EXCIMER LASERS & UV OPTICAL SYSTEMS

Product Catalog









TABLE OF CONTENTS

		Introduction	4-9
ExciStar		ExciStar	10-12
IndyStar		IndyStar	13-15
COMPex	Comment	COMPex	16-19
LEAP		LEAP	20-23
LAMBDA SX		LAMBDA SX	24-26
VYPER		VYPER/TwinVYPER/TriVYPER	27-30



TABLE OF CONTENTS

UVblade	31-33	UVblade
LineBeam	34-36	LineBeam
VarioLas	37-39	VarioLas
GeoLasHD	40-42	GeoLasHD
Components/Laser Measurement & Control	43-47	s/LMC
Service/Training/Applications	48-53	Component
Doing Business with Coherent	54	ntact
How to Contact Us	55	Service/Co

Scalable Power. Ultimate Precision.

With 50 years of experience in UV lasers, Coherent understands that getting the best results requires an excimer laser that matches your application. That's why we offer the widest selection of excimer laser power and energy options.



IndyStar

COMPex

LEAF

LAMBDA SX

VYPER





ge Power (W)

Onsite Requirements



LAMBDA SX



Excimer Laser Gases

Premix Gas Operation



Where to Buy Excimer Gases and Gas Installation Equipment

The gas concentrations, mixtures, and puities are specified for each laser model and each laser wavelength and are listed in the user manual.

Excimer laser gases and gas installation equipment are available from various suppliers, some of whom are listed below:

www.praxair.com/international-locations

www.lasergas.com/globallocations.html

www.scicalgas.com/contact/

www.linde-worldwide.com/en/index.html

www.airgas.com/solutions/specialty-gases/gas-mixtures

www.airproducts.com/products/gases.aspx

Applications Matrix

	2	r	X		A SX	
	ixciSta	ndyStä	COMPe	.EAP	AMBD	үреr
Marking & Engraving			<u> </u>			-
Polymer, Teflon Marking	•	•	•			
Visible and Invisible Marking (Eyeglass Marking, etc.)	•	•	•			
Diamond and Jewel Marking	•	•	•			
Material Processing						
Polymer Drilling (Inkjet Nozzle, Filter)		•		•	•	
Hard and Brittle Drilling		•	•	•	•	
FBG Writing	•		•			
Thin Film Structuring (TCO, ITO, ZnO, FiNx, etc.)			•		•	
Laser Lift-Off (Thin Wafers, Flexible OLED, MicroLED Displays)			•		•	•
Laser-Induced Forward Transfer (MicroLED Displays)		•		•		
Surface Treatment						
Excimer Laser Annealing (ELA/SLS)					•	•
Cylinder Honing					•	•
Pulsed Laser Deposition (PLD)			•		•	•
Laser Direct Synthesis (LDS)			•	•		
Laser Direct Patterning (LDP)				•	•	•
Ion Implantation/Doping/Implant Activation			•		•	•
Surface Cleaning	•	•	•	•	•	•
Measurement						
Combustion Analysis	•		•			
Optics/Coating Testing	•	•				
Mask Inspection	•	•				
Spectroscopy, LIDAR	•		•	•		
Laser-Induced Fluorescence (LIF)	•		•	•		
Medical Procedures						
Psoriasis/Vitiligo Treatment	•					
Refractive Eve Surgery (Lasik)						



Elevate Your UV Laser Application

Explore the Complete Coherent Laser Portfolio and Find Your Excimer Laser Solution by Visiting Our Website.



Brochures, Tech Notes, Data Sheets



ExciStar

Compact, High Repetition Rate Excimer Laser

ExciStar excimer lasers are table top-size lasers designed for easy system integration. The proven ALMETA tube design ensures industrial-grade performance and endurance. Thousands of ExciStar lasers serve a broad range of delicate tasks including cornea ablation, prescription lens marking, and optical sensor manufacturing.

FEATURES & BENEFITS

- Ultrashort 193 nm and 248 nm wavelengths for superior ablation and marking
- High repetition rate to enable fast and flexible processing
- Ultimate pulse control to ensure effective use of photons
- ALMETA tube with integrated heating device to ensure reproducible results
- Air-cooled, single-phase design, premix gas supply and CE-declaration compliance for easy integration

APPLICATIONS

- LASIK Vision Correction
- UV Precision Marking
- LA-ICP-MS Analysis
- FBG Writing





ExciStar Performance at 193 nm and 248 nm/500 Hz



COHERENT.



MECHANICAL SPECIFICATIONS





Coherent, Inc., 5100 Patrick Henry Drive Santa Clara, CA 95054 p. (800) 527-3786 | (408) 764-4983 f. (408) 764-4646

tech.sales@coherent.com www.coherent.com

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all ExciStar lasers. For full details of this warranty coverage, please refer to the Service section at www.coherent.com or contact your local Sales or Service Representative.





ExciSta



IndyStar

Fast Pulse, High Precision Processing

IndyStar is a rugged high-duty cycle excimer laser designed for fast pulse frequency applications as high as 2000 Hz. Based on proven ALMETA tube technology, the Semi-S2 certified IndyStar operates over many billion pulses at ultra-short 193 nm and 248 nm wavelengths. The IndyStar series is engineered to meet the highest demands in every aspect of an industrial laser.

