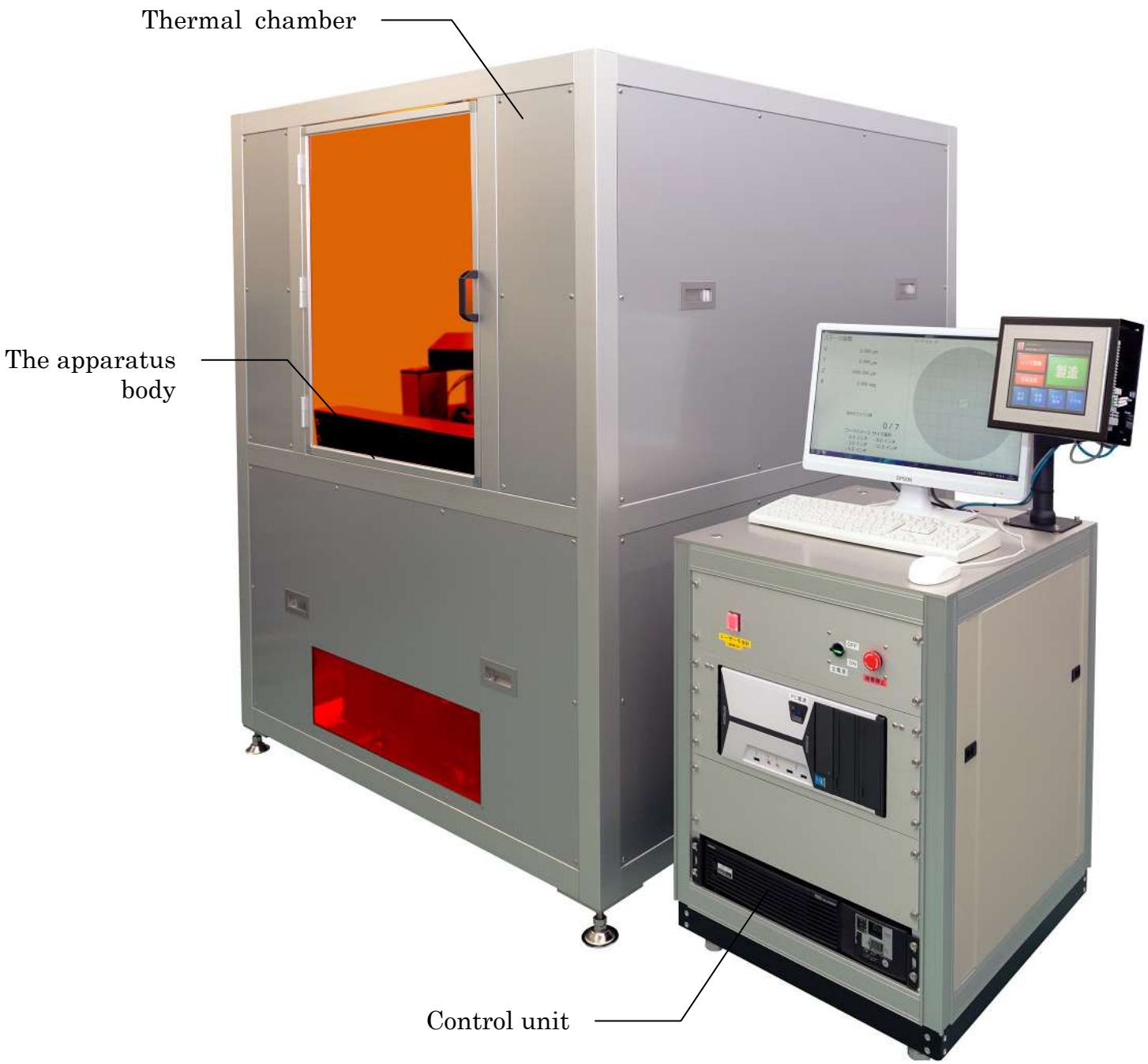
PMT Mask-less exposure apparatus
PLS-3000

