Sintec Optronics

SBN Series Liquid Crystal Spatial Light Modulators

Our spatial light modulator (SLM) is based on reflective liquid crystal on silicon (LCOS) micro-display technology. The SLMs enable optical phase modulation freely and generate arbitrary 2D phase patterns on a LCOS pixel-by-pixel basis. SBN-RD series are our latest Full-HD LCOS model. The SLMs are suitable for various scientific and industrial applications, including beam shaping, wavefront correction and optical manipulations.

Applications:

- HUD
- Micro-projection
- Holographic imaging
- Optical communication
- Optical forceps
- Light field regulation
- Adaptive optics
- Beam shaping
- Laser processing

Product model naming rules:

Serial Number - Modulation Type - modulation Mode - Resolution - Pixel Size - Window - Optional wavelength - Others

For example: SBNA-PP2K-6355-NIR-H, SBNA series, Phase modulation, analog control, resolution 1920*1080, pixel 6.3m, window 0.55, wavelength NIR-H 1064nm (high power version)

Serial number	Modulation type	Modulation mode	Resolution	Pixel size	Window size	Optional wavelength
SBNA SBNB SBNC SBNE	A=Amplitude P=Phase	P=Analog D=Digital	4K=4090*2160 4K2=3840*2160 2K=1920*1080 1K=1280*720	36=3.6μm 38=3.8μm 45=4.5μm 60=6.0μm 63=6.3μm 80=8,0μm	26=0.26” 39=0.39” 52=0.52” 55=0.55” 62=0.62” 69=0.69” 70=0.70” 72=0.72” 78=0.78”	VIS=430nm-750nm NIR=1000nm-1100nm TEC=1530nm-1565nm Specific wavelength, such as 1064nm

1. SBN series digital silicon - based liquid crystal (LCoS) high - resolution spatial light modulator

This series of spatial light modulators (SLMS) are a high-resolution version of digital silicon based liquid crystals (LCoS). It provides up to 4160×2460 resolution and allows dynamic adjustment of modulation region, so it is suitable for multi - mode or single - mode high - resolution optical system applications.

Features/Advantages:

- Easily calibrated
- Digital drive, flexible modulation
- Easy to use, plug and play
- Good linearity of amplitude/phase gray curve
- High resolution, high phase accuracy and good phase stability

Serial number	Modulation type	Modulation mode	Resolution	Pixel size	Window size	Operating wavelength
SBNA	A=Amplitude P=Phase	D=Digital	4K=4096*2160	38=3.8μm	70=0.7”	VIS=430nm-750nm NIR=1000nm-1100nm TEC=1530nm-1565nm
SBNB	A=Amplitude P=Phase	D=Digital	4K2=3840*2160	36=3.6μm	62=0.62”	VIS=430nm-750nm NIR=1000nm-1100nm TEC=1530nm-1565nm
SBNC	A=Amplitude P=Phase	D=Digital	4K=3840*2160	45=4.5μm	78=0.78”	VIS=430nm-750nm NIR=1000nm-1100nm TEC=1530nm-1565nm

2. SBN series analog silicon - based liquid crystal LCoS spatial light modulator

This series of spatial light modulators (SLMS) are a high refresh rate version of analog silicon based liquid crystals (LCoS). It allows dynamic adjustment of the modulation region and is suitable for multimode or single-mode high resolution optical system applications. Its ability to accurately control wavefront phase is applicable to various applications of optical field modulation.

Features/Advantages:

- Analog drive
- Low power consumption
- High contrast
- High refresh rate

Serial number	Modulation type	Modulation mode	Resolution	Pixel size	Window size	Operating wavelength
SBNB SBNC	A=Amplitude	P=Analog	2K=1920*1080	45=4.5μm	39=0.39”	VIS=430nm-750nm NIR=1000nm-1100nm
SBNC	A=Amplitude	P=Analog	1K=1280*720	45=4.5μm	26=0.26”	VIS=430nm-750nm NIR=1000nm-1100nm
SBNC	A=Amplitude P=Phase	P=Analog	2K=1920*1080	60=6μm	52=0.52”	VIS=430nm-750nm NIR=1000nm-1100nm TEC=1530nm-1565nm

3. SBN series analog silicon - based liquid crystal LCoS spatial light modulator

This series of spatial light modulators (SLMS) simulate regular versions of silicon-based liquid crystals (LCoS). It has the advantages of high phase stability, good phase gray linearity and high reliability, so it is suitable for various application fields of optical field modulation.