FEATURES & BENEFITS

- Repetition rate of 1 and 2 kHz for fast processing
- TimeLok and PowerLok functionalities for ultimate pulse control
- ALMETA tube design to ensure most efficient processing
- Semi-S2 compliance and premix gas supply to facilitate production floor integration

APPLICATIONS

- Photomask Inspection
- Inkjet Nozzle Drilling
- Optics Testing







SPECIFICATIONS	IndyStar 193 1 kHz	IndyStar 193 2 kHz	IndyStar 248 1 kHz	IndyStar 248 2 kHz		
Wavelength (nm)	193	193	248	248		
Nominal Pulse Energy (mJ)	8	4	12	6		
Nominal Pulse Power (W)	8	8	12	12		
Max. Pulse Energy (mJ)	12	6	16	8		
Energy Stability (sigma, %)	<2	<2	<2	<2		
Max. Repetition Rate (Hz)	1000 2000 1000		1000	2000		
Beam Dimension (FWHM, mm, V x H)	(5.7 ±0.5) × (2.5 ±0.5)	(5.5 ±0.5) × (2.3 ±0.5)	(5.7 ±0.5) × (2.7 ±0.5)	(5.5 ±0.5) × (2.6 ±0.5)		
Beam Divergence (FWHM, mm, V x H)	(2.25 ±0.5) × (1.0 ±0.5)	(2.75 ±0.5) × (1.0 ±0.5)	(2.4 ±0.5) × (1.6 ±0.5)	(2.5 ±0.5) × (1.5 ±0.5)		
Pulse Duration (FWHM, ns)	5 ±2	4 ±1	6 ±2	4 ±1		
Cooling	Air/Water	Water	Air/Water	Water		
Weight	135 kg (297 lbs.)					
Laser Dimensions	974 x 381 x 838 mm (48.23 x 7.8 x 8.96 in.)					
Electrical	230 V (1-phase) / 208 V (2-phase), 50/60 Hz, 2100 VA					
Part Number	1166017	1162918	1166018	1166016		

IndyStar Series Energy Performance





MECHANICAL SPECIFICATIONS



ACCESSORIES		Description
Part Number	1285557	External Heat Exchanger, water-to-air



Coherent, Inc., 5100 Patrick Henry Drive Santa Clara, CA 95054 p. (800) 527-3786 | (408) 764-4983 f. (408) 764-4646

tech.sales@coherent.com www.coherent.com

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all IndyStar Lasers. For full details of this warranty coverage, please refer to the Service section at www.coherent.com or contact your local Sales or Service Representative.





COMPex

Market Leading UV-Technology

COMPex Excimer lasers are highly effective light sources, featuring a compact design and easy installation and operation. They deliver superior results in demanding applications, such as solid sampling systems (LA-ICPMS), material research (PLD) and precise material processing.

Featuring ceramic preionization, the COMPex provides multihundred millijoules output, plus unmatched pulse-to-pulse stability. The COMPex also comes with an improved gas processor that extends both gas and optics lifetimes.



FEATURES & BENEFITS

- Selection of 193 nm, 248 nm, 308 nm, and 351 nm wavelengths for full material flexibility
- Superior pulse energy of up to 750 mJ to enable effective ablation at large field size
- Unrivalled pulse stability of 0.75%, rms to ensure high fluence control
- Ultimate pulse control and system parameter logging to deliver smart and reproducible thin films

APPLICATIONS

- PLD Pulsed Laser Deposition
- Thin Wafer Processing
- Laser Lift-Off/Debonding
- LA-ICP-MS

COMPex



SPECIFICATIONS	COMPex FBG	COMPex 50	COMPex 102	COMPex 110	COMPex 201	COMPex 205		
W	/avelength (nm)							
Pulse Energy ¹ (mJ)	193	-	100	240	240	400	400	
	248	140	150	400	400	750	750	
	308	-	-	250	250	500	500	
	351	-	-	200	200	300	300	
Max. Rep. Rate (Hz)		100	50	20	100	10	50	
Average Power ² (W)	193	-	4	4.8	12	4	15	
	248	12	7	8	30	7.5	33	
	308	-	-	5	16	5	20	
	351	-	-	4	12	3	15	
Energy Stability ³ (1 sigma) (%)		≤0.75						
Pulse Duration (FWHM) (ns) (typ.)		20						
Beam Dimensions (V x H, FWHM) (12 x 4.5	14 x 5	24 x 10	24 x 10	24 x 10	24 x 10		
Beam Divergence ³ (V x H, FWHM) (mrad ²)	≤0.3 × 0.2	≤2 x 1	≤3 x 1	≤3 x 1	≤3 x 1	≤3 x 1	
Beam Pointing Stability ⁴ (1 sigma) (µrad)	≤50						
Spatial Coherence (FWHM) (µm) He	orizontal (typ.)	800	-	-	-	-	-	
Electrical		200 to 240V AC, 16A, 50/60 Hz switchable, 1-phase 100 to 120V AC, 25A, 50/60 Hz switchable, 1-phase						
Water Cooling⁵		2 to 5 l/min. (0.5 to 1.3 gal./min.), 10 to 20°C, connection: 1/2"						
Weight	280 kg (617 lbs.) 325 kg (717 lbs.)					717 lbs.)		
Dimensions (L x W x H)	1258 x 375 x 813 mm³ 1682 x 375 x 813 mm³ 50 x 15 x 32 in.³ 66 x 15 x 32 in.³				x 813 mm ³ x 32 in. ³			
Part Number								
F-Version	1314941	1314940	1314942	1314944	1314970	1314972		
C-Version		N/A	N/A	1314943	1314945	1314971	1314973	
1 Measured at low repetition rate.								

2 Measured at maximum repetition rate.

Specified at 248 nm.
 At shutter plane over 2000 pulses.

