



High-Power (1 kW Power Handling)

Liquid Crystal on Silicon Based Spatial Light Modulator

SLM-310

Product Overview

SLM-310 is an LCOS-based spatial light modulator designed for high laser power durability, supporting 1 kW near-infrared lasers at 1064 nm.

It features a high resolution of WUXGA (1920×1200) and exceptional phase stability with a representative value below 0.003π , enabling precise beam control with 10bit (1024 grayscale levels) modulation.

Equipped with a robust water-cooling system, the SLM-310 can be integrated into laser processing equipment for welding, drilling, cutting, and metal 3D printing.

It contributes to improved processing accuracy, minimized thermal effects, efficient beam shaping, steering correction, and multi-beam control.



Features

- Laser Power Durability: Up to 1 kW
- Wavelength: 1020–1100 nm
- Stable Operation with Water-Cooling System
- Phase Stability: $< 0.003\pi$ (typical)
- Gray Level: 10bit (1024 Levels)
- Resolution: WUXGA (1920×1200)
- Built-in Memory and I/O Trigger Functions
- Extended Flexible Cable for Versatile Installation
- Extended SDK with example codes based on C#, MATLAB, Python, LabVIEW, etc
- Prompt and professional technical support, for supporting you to test and integrate the product to your project

Application

- Laser Material Processing, including welding, cutting, drilling, Chamfering, Film removing, surface treatment, etc
- Metal 3D Printing, Additive Manufacturing
- Wafer cutting, Dicing
- Wavefront Correction
- Pulse Shaping and Beam Shaping

Specifications

Parameter	Min	Max	Unit	Notes
Wavelength	1020-1100		nm	
Panel size	(H)15.36 x (V)9.60		mm	Active area
Pixel resolution ¹⁾	(H)1920 x (V)1200		pixel	
Pixel size / pitch	7.8 / 8.0		μm	
Panel reflectivity ²⁾	Typ. > 92		%	
Aperture ratio	95		%	
Gray level	10 (1024)		bit	
Frame rate	60 or 120		Hz	Factory setting, default 60 Hz
LCOS drive frequency	1200		Hz	
Phase depth	2π	-	rad.	
Phase stability	Typ. <0.003π		rad.	
Response time ³⁾	Tr: 250 / Tf: 350		ms	
Interface	DVI* / USB3.0		-	*10-bit using RGB 8-bit, 3 colors
Operating temperature range	15	35	°C	No condensation
Storage temperature	0	40	°C	No condensation
Optical power handling ⁴⁾	-	1000	W	CW @1070 nm, 6.5 mm beam diameter
Control software	GUI software and SDK for Windows		-	
Water flow	8		L/min.	15 ~ 25 °C
Water inlet and outlet	Pipe fittings		-	Rc(PT) 3/8 inch female ⁵⁾
Dimensions	117.6 x 117.6 x 33.7		mm	

1) Pixel defects are not warranted.
2) Zero-order reflection. Depending on wavelength range.
3) Response time is a typical value and is not affected by frame rate.
Tr: Rise time between 10% and 90% levels in a phase change of 0 to 1023 bit (2π rad.) at 25 °C.
Tf: Fall time between 90% and 10% levels in a phase change of 1023 to 0 bit (2π rad.) at 25 °C.
4) The value is not guaranteed. Depending on the conditions of the laser oscillator used,
the product's life may be significantly shortened due to accumulated exposure time.
5) Supports NPT standard using attached conversion adapters.



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