Apparatus appearance



PMT CORPORATION
Precision Machinery & Tools

PMT Mask-less exposure apparatus
PLS-3000 Specification

Equipment Summary	Name		Mask-less Exposure Apparatus
	Model		PLS-3000
	Dimensions body	(Including thermal chamber)	W 1,550 mm × D 1,450 mm × H 2,000 mm
		Control unit	W 600 mm × D 650 mm × H 900 mm
	Mass body	(Including thermal chamber)	Approx. 1,500 kg
		Control unit	Approx. 100 kg
Work piece	Size		Diameter 300 mm、Thickness 0.5～7 mm
	Supply system		Manual
	Fixing system		Vacuum adsorption
Capability	Throughput		Approx. 530 minutes / sheet [Normal exposure 12inch entire surface of the wafer drawing]
	Maximum exposure rate		180 mm^2/min (transport, AF, does not include such alignment time)
	Exposure speed setting range		0.1mm/sec～3.75mm/sec
	Positioning system		The semi-automatic alignment by image recognition
	Overlay accuracy		Within X,Y ±1μm
	Data resolution		0.5μm/pixel
	Exposure resolution		1.0μm （1:1 Line & Space）
	Minimum line width		0.5μm （single line）
	Swath junction conditions		Within ±0.5μm
	Evaluation conditions		Work piece: 4 inch silicon wafer Resist: Tokyo Ohka Kogyo (Co.) OFPR-5000 Resist film thickness: 1μm
Exposure Syst	Exposure system		The scan exposure by synchronous scanning of DMD and stage
	Spatial light modulation element		1,920×1,080 pixels ※ it uses only part of the exposure (generally about 20%)
	Exposing source		LED
	Peak wavelength		405 nm
	Maximum exposure energy		950 m W/cm^2 and more
	Objective numerical aperture		0.4
	Reduction ratio		1/21.6
	Minimum pixel size		0.5μm/pixel
Alignment system	Camera		CMOS image sensor
	Illumination light source		LED

	Peak wavelength		625 nm
Focal point Adjustment	Drawing before the start		Contrast type auto focus
	After drawing start		The dynamic focus by a laser displacement meter
			Correction follow-up range: ± 10μm
			Laser peak wavelength: 650 nm
Machinery Specification	Axis configuration		X-Y-Z-θ 4 axis
	Stroke	XY	300 mm×300 mm
		Z	7 mm
		θ	±3 deg
	The anti-vibration mechanism		Stone surface plate + air spring passive vibration isolation
Power Supply	Required electric capacity		Single-phase 100 V 15 A
	Consumption Power	Body	400 W
		Vacuum pump	600 W
	*for data corruption and exposure in loss avoidance of the wafer at the time of power outage (Uninterruptible power supply) Built-in UPS *Storage battery is being used must be replaced periodically (approximately every 4-5 years)		
Air pressure	Supply pressure		0.45 MPa ～ 0.8 MPa
	Supply flow rate		Maximum: less 50 Nl/min Drawing during: 40 : less Nl/min
	[ISO / DIS 5598 temperature 20 ℃ / absolute pressure 101.3 kPa / relative humidity 65% (ANR)]		
	Atmospheric pressure dew point		-10 ℃ below (However, the room temperature is not below freezing)
	Compressed air cleanliness		Fine solids 0.3μm or less Oil mist removal rate of 99.99% or more
	Connection		Φ6 mm one-touch coupler
Vacuum	Vacuum source		Diaphragm type dry vacuum pump
	Installation location		Place floor to the outside of the apparatus
	The effective pumping speed		100 L/min
	※ regular basis, such as exchange of the diaphragm must be overhauled to (almost every year) *Recommended holdings of spare pump		
Installation Environment	Temperature		23 ± 1℃(during operation) 23±1℃(during non-operation, transportation time)
	Humidity		50±10 %RH(non-condensing)
	Cleanliness		ISO Class 6 (Class 1000) or more
	Lighting		That it does not contain a photosensitive wavelength of use resist (Yellow Room)
	Floor and surrounding environment		There is no vibration, and installed in a robust floor The vibration source Without that close exposure device