5 Only required above 20 Hz, delivered as standard.

COMPex 205 Pulse Energy over Dynamic Operating Range



MECHANICAL SPECIFICATIONS





26.00

400.00

0.00

1154130

COMPter 1107

140

INT Pepulote

100

877850

EGY PGR

COMPex: Additional Control Options¹



HIGH SPEED USB 2.0 STANDARD A Upload/download data from the Laser



SPEED USB STANDARD B Virtual Serial Port for input/output of operating modes



ETHERNET NETWORK CONNECTION RJ45 Upload/download data to/from the Laser Controller

1 Laptop not included.

ACCESSORIES		Description
Part Number	1377860	PLD Optics Set with X, Y, Phi-Mounts for COMPex, 248 nm
	1336438	Beam Alignment Laser
	1132990	Temperature Stabilization Module
	262856	VCR Upgrade Kit (VCR gas connections instead of Gyrolok)
	1323920	Pre-mounted Output Coupler for quick optics exchange, COMPex 100/200
	1323916	Pre-mounted Rear Mirror for quick optics change, 248 nm
	26083110	Low-Divergence Optics, 248 nm, COMPex 200
	262456	Low-Divergence Optics Adapter, COMPex 100/200



Coherent, Inc., 5100 Patrick Henry Drive Santa Clara, CA 95054 p. (800) 527-3786 | (408) 764-4983 f. (408) 764-4646

tech.sales@coherent.com www.coherent.com

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all COMPex Lasers. For full details of this warranty coverage, please refer to the Service section at www.coherent.com or contact your local Sales or Service Representative.





LEAP

High Energy, High Precision Processing

LEAP excimer lasers deliver a unique combination of high duty-cycle output, outstanding reliability, and low cost-of-ownership. This makes them an ideal source for a diverse assortment of demanding, high throughput, high-precision microprocessing tasks, ranging from display fabrication to reel-to-reel manufacturing of superconductive tape. LEAP lasers are available at wavelengths of either 248 nm or 308 nm, with output powers of up to 300 W (and pulse energies of up to 1 J). This power comes in a compact footprint package which is easily integrated into tools, or with other production equipment.

FEATURES & BENEFITS

- Compact industrial design for easy integration
- Pulse-on-Demand to enable cost effective Laser-Lift-Off
- High laser energy for fast and large area processing
- Ethernet interface for control and fast data acquisition
- 248 nm and 308 nm wavelengths for optimized processing of a large variety of materials

APPLICATIONS

- LLO Laser Lift-Off (OLEDs & MicroLEDs)
- PLD Pulsed Laser Deposition
- LDP Laser Direct Patterning
- Micro-Structuring
- LIFT Laser-Induced Forward Transfer (MicroLEDs)







SPECIFICATIONS	LEAP 80K 130K	LEAP 80C 130C	LEAP 100K 150K	LEAP 100C 150C	LEAP 300C 300K	
Wavelength (nm)	248	308	248	308	308 248	
Stabilized Energy Range (mJ)	550 to 650	550 to 650	900 to 10001	900 to 1000	900 to 1000	
Max. Stabilized Average Power (W)	81.25 130	81.25 130	100 150	100 150	300	
Max. Repetition Rate (Hz)	125 200	125 200	100 150	100 150	300	
Energy Stability (1 Sigma)	≤1.2	≤1.2	≤1.2	≤1.2	≤1.2	
Pulse Duration (FWHM) (ns)	29 ±5	22 ±5	32 ±5	27 ±5	29 ±5 32 ±5	
Beam Dimensions (V x H, FWHM) (mm ²)	32 ±3.5 x 13 ±4	33 ±3.5 x 13 ±4	32 ±3.5 x 13 ±4	33 ±3.5 x 13 ±4	37 ±3.5 34 ±3.5 x 14 ±3 x 15 ±4	
Divergence (V x H, FWHM) (mrad ²)	≤4.5 x ≤1.5	≤4.5 x ≤1.5	≤4.5 x ≤1.5	≤4.5 x ≤1.5	≤4.5 x ≤1.5	
Dynamic Gas Lifetime (at max. stabilized energy) (mio. pulses)	30	30	30	30	50 40	
Electrical (kVA)	8.6 9.6 3-phase, 200/208 or 3-phase, 200/208 or 400 VAC, 50/60 Hz 400 VAC, 50/60 Hz				17 3-Phase 400 VAC 50/60 Hz,	
Water Cooling	20 l/min; T=19-21°C				0-40 l/min; T=11-15°C	
Weight	860 kg (1896 lbs.)				1100 kg (2425 lbs)	
Cabinet Size (L x W x H)		2415 x 800 x (1090 ±10) mm ³			2563 x 820 x (1125 ±10) mm ³	
	95.1 x 31.4 x (42.9 ±0.4) in. ³				100.9 x 32.3 x (45.1 ±0.4) in. ³	
Part Number (200/208V)	1320859 (80K)	1320859 (80C)	1320863 (100K)	1320861 (100C)	-	
	1165692 (130K)	1165692 (130C)	1290885 (150K)	1290888 (150C)	-	
Part Number (400V)	1320860 (80K) 1165694 (130K)	1320858 (80C) 1165695 (130C)	1320864 (100K) 1290886 (150K)	1320862 (100C) 1290889 (150C)	1305000 (300C) 1347950 (300K)	

1 Max. pulse energy 1100 mJ at 10 Hz.



0 + 0

5

10

15

Mio Pulses (n)

20

25

30



MECHANICAL SPECIFICATIONS

LEAP 80/100/130/150 Beam Exit Left (view from access side)



ACCESSORIES		Description
Part Number	376252	Low-Divergence Resonator Optics, 248 nm, LEAP K-Series
	1136303	Transformer, 30 kVA, 190 to 480 VAC, LEAP 300C
	1320865	Upgrade LEAP 80 to LEAP 130
	1320866	Upgrade LEAP 100 to LEAP 150

MECHANICAL SPECIFICATIONS

LEAP 300C/300K Beam Exit Right (view from access side)



Top View



Coherent, Inc., 5100 Patrick Henry Drive Santa Clara, CA 95054 p. (800) 527-3786 | (408) 764-4983 f. (408) 764-4646

tech.sales@coherent.com www.coherent.com

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Q

Coherent offers a limited warranty for all LEAP Lasers. For full details of this warranty coverage, please refer to the Service section at www.coherent.com or contact your local Sales or Service Representative.



