



Advanced UV-LED Light Engine ONE

ALE/1 – Light Guide-Coupled UV-LED Light Sources



Key Applications

- + UV exposure in lithography tools (Mask Aligners, Wafer Steppers, Wafer Edge Exposure)
- + Photomask- and Reticle Inspection
- + Precision UV spot curing in automotive, electronics, medical, and optics manufacturing
- + Highly uniform flood exposure
- + Non-Destructive Testing (NDT)
- + Life Sciences applications

ALE/1 UV-LED Light Source Highlights

- + Up to 30 Watts of optical output
- + Fully customizable spectrum (UV, VIS, NIR)
- + Closed-loop-controlled optical output
- + LED process stability and TCO benefits
- + Easy to integrate into new and existing setups
- + No external cooling required
- + No mercury! Save and future-proof LED light source
- + Quality made in Germany

Modular All-in-One LED Exposure System

Broadband Spectra Showcase and Output Performance

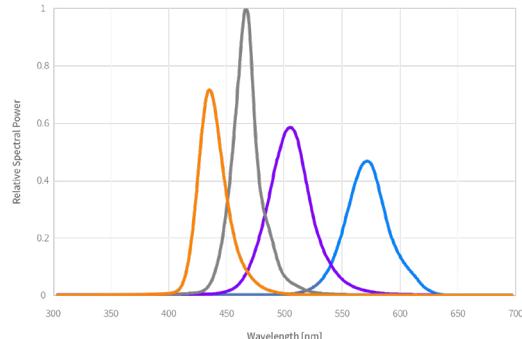
ALE/1.1

1 NUV-LED:

365, 385,
405, or 436 nm

Applications:

- + UV-tape debonding
- + Narrowband exposure



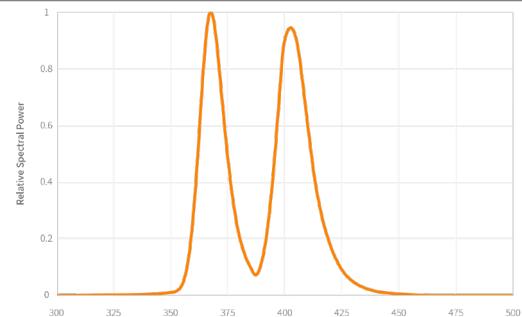
ALE/1.2

2 NUV-LEDs:

365 / 385 nm,
365 / 405 nm, or
385 / 405 nm

Applications:

- + Precision spot curing



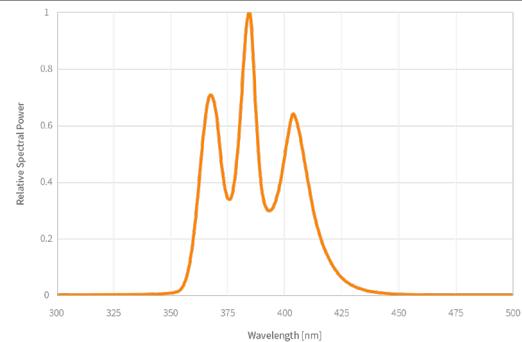
ALE/1.3

3 NUV-LEDs:

365 / 385 /
405 nm

Applications:

- + Broadband spot curing
- + Material science



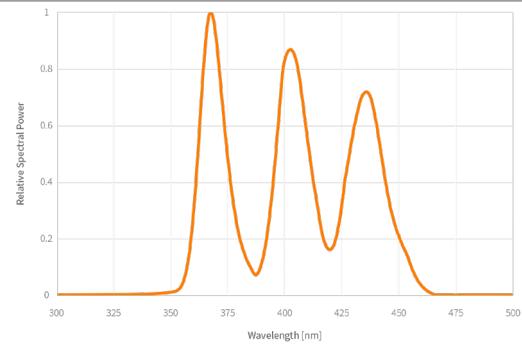
ALE/1.3

3 NUV-LEDs:

365 / 405 /
436 nm

Applications:

- + Broadband lithography
- + Collimated flood exposure
- + Reticle inspection



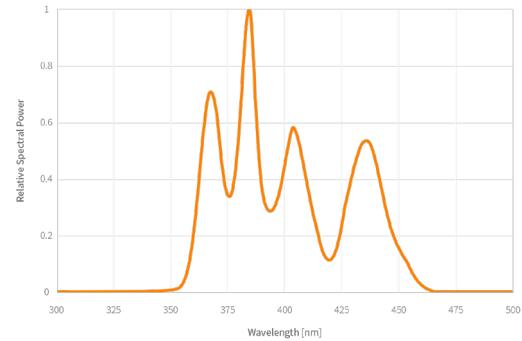
ALE/1.4

4 NUV-LEDs:

365 / 385 /
406 / 436 nm

Applications:

- + Broadband spot curing
- + Material science



Radiation [mW]

	ALE/1.1	ALE/1.1+
Light Guide Active Core	Ø5.0	Ø6.5
CWL 365 nm	7,000	10,000
CWL 385 nm	10,000	14,000
CWL 405 nm	10,000	14,000
CWL 436 nm	7,000	10,000
Intensity* [mW/cm ²]	51,000	42,000

*Maximum values

Radiation [mW]

	ALE/1.2	ALE/1.2+
Light Guide Active Core	Ø5.0	Ø6.5
CWL 365 nm	6,000	10,000
CWL 405 nm	6,500	11,000
Total	12,500	21,000
Intensity [mW/cm ²]	64,000	63,000

Radiation [mW]

	ALE/1.3	ALE/1.3+
Light Guide Active Core	Ø5.0	Ø6.5
CWL 365 nm	4,000	7,000
CWL 385 nm	4,500	7,000
CWL 405 nm	4,500	8,000
Total	13,000	23,000
Intensity [mW/cm ²]	66,000	69,000

Radiation [mW]

	ALE/1.3	ALE/1.3+
Light Guide Active Core	Ø5.0	Ø6.5
CWL 365 nm	6,000	10,000
CWL 405 nm	6,000	10,000
CWL 436 nm	6,000	10,000
Total	18,000	30,000
Intensity [mW/cm ²]	92,000	90,000

Radiation [mW]

	ALE/1.4	ALE/1.4+
Light Guide Active Core	Ø5.0	Ø6.5
CWL 365 nm	4,000	7,000
CWL 385 nm	4,500	8,000
CWL 405 nm	4,000	7,000
CWL 436 nm	4,500	8,000
Total	17,000	30,000
Intensity [mW/cm ²]	87,000	90,000

CWL of emitters: 367.5±2.5 nm, 387.5±2.5 nm, 402.5±2.5 nm, and 435.0±2.5 nm.
Full spectrum of each emitter measured at end of light guide (length 1.5 m); deviation of ±10% possible.
Ø6.5 mm light guide with antireflective coating.

ALE/1: Versatility Meets Performance

System Properties and Specifications

Emitter Options	Up to 5 installed LED Modules (CWL 365 to 1,050 nm)	
Numerical Aperture	NA 0.6 ($2\alpha \sim 70^\circ$)	
Output Control	<ul style="list-style-type: none">✚ Individual LED power management and presets✚ High-resolution intensity adjustment (10 - 100%)✚ LED rise time under 1 millisecond✚ Continuous monitoring of optical output and feedback control	
Communication interfaces	<ul style="list-style-type: none">✚ Touch display✚ Discrete PLC interface (TTL)✚ AUX (debounced)✚ USB (serial)✚ Ethernet / Modbus (optional)	
Thermal Management	Liquid cooling with internal radiator	
Dimensions (W H D)	28 X 23 X 40 cm	(11.0 X 9.1 X 15.7")
Weight	15 kg	(33 lbs)
Power Supply	110 - 240 VAC / 50 - 60 Hz / 1,000 W	
Light Guide Options	<ul style="list-style-type: none">✚ Liquid light guides only!✚ Single and multi-pole options✚ Active core Ø5.0, Ø6.5, and Ø8.0 mm✚ Standard length 1.5 m; custom lengths 0.5 - 20 m✚ Custom end fittings available on request	





Accessories for the ALE/1

Performance Optics

We offer single- and multi-pole liquid LED Light Guides that perfectly fit our UV-LED Light Engine ALE/1. Our LED Light Guides are made in Germany, meeting the highest quality, durability, and efficiency standards. In addition to LED Light Guides, we also provide standard and customized homogenizing, condensing, and focussing optics, which can be an economical add-on to improve exposure uniformity or efficiency of the whole optical setup.



Single-pole Liquid Light Guides

- Three active core sizes: Ø5.0, Ø6.5, and Ø8.0 mm
- Standard length: 1.5 m; custom lengths of 0.5 to 20 m available on request



Multi-pole Liquid Light Guides

- 4-pole LED Light Guides
- Active core: Ø3.0 mm
- Standard length: 1.5 m; other length available on request



Condensing / Focussing Optics

- Standard condensing and focussing LED Light Guide adapters available
- Custom optics available on request