Features/Advantages:

- Analog drive
- Phase stability
- Good phase linearity
- Low power consumption

Serial number	Modulation type	Modulation mode	Resolution	Pixel size	Window size	Optional wavelength
SBNB	A=Amplitude P=Phase	P=Analog	2K=1920*1080	63=6.3μm	55=0.55”	VIS=430nm-750nm TEC=1525nm-1572nm
SBNA	A=Amplitude P=Phase	P=Analog	2K=1920*1080	80=8μm	72=0.72”	VIS=430nm-750nm NIR=450nm-10640nm NIR-H=1064nm(High power version) TEC=1525nm-1572nm
SBNC	A=Amplitude P=Phase	P=Analog	2K=1920*1080	80=8μm	69=0.69”	VIS=420nm-760nm TEC=1530nm-1570nm

4. SBNE series digital silicon - based liquid crystal LCoS spatial light modulator

SBNE series spatial light modulator (SLM) is a product mainly developed for teaching and research in universities. It is the regular version of digital silicon based liquid crystal (LCoS). The control signal from

processor to each pixel is in digital form, without digital to analog conversion. Its driving system is simple and compact, and the anti-noise performance is outstanding.

Features/Advantages:

- Easily calibrated
- Digital drive, flexible modulation
- Easy to use, plug and play
- Good linearity of amplitude/phase gray curve
- High resolution, high phase accuracy and good phase stability

Serial number	Modulation type	Modulation mode	Resolution	Pixel size	Window size	Optional wavelength
SBNE	A=Amplitude P=Phase	D=Digital	2K=1920*1080	63=6.3μm	55=0.55”	VIS=430nm-750nm NIR=450nm-10640nm TEC=1525nm-1572nm

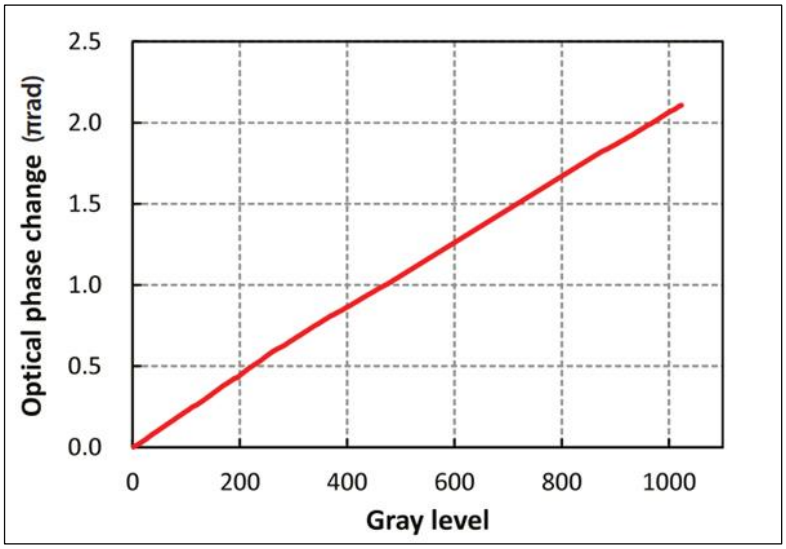
5. SBN-RD3 Series Spatial Light Modulators

Features:

- WUXGA (1920 x 1200) and Full-HD (1920 x 1080) available
- Frame rate (60Hz or 120Hz)
- Memory function
- Triggers-input & output

Applications:

- Beam steering
- Wavefront correction
- Pulse/Beam shaping
- Diffractive optics
- Optical manipulation
- Programmable phase pattern



Technical Specifications:

Item	min	max	Units	Notes
Operating wavelength range	450	1064	nm	(Refer to AR coating option)
Panel size	(H)15.36 x (V)9.60		mm	Active area
Pixel resolution	(H)1920 x (V)1200		pixel	
Pixel size/pitch	8.0		μm	
Panel reflectivity	Typ.>80		%	Depending on specified wavelength range
Aperture ratio	95		%	
Gray level	10(1024)		bit	
Frame rate	60 or 120		Hz	Factory default setting
Phase depth	2π		rad.	

Phase stability	Typ. <0.001π		rad.	
Response time	Typ. 300		ms	
Interface	HDMI		-	10-bit using RGB 8-bit, 3 colors
Operating temperature range	15	35	degC	No condensation
Storage temperature	0	40	degC	No condensation
Optical power handling	Typ.10		W/cm2	@1064nm, CW, 2.0mm beam diameter
Dimensions	122.6x92.4x25.6		mm	
Control software	GUI software and SDK for Windows		-	

1) The value is not guaranteed. Please contact us for technical support.

AR-coating Options:

Item	Parameter					Units
Ordering code number	-01	-02	-03	-12	-14	-
AR coating range	450-550	750-850	1000-1100	400-700	450-550/1500-1600	nm
AR coating reflectance	<0.5			<1.5	<0.6	%

2) Angle of incidence = 0 degree
3) Typical laser wavelength 532nm, 630nm, 850nm, 1064nm and wide spectrum 405-1100nm available.