 \bigcirc



LAMBDA SX

High-Power Excimer Lasers

The LAMBDA SX industrial excimer laser series provides unique high UV power to the production floor. It delivers high and stable pulse energy, and also features a number of innovative technologies for unsurpassed performance and reliability.

LAMBDA SX lasers are perfectly suited for applications ranging from micro structuring, advanced semiconductor packaging, manufacturing of High Temperature Superconductors by Pulsed Laser Deposition (PLD), Laser Lift-Off (LLO) to high power UV LIDAR. The E-Series is ideal for Excimer Laser Annealing (ELA).



FEATURES & BENEFITS

- Perfect energy stability to ensure production yield
- Pulse on Demand to enable cost effective Laser Lift-Off
- Laser data acquisition to allow advanced process control
- Sealed and purged beam path for stable long term operation
- Ethernet interface for control and fast data acquisition

APPLICATIONS

- Microstructuring and Drilling
- Pulsed Laser Deposition
- Surface Treatment



SPECIFICATIONS	LAMBDA SX E500	LAMBDA SX C600	
Wavelength (nm)	308	308	
Maximum Stabilized Pulse Energy (mJ)	1000	1000	
Maximum Stabilized Average Power (W)	500	600	
Maximum Repetition Rate (Hz)	500	600	
Energy Stability (sigma, %)	≤0 .45	≤1	
Pulse Duration (FWHM) (ns)	24 ±4	24 ±4	
Beam Dimensions ² (FWHM, V x H, mm ²)	35 ±4 x 14.5 ±3	35 ±4 × 14.5 ±3	
Beam Divergence (FWHM, V \times H, mrad ²)	≤4.5 x 1	≤4.5 x 1.5	
Dynamic Gas Lifetime (at max. stabilized energy) (mio. pulses)	60	100	
WEIGHT/UTILITIES/DIMENSIONS			
Weight	2200 kg/4850 lbs.	2200 kg/4850 lbs.	
Cooling	Water, 3 to 70 l/min. (0.8 to 18.5 gal./min.), 12 to 15°C	Water, 3 to 70 l/min. (0.8 to 18.5 gal./min.), 12 to 15°C	
Electrical	40 kVA, 3-phase, 400 VAC, 50/60 Hz	40 kVA, 3-phase, 400 VAC, 50/60 Hz	
Dimensions (L x W x H)	2800 x 850 x 2083 mm (110.2 x 33.3 x 82 in.)	2800 x 850 x 2083 mm (110.2 x 33.3 x 82 in.)	
Part Number	1334359	1334357 (beam exit right) 1334358 (beam exit left)	

1 All specifications are subject to change without prior notice in order to provide the best product possible.

2 Beam dimensions measured at 1.0m from beam exit.
3 ±20 mm (0.8 in.).

ExiScope Data Analysis

System energy, sum sigma, individual sigma, and much more parameter can be analyzed and displayed with the ExiScope software.

Сон	IERE	INT.		LAMBDA SX C600 Excimer Laser	æ	×
load data	10	40000			1040000	* *
profile	10	20000		1 loule pulse energy at 600 Hz	1020000)
_	10	00000		······································	1000000	,
export data	98	0000			980000	
save as image	96	0000			960000	
print	2	1			1	<u>s</u> 🛞
print	3	0.9			0.9	2 ×
		0.8			0.8	
		0.6			0.6	
		0.5			0.5	
		0.4		0.2 0.2 % (Cigma) energy stability	0.4	
		0.3		0.2 - 0.5 70 (Sigma) energy stability	0.3	
		0.2	The state of the s		0.2	
		0.1			0.1	
+	00	0	20 Dec	21 Dec	0	



MECHANICAL SPECIFICATIONS

LAMBDA SX

Front View





ACCESSORIES	Description			
Part Number 1228700	Mains Cable, 60 kVA, 25 m			
1136304	Step Up Transformer, 60 kVA			

Coherent, Inc., 5100 Patrick Henry Drive Santa Clara, CA 95054 p. (800) 527-3786 | (408) 764-4983 f. (408) 764-4646

tech.sales@coherent.com www.coherent.com

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all LAMBDA SX lasers. For full details of this warranty coverage, please refer to the Service section at www.coherent.com or contact your local Sales or Service Representative.







VYPER

Very High-Power Excimer Lasers

The VYPER Series lasers are multiple beam very high-power excimer lasers specially designed for Excimer Laser Annealing (ELA). The high quality demand in high resolution mobile display manufacturing requires high grade low temperature poly-Silicon (LTPS) which can be created only with excimer lasers.

The lasers fit perfectly to the high power LineBeam 750 (VYPER), LineBeam 1000 (TwinVYPER) and LineBeam 1500 (TriVYPER) optics.

