, exposure energy mJ, positions of cameras and vacuum cups regarding PCB size, single or double side exposure, energy for reflected or transmitted light regarding resist, ink type and thickness
- Statistical process control with output of registration results and production protocol (optional)
- Scaling software for the measuring of panel or film to glass master (optional)
- Service menu for manual operation of all functions
- Multi lingual operation menu

- 1 or 2 CCD-cameras single or double side with xy-servo drivers
- 2 or 4 CCD-cameras single or double side with xy-servo drivers
- Registration and alignment methods for 2 or multiple targets
- Positions of targets possible at the boarders or the active area
- Fixation of outer layer and solder mask with self cleaning fixed pins
- Fixation of inner layer with vacuum without pins
- Double side exposing of inner layer without registration holes
- Optical organic PX-glass for perfect soft vacuum contact
- Automatic control of film dimension and film relax function
- Check of alignment after vacuum and before exposure
- Detection of targets with transmitted or reflected light



- Expomat AEX-II-H with semi automatic panel handling
- Later upgrade able to the full automatic AEX-II
- No manual handling of boards to films and scratching
- Load and unloading with high speed double transfer-shuttle

- High speed job changing <30 second with changeable film cassette
- Very easy preparation and cleaning of the film cassette outside of the machine while production.
- For the changing of film cassettes a sliding door at front is automatic opening when job changing is selected. Over pressure with HEPA filter class 100 and no generation of dust.
- Single cassette trolley for the handling of one film cassette. Especially for the manual operated AEX-II-H recommended.
- Double cassette trolley for the handling of two film cassettes simultaneously. With pneumatic cassette lift for changing level. Automatic pressed air connection when setting the cassette trolley to the machine front. Especially for the full automatic AEX-II recommended.
- Automatic film cassette exchange with storage for interruption-free automatic production (option).

EXPOMAT AEX-II-H

High speed precision exposure machine with automatic optical CCD-camera-registration and manual handling

- **Production capacity per hour up to**
- **155 inner layer**
- **150 outer layer**
- **130 solder mask**

Expandable to full automatic AEX-II

Input transport with polished stainless steel rollers

Automatic precentering

Transport shuttle with automatic suction cup positioning

Output transport with polished stainless steel rollers

Controller and sensoric for automatic operation

- **Production capacity per hour up to**
- **240 inner layer**
- **200 outer layer**
- **180 solder mask**

Specification

Process	inner layer, outer layer, solder mask, legend, laservia, conform.	
Panel size	min. 300 x 200 mm (12" x 8") max. 650 x 560 mm (25,5" x 22") over sizes on request	
Panel thickness	standard 0,020 (0,001") up to 4,0 mm (0,15") / optional up to 10 mm (0,4")	
Panel warpage	≤ 1% diagonal, max. 6 mm (0,23")	
Artwork	silver film and/or glass master tool	
Artwork size	min. 400 x 250 mm (15" x 10") whatever up to max. 690 x 600 mm (27" x 23,6") over sizes on request	
Film fixation	optical mineral glass „Optiwhite-Glass" or optical organic „PX-Glass"	
Light source	6,0kw scattered light programmable switch able to 4,0kw and 2,0kw	
	8,5kw scattered light programmable switch able to 5,5kw and 2,5kw	
	2,0kw cold light for high resolution; inner layer and outer layer with photo resist or liquid film	
Illumination uniformity	Homogeneous over the complete area	
Registration	Full automatic optical CCD-camera-registration	
Registration method	2 or 4 target	
Inner layer	Single side camera target detection with 1 or 2 cameras	
	· Target on film top to target on film bottom with transmitted light	
	Inner layer without holes fixated by vacuum	
Outer layer	Single side camera target detection with 1 or 2 cameras	Double side camera target detection with 2 or 4 cameras
	· Target on film top and target on film bottom to the hole in the panel with transmitted light · Thickness of panel 0,02 (0,001") - 4,0 mm (0,15") · Thickness of panel 4,0 (0,15") - 10,0 mm (0,4") single side · Target on film top to laser via or via group with reflected light = 2 x single side exposure · Thickness of panel 0,02 (0,001) - 10,0 mm (0,4")	· Target on film top to the hole in the panel top and target on film bottom to the hole in the panel bottom with intermittent transmitted light · Target on film top to laser via or via group top and target film bottom to laser via or via group bottom with reflected light · Thickness of panel 0,02 (0,001") – 10,0 mm (0,4")
	Outer layer with holes fixed with pins	
Solder mask	Single side camera target detection with 1 or 2 cameras	Double side camera target detection with 2 or 4 cameras
	· Target on film top and target on film bottom to the hole in the panel with transmitted light · Thickness of panel 0,02 (0,001") - 4,0 mm (0,15") · Thickness of panel 4,0 (0,15") - 10,0 mm (0,4") single side · Target on film top to etched circle area with reflected light = 2 x single side exposure · Thickness of panel 0,02 (0,001") - 10,0 mm (0,4")	Target on film top to etched circle area top and target on film bottom to etched circle area bottom with intermittent transmitted light · Thickness of panel 0,02 (0,001") - 10,0 mm (0,4")
	Solder mask panel with holes fixed with self cleaning pins	
Alignment accuracy	± 2 µm after vacuum before exposure	
Registration accuracy	± 5 µm after vacuum before exposure	
Reputability accuracy	± 2 µm after vacuum before exposure	
Job changing time	≤ 30 seconds with prepared film cassette	
Resolution	< 50 µm (depends on resist type and thickness)	
Air filtration	HEPA class 100	
Air conditioning	Cassette and machine with over pressure	
	Lamps with forced air (option circulation)	
Water connection	appr. 1,5m³/h at max. 8-10°C	
Compressed air	appr. 5,5m³/h at min. 6 bar	
Electrical connection	400V, 50Hz, AEX-II-2 appr. 8kw AEX-II-6 appr. 16kw AEX-II-8.5 appr. 20kw	
Dimensions	2450 x 1250 x 2000 mm (96,5" x 49,2" x 78,7")	
	AEX-II-H semi automatic	**AEX-II full automatic in line**
Productivity per hour	Up to 155 inner layer	Up to 240 inner layer
	Up to 150 outer layer	Up to 200 outer layer
	Up to 130 solder mask	Up to 180 solder mask
Transport system	Double shuttle with transport shuttle	In line with double transport shuttle
Operating side Transport direction	From right side	Left-right or right-left
Weight	appr. 2.000kg	appr. 2.500 kg

Printprocess AG Sumpfstrasse 14 6300 Zug Switzerland
Telefon +41 41 9478080 Telefax +41 41 7498090 E-mail info@printprocess.com

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