

# NEWS RELEASE

Hamamatsu Photonics has developed an LCOS-SLM with the world's highest power handling capability that will streamline production of laser metal machining

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[LCOS-SLM X15213-03CL with the world's highest power handling capability](#)

Hamamatsu Photonics has developed a new LCOS-SLM (Liquid Crystal On Silicon - Spatial Light Modulator), the X15213-03CL, that delivers the world's highest power handling capability up to 700 W. We did this by harnessing our unique thermal design technology which enhances heat dissipation performance.

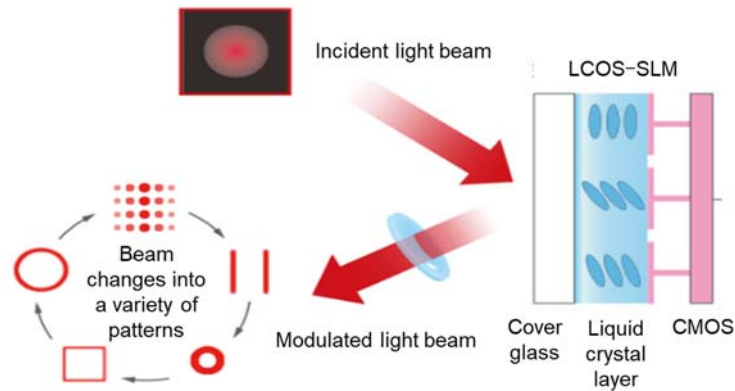
The X15213-03CL is an optical component designed for laser beam machining of metal materials which also allows free control of laser beam patterns. The X15213-03CL vastly boosts production efficiency when used for specific applications. This includes metal 3D printing, where metal powder is sintered by laser to form solidified parts for aircraft and transport equipment, as well as laser metal welding and cutting.

Sales of this product will start on Friday, December 1, 2023, for domestic and overseas manufacturers of metal 3D printers and laser beam machining equipment.

We will also display this new product on our booth at the LASER World of PHOTONICS 2023 which is the world's leading trade fair for lasers, laser systems, and optics held in Munich, Germany from Tuesday, June 27 to Friday, June 30, 2023.

[How LCOS-SLM works](#)

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The LCOS-SLM is a reflective type of spatial light modulator capable of freely controlling laser beam patterns. The tilt of the liquid crystals in the LCOS-SLM is controlled so as to change the path length of the incident light beam to generate a difference in the phase of the laser beam. This efficiently changes the reflected laser beam into a variety of patterns.

We have already designed, manufactured, and sold an LCOS-SLM having a power handling capability of 200 W. Yet there are market demands for even better power handling capability in laser metal machining.

When a high-power laser beam used for metal machining strikes the LCOS-SLM, it usually causes a temperature rise in the liquid crystal layer that results in a drop in device performance. To solve this problem, this temperature rise in the liquid crystal layer must be suppressed by achieving better heat dissipation.

The X15213-03CL LCOS-SLM uses a sapphire plate as the cover glass. Since the thermal conductivity of sapphire is about 30 times higher than that of conventional cover glass materials, the heat generated in the liquid crystal layer is more easily transferred to the cover glass. What's more, the LCOS-SLM package contains a filler with high thermal conductivity and has an optimized internal structure to increase the heat dissipation efficiency of the cover glass. These improvements proved effective in suppressing the temperature rise in the liquid crystal layer of the LCOS-SLM and succeeded in achieving the world's highest power handling capability of up to 700 W.

Incorporating the X15213-03CL LCOS-SLM into a laser metal machining system and splitting the laser into multiple beams for simultaneous multi-point processing will vastly boost production efficiency. Significant tact time improvement can be expected in applications that normally require time-consuming material processing such as metal 3D printing, and laser beam machining for welding and cutting metal parts of complex shapes.

We will work to expand sales of the X15213-03CL and also continue designing and developing products that meet ever-changing market needs.

#### Main specifications

Parameter	X15213-03CL	Unit
Supported wavelength	1050±50	nm
Number of pixels	1272×1024	pixels
Effective area size (W×H)	15.9×12.8	mm
Pixel pitch	12.5	μm
Fill factor	96.8	%
Power handling capability for average power	700	W