FEATURES & BENEFITS

- Highest UV power to enable high throughput applications
- Excellent energy stability to ensure high production yield
- EquiSwitch synchronization to provide lowest jitter
- Laser data acquisition to allow advanced process control
- Sealed and purged beam path for stable long term operation
- Ethernet interface for control and fast data acquisition

APPLICATIONS

- Excimer Laser Annealing
- Pulsed Laser Deposition



VYPER



SPECIFICATIONS ¹	VYPER	TwinVYPER	TriVYPER
Wavelength (nm)	308	308	308
Maximum Stabilized Pulse Energy (mJ)	2000 ²	4000 ³	6000 ⁴
Maximum Stabilized Average Power (W)	1200 ²	2400 ³	36004
Maximum Repetition Rate (Hz)	600	600	600
Sum Energy Stability (sigma, %)	≤0.45	≤0.35	≤0.30
Pulse Duration (FWHM, ns)	24 ±45	24 ±4 ⁵	24 ±4 ⁵
Beam Dimensions ⁶ (FWHM, V x H, mm ²)	35 ±4 x 14.5 ±35	35 ±4 x 14 .5 ±3 ⁵	35 ±4 x 14.5 ±35
Beam Divergence (FWHM, V x H, mrad ²)	≤4.5 x 1.3 ⁵	≤4.5 x 1.3 ⁵	≤4.5 x 1.3 ⁵
Dynamic Gas Lifetime (at max. stabilized energy) (mio. pulses)	100	100	100
Weight	4400 kg/9700 lbs.	8800 kg/19,400 lbs.	13,200 kg/29,100 lbs.
Cooling	Water, up to 2x 70 l/min. (2x 18.5 gal./min.), 12 to 15°C	Water, up to 4x 70 l/min. (4x 18.5 gal./min.), 12 to 15°C	Water, up to 6x 70 l/min. (6x 18.5 gal./min.), 12 to 15°C
Electrical	2x 39 kVA, 3-phase, 400 VAC, 50 or 60 Hz	4x 39 kVA, 3-phase, 400 VAC, 50 or 60 Hz	6x 39 kVA, 3-phase, 400 VAC, 50 or 60 Hz
Dimensions (L x W x H)	2800 x 1700 x 2085 ⁷ mm (110 x 66.9 x 82 in.)	2800 x 4950x 2085 ⁷ mm (110 x 195 x 82 in.)	2800 x 8200 x 2085 ⁷ mm (110 x 323 x 82 in.)
Part Number	1327157	1328642	1328643

5 Per single beam.

Beam dimensions measured at 1.0 m from beam exit.
±20 mm (0.8 in.).

1 All specifications are subject to change without prior notice in order to provide the best possible product.

2 Sum of two beams. 3 Sum of four beams.

Sum of four beams.
 Sum of six beams.

ExiScope Data Analysis

System energy, sum sigma, individual sigma, and much more parameter can be analyzed and displayed with the ExiScope software.



Superior Reliability & Performance



MECHANICAL SPECIFICATIONS









MECHANICAL SPECIFICATIONS

VYPER



ACCESSORIES	Description
Part Number 1345687	Motorized Optics Module V4, VYPER 1.3, Upgrade Kit with Encoder
1281270	Tool Trolley, VHP
1228700	Mains Cable, 60 kVA, 25 m
1136304	Step Up Transformer, 60 kVA



Coherent, Inc., 5100 Patrick Henry Drive Santa Clara, CA 95054 p. (800) 527-3786 | (408) 764-4983 f. (408) 764-4646

tech.sales@coherent.com www.coherent.com

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all VYPER lasers. For full details of this warranty coverage, please refer to the Service section at www.coherent.com or contact your local Sales or Service Representative.





VYPER



UVblade

Laser Lift-Off Processing

UV*blade* gently detaches delicate polymer-based displays of all types from their rigid glass carriers. Laser Lift-Off separation is the enabling technology in manufacturing flexible displays. UV*blade* is available at variable line beam lengths supporting fast and effective separation of substrates and wafers.

FEATURES & BENEFITS

- Cost effective solutions for Laser Lift-Off (LLO) separation
- Pulse on Demand (POD)
- Unmatched beam utilization
- Scalability in line lengths and energy density
- Flexible system footprint

APPLICATIONS

- Laser Lift-Off Separation of Wafers and Displays
- Unique Lift-Off Solution for Transparent and Colorless Polyimide (CPI)



31



SPECIFICATIONS ¹	UV <i>blade</i> 250	UV <i>blade</i> 380	UVblade 465	UV <i>blade</i> 750	UV <i>blade</i> 750HP	UV <i>blade</i> 1000
Wavelength (nm)	308	308	308	308	308	308
Laser Pulse Energy (mJ)	580	1000	1000	1000	2000	2000
Repetition Rate (Hz)	200	600	600	600	600	600
Energy Density (mJ/cm ²) (at 96%)	370	450	360	340	320	315
Beam Length (mm)	250	380	465	750	750	950
Beam Width (µm) (at 96%)	400	400	400	250	500	400
Homogeneity Long Axis (%, 2σ)	1.8	1.8	1.8	1.8	1.8	1.8
Depth of Focus (µm)	±200	±200	±150	±100	±150	±100

1 Large number of system combinations enabling optimum throughput, CoO and CAPEX.

UVblade Performance

Example of UVblade 750 2D-beam profile, short and long axis cross sections in the substrate plane.





MECHANICAL SPECIFICATIONS



ACCESSORIES	Description
System Enhancement	BSU – Beam Stabilization Unit
	SAOM – Short Axis Online Monitor
	ESM – Energy Sigma Monitors for Combined and Single Beams
	BeamScout
	AC Beam Profiler

Coherent, Inc., 5100 Patrick Henry Drive Santa Clara, CA 95054 p. (800) 527-3786 | (408) 764-4983 f. (408) 764-4646

tech.sales@coherent.com www.coherent.com

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all UVblade Systems. For full details of this warranty coverage, please refer to the Service section at www.coherent.com or contact your local Sales or Service Representative.





LineBeam

Large Format Polysilicon Annealing

Demand is rising for high definition and power efficient low temperature polysilicon (LTPS) display backplanes to be the foremost differentiator for mobile devices such as smartphones and tablets. LineBeam systems from Coherent are the enabling technology for mass manufacturing LTPS backplanes on large substrate panels with highest yield.



FEATURES & BENEFITS

- 308 nm wavelength for high yield OLED and LCD polysilicon annealing
- Superior pulse stability and high depth of field to ensure a large process window
- Short and long axis beam homogeneity for maximum throughput and beam utilization
- Proven performance in leading large-scale OLED and LCD fabs
- Active control and observation modules for reproducible annealing results
- Line beam lengths scalable up to Gen 10.5 panel size

APPLICATIONS

• Excimer Laser Annealing (ELA) of polysilicon backplanes for OLED and LCD



SPECIFICATIONS	Mass Production LineBeam Systems ¹			
Wavelength (nm)	308			
Line Length (mm)	750 1000 1300			1500
Beam Profile Type	Top-hat beam along both axes			
Depth of Focus (µm)	±150	±120	±120	±120

1 R&D-LineBeam systems with smaller format available on request.

LineBeam Performance

Example of LB1000 2D-beam profile, short and long axis cross sections in the substrate plane.





MECHANICAL SPECIFICATIONS





ACCESSORIES	Description
System Enhancement	LASA-BSG – Beam Symmetry Generator Micro Smoothing Device AC Beam Profiler PEX – Pulse Expander SAOM – Short Axis Online Monitor ESM – Energy Sigma Monitors for Combined and Single Beams PLEM – Projection Lens Entrance Monitor Polarization Devices
Process Monitoring	LTPS Process Analysis with Crystallization Monitor

Coherent, Inc., 5100 Patrick Henry Drive Santa Clara, CA 95054 p. (800) 527-3786 | (408) 764-4983 f. (408) 764-4646

tech.sales@coherent.com www.coherent.com

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all LineBeam Systems. For full details of this warranty coverage, please refer to the Service section at www.coherent.com or contact your local Sales or Service Representative.







VarioLas

Versatile UV Laser Processing

VarioLas processing systems based on the powerful COMPex excimer laser are flexible tools for high quality UV microprocessing. Superior optics design, rugged mechanics and unmatched pulse-to-pulse stability are the key ingredients to each VarioLas model available at 193 nm, 248 nm, and 308 nm.

FEATURES & BENEFITS

- High resolution optics and mechanics ensure reproducible results
- Modular design with tailored options for flexible use
- Square beam and line beam fields for optimum results
- Supports all COMPex laser models to enable efficient processing

APPLICATIONS

- Laser Lift-Off Separation
- Dopant Ion Activation
- Ablative Patterning
- Excimer Laser Annealing





SPECIFICATIONS	VarioLas Eco	VarioLas Pro	VarioLas Sweep
Field Geometry	Square	Square	Line
Substrate Field Size (mm ²)	2 x 2	2 x 2	50 x 0.6
Optical Resolution (µm)	30	5	-
Working Distance (mm)	50	50	150
Max. Repetition Rate (Hz)	100	100	100
Max. Energy Density (J/cm ²)			
at 193 nm	2.5	2.5	0.5
at 248 nm	7.5	7.5	1.3
at 308 nm	6.0	6.0	1.0
Energy Stability (%, 1 sigma)			
at 193 nm	2	2	2
at 248 nm	1	1	1
at 308 nm	1	1	1
Part Number (laser not included)			
at 193 nm	1156386	1156390	1156394
at 248 nm	1156387	1156391	1156395
at 308 nm	1156388	1156392	1156396

VarioLas Performance

2D-mask plane image of VarioLasPro with cross sections along x- and y-axis.





MECHANICAL SPECIFICATIONS

VarioLas



ACCESSORIES	Description
Part Number	Safety Options
1161813	Class 1 Housing
1161812	Automated Safety Class 3 Interlock Circuit
1107556	Automated Beam Shutter for 193 nm
1107557	Automated Beam Shutter for 248 nm
1157558	Automated Beam Shutter for 308 nm
Part Number	Control Options
1161814	Control PC (with monitor)
1161815	Substrate Stage (3-axes including substrate chuck)
1161816	Observation Unit (for VarioLasPRO, 193 nm)
1161817	Observation Unit (for VarioLasPRO, 248 nm/308 nm)
1161818	Observation Unit (for VarioLasECO, all wavelengths)
1161819	Motorized Attenuator (upgrade)
1161820	Motorized Attenuator, Energy Control, PRO/ECO, 193 nm
1161821	Motorized Attenuator, Energy Control, PRO/ECO, 248 nm
1161822	Motorized Attenuator, Energy Control, PRO/ECO, 308 nm

Coherent, Inc., 5100 Patrick Henry Drive Santa Clara, CA 95054 p. (800) 527-3786 | (408) 764-4983 f. (408) 764-4646

tech.sales@coherent.com www.coherent.com

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all VarioLas Systems. For full details of this warranty coverage, please refer to the Service section at www.coherent.com or contact your local Sales or Service Representative.





GeoLasHD

Superior Solid Sampling at 193 nm

Young Zircons, Fluid Inclusions and More

GeoLasHD is the next generation laser ablation system for all-encompassing LA-ICP-MS elemental and isotopic analysis. Powered by the mighty COMPex laser, it uniquely combines sturdy high-resolution optical design, expert polarizer microscope and the latest HD camera technology. The new and intuitive EAGLE control software features real-time HD monitoring of micron-size features and seamless sample mapping with optional external image overlay.

FEATURES & BENEFITS

- Ultrashort 193 nm wavelength for clean ablation in every material
- Schwarzschild ablation objective enabling widest fluence range at superior crater bottom flatness
- HD camera and EAGLE software package for wide area sample inspection with micron resolution
- Multi-format sample cell with fast washout time to deliver stable and assignable ICP-MS signals
- Sub-micron precision x-y-z stage and bidirectional control of mass spectrometer to provide the highest process control

APPLICATIONS

- Isotope Ratio Determination
- Fluid Inclusion Research
- U/Pb-Age Dating in Zircons
- Marine Sediment Analysis
- 193 nm Multicollector ICP-MS
- Gemstone Fingerprinting





SPECIFICATIONS		GeoLasHD	
Operating Wavelength (nm)		193	
Spot Sizes (µm)		2 to 160	
Optical Resolution (µm)		1	
Beam Homogeneity (%) (1 sigma)		1	
Maximum Fluence (J/cm ²)		50	
Pulse Stability (%, rms)		1	
Repetition Rate (Hz)		1 to 20 (option: 1 to 100)	
X,Y-Drive Min. Step Size (µm)		0.1	
Z-Focus Min. Step Size (µm)		0.1	
Dimensions (L x W x H)		2470 x 1142 x 1440 mm (97.24 x 44.96 x 56.69 in.)	
Weight		395 kg (870.83 lbs.)	
Mains Supply		110/230 VAC, 1 PN, 25/16A	
Part Number 1294980		GeoLasHD, 230V, Automated Mask	
	1299415	GeoLasHD, 230V, Manual Mask	

GeoLasHD Performance

Drag and drop – copy and paste definition of ablation areas (single spot, matrix, polygon, cascade, lines, step and repeat mode)



MECHANICAL SPECIFICATIONS

GeoLasHD







ACCESSORIES	Description
Part Number 11144	7 Class 1 Housing
11022	8 20x Microscope Objective
10989	11 Valve Set
10996	6 Manual Mask Slider Assembly
11125	8 Mask "Small Spots"
11125	9 Mask "Square and Round Spots"
29106	2 Mass Flow Controller
M4100-	4 Sample Chamber Window 2'
11790	MMG Sample Cell



Coherent, Inc., 5100 Patrick Henry Drive Santa Clara, CA 95054 p. (800) 527-3786 | (408) 764-4983 f. (408) 764-4646

tech.sales@coherent.com www.coherent.com

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all GeoLasHD Lasers. For full details of this warranty coverage, please refer to the Service section at www.coherent.com or contact your local Sales or Service Representative.









Components

Attenuator Modules

Attenuator Module, Manual

- Variable attenuation substrate 60 x 35 x 2 mm³ with inverse characteristic for high thermal stability
- Compensator plate 60 x 35 x 2 mm³ to compensate for any beam displacement
- Manual knob and digital scale for accurate transmittance setting
- Electromagnetic shutter

Attenuator Module, Motorized

- Variable attenuation substrate 60 x 35 x 2 mm³ with inverse characteristic for high thermal stability
- Compensator plate 60 x 35 x 2 mm³ to compensate for any beam displacement
- DC motor and encoder, ACM RS-232 interface module, interface cables, and control software for Windows*
- Electromagnetic shutter

Attenuator Module for 157 nm

- Leak-tight module housing with observation window.
- Variable attenuation substrate 60 x 35 x 2 mm³ with inverse characteristic for high thermal stability
- Compensator plate 60 x 35 x 2 mm³ to compensate for any beam displacement
- Manual knob and digital scale for transmittance setting
- Electromagnetic shutter
- Flanges for tube connections and vacuum exhaust
- Purge gas inlet and exhaust gas outlet with gate valve

 \star Windows is a registered trademark of Microsoft Corporation.

PART NUMBER	ł	Attenuator Module, Manual	Attenuator Module, Motorized	Attenuator Module, for 157 nm
Wavelength (nm)	157	_	_	1111338
	193	2910218	1116186	
	248	2910216	2910566	
	308	1116181	1116184	
	351	1116182	2910568	





Components

Homogenizers

Superior Optics and Coatings

Because excimer lasers produce high-energy pulses of ultraviolet light, the materials used to make the optics must be carefully selected and the optics themselves must be carefully designed. You can rely on our expansive knowledge and many years of experience to deliver the exact solutions you need.

SPECIFICATIONS		Homogenizer 5x5	Homogenizer 10x10	
Homogenized Field Size (mm)		5 x 5	10 x 10	
Zoom (%)		±10	±10	
Homogeneity (%)		<±5	<±5	
Field Position		~350 mm after homogenizer exit (depending on wavelength)	~450 mm after homogenizer exit (depending on wavelength)	
Entance Aperture (mm)		27 x 27	27 x 27	
Overall Entrance – Exit L	_ength (mm)	~650 (depending on wavelength)	~700 (depending on wavelength)	
Part Number	193 nm	1385911	1385914	
	248 nm	1385912	1385915	
	308 nm	1385913	1385916	





Components

Projection Lenses

SPECIFICATIONS		P-lens 4-10x/4- xxx	P-lens 5x/18- xxx	P-lens 5x/30- xxx	Doublet 50-xxx	Doublet 100-xxx
Wavelength (nm)	157	_	_	_	Yes	Yes
	193	Yes	-	-	Yes	Yes
	248	Yes	Yes	-	Yes	Yes
	308	Yes	Yes	Yes	Yes	Yes
	351	Yes	-	-	Yes	Yes
Demagnification		4 to 10x (higher demagnifi- cation on request)	5x	5x	Variable	Variable
Focal Length (mm)		Approx. 100	-	-	Approx. 50	Approx. 100
Image Field Diameter (mm)		4	18	30	Depending on wavelength	Depending on wavelength
Numerical Aperture		Depending on wavelength (diffraction-limited for all available wavelengths)	0.13 (diffraction-limited)	0.1 (diffraction-limited)	-	-
Spatial Resolution (µm)		3 (lines & spaces)	2 (lines & spaces)	2.5 (lines & spaces)	50 (lines & spaces)	50 (lines & spaces)
Working Distance (mm)		Depending on wavelength, use of eye piece, and demagnification	Depending on wavelength	Depending on wavelength	Approx. 35	Approx. 70
Tracking Length (mm)		Depending on wavelength, use of eye piece, and demagnification	800	1050	Depending on wavelength and demagnification ratio	Depending on wavelength and demagnification ratio
Transmission (%)		>80	>80	>80	-	_
Part Number	157 nm	_	_	-	1116211	1116216
	193 nm	9680011	_	-	1116212	1116217
	248 nm	M290009	M290022	-	1116213	1116218
	308 nm	1116206	_	1143259	1116214	2921330
	351 nm	-	_	-	1116215	1116219

Components/LMC



Laser Measurement & Control

Laser Measurement Products for Excimer Lasers



Superior Reliability & Performance



Laser Measurement & Control

Recommendation Matrix for Excimer Lasers*

METER & SENSOR COMPATIBILITY								
LASER	Wavelength	Power Meter ¹	Power Sensor	Energy Meter	Energy Sensor			
ExciStar 200, 500	193	FieldMaxII-TO	PM10X	FieldMaxII-TOP	J-25MUV-193			
ExciStar 200, 500	248	FieldMaxII-TO	PM10X	FieldMaxII-TOP	J-25MUV-248			
ExciStar 1000	248	FieldMaxII-TO	PM10X	LabMax-TOP	J-25MT-10KHz			
IndyStar	193, 248	FieldMaxII-TO	PM30X	LabMax-TOP	J-25MT-10KHz + small heat sink			
COMPex	193	FieldMaxII-TO	PM150-50XC1	FieldMaxII-TOP	J-50MUV-193 ²			
COMPex	248	FieldMaxII-TO	PM150-50XC1	FieldMaxII-TOP	J-50MUV-248 ²			
COMPex	308, 351	FieldMaxII-TO	PM150-50XC1	FieldMaxII-TOP	J-50MB-YAG ²			
LEAP 80, 100, 130, 150	248, 308	FieldMaxII-TO	PM150X	-	-			
LEAP 300	248, 308	FieldMaxII-TO	PM1KX-100	-	-			
LAMBDA SX	308	FieldMaxII-TO	PM1KX-100	-	-			
VYPER	308	FieldMaxII-TO	PM1KX-100	-	-			

★ Sensors with USB or RS-232 interface are also available.

1 Air cooled operation.

2 Large heat sink recommended for COMPex 110 and 205 models.





Global Reach. Local Focus.

Customer-tailored Maintenance and Service Contract

- 24/7 technical phone support agreements
- Advanced replacement programs
- Fixed-cost contracts for simplified budgeting
- Factory-trained service engineers across the globe

Technical Support

- Phone support
- On-site service support
- Laser device and system installation and system upgrades
- Depot repair
- On-site and factory-tailored training courses

• Global Logistics Services

- Worldwide spare parts stocking and fast delivery
- Support of custom processes
- Utilization of free trade agreements

• Spare Parts, Certified Accessories, Options, and Consumables



Coherent service team locations span over 100 cities and 40 countries on 6 continents. We are dedicated to your success and are close to where you need us. Our knowledge and expertise are at your fingertips and just a phone call away at 1-800-367-7890. For the location nearest you, please go to: coherent.com/service



>120 Qualified Service Engineers for Excimer Products Globally



Excimer Laser Training Programs

Coherent offers Advanced Customer and Original Equipment Manufacturer (OEM) Training Courses which have been designed spcifically to help our customers operate and maintain their Coherent Excimer Lasers. Participants who successfully complete this Laser Training Course will gain a level of knowledge and skill that will allow them to effectively and efficiently operate, optimize, and maintain their Excimer Laser System.

- Training Facilities in Germany, China, and Korea
- Dedicated Trainers with Field Experience
- Operator and Maintenance Courses for Excimer Lasers and UV Optical Systems

Training Catalog Available for Download



250 Training Courses Each Year

- Individually tailored courses, designed to meet the specific needs of our students
- Small class sizes, ensuring a generous amount of individualized attention and hands-on experience with the laser system
- Emphasis on laser safety
- Professional, experienced instructors
- Official certification upon successful course completion





The Winning Solution for Your Application

Applications lab experts face a wide range of substrates and surfaces to match with the right excimer laser for our customers' production needs.

Determining the optimum parameter set—wavelength, fluence level, beam geometry, laser pulse frequency—is pivotal to quality and throughput for UV applications.



Materials Are Not Alike. Neither are Processes.

At Coherent, we know the importance of laser parameters for every application. With more than 50 years of laser expertise, Coherent provides the broadest selection of excimer lasers available from any company, enabling us to deliver the optimum UV solution for your precision application, no matter the process requirements.

With a global network of applications and process development engineers, we work with you to determine the right excimer laser solution for your process.







Doing Business with Coherent



Visit Our Website for Current Terms and Conditions of Sale



How to Contact Us



Contact Us by Phone

Coherent, Inc. (800) 527-3786 or (408) 764-4983

Contact Us by Email

Laser Products: tech.sales@coherent.com

Laser Measurement: Imc.sales@coherent.com

Service: product.support@coherent.com

Notes



Notes

coherent.com





Coherent, Inc., 5100 Patrick Henry Drive Santa Clara, CA 95054 p. (800) 527-3786 | (408) 764-4983 f. (408) 764-4646

tech.sales@coherent.com www.coherent.com