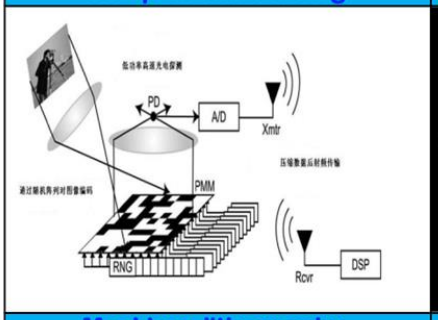
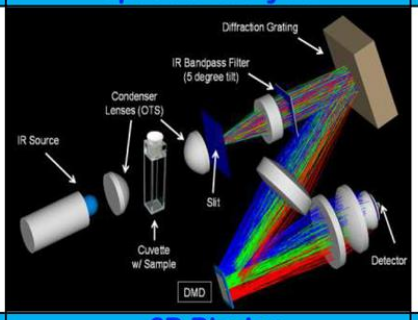
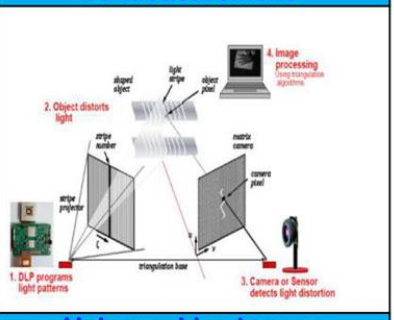
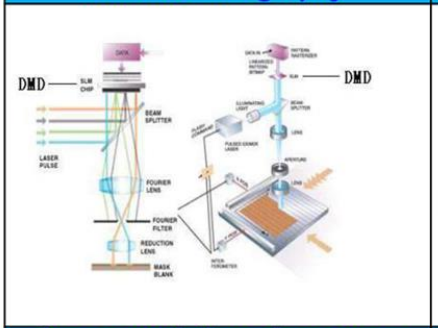
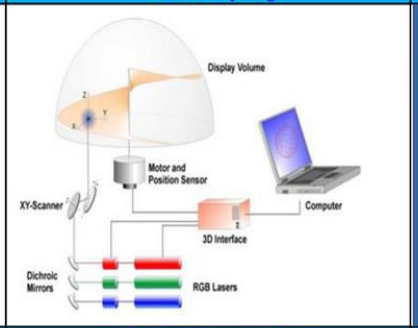
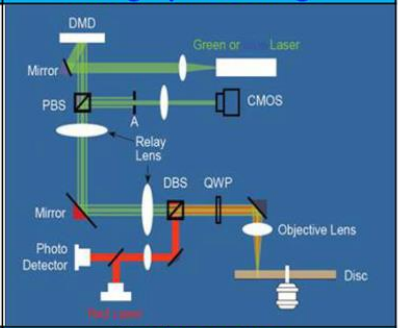
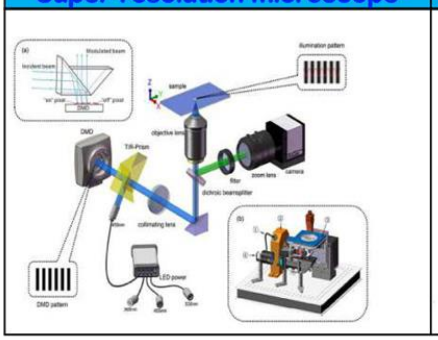
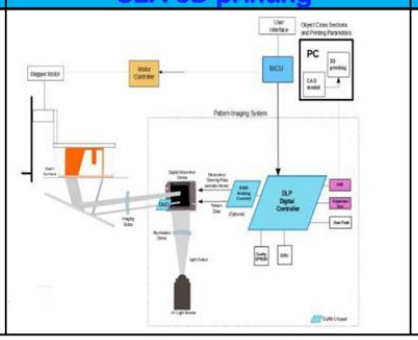
SFG Series Digital Micromirror Spatial Light Modulators

We are mainly engaged in the application technology research and development of digital micromirror spatial light modulator (Digital Micromirror Device-DMD). It is a high-tech enterprise specializing in the research and development, production and sales of hardware and software in digital light process (DLP) related fields such as semiconductor maskless lithography, computational imaging, compressed sensing and 3D detection. Our products include SFG-F3010, SFG-F4100, SFG-F4200, SFG-F4500, SFG-F4710, SFG-F4320, SFG-F6500, F SFG-9000, etc., widely used in scientific research, 3D scanning and LDI industries.

The company has been composed of young and middle-aged technical backbone R & D team, can be said to provide customers with DLP scheme design, DMD drive control system design and other services. At the heart of the digital micromirror spatial light modulator is the digital Micromirror device (DMD), an optical semiconductor module and a MEMS chip in which each lens can be deflected ±10deg, ±12deg or ±17deg respectively, around the hinged shaft. The DMD chip mainly regulates the rotation Angle of each micromirror on the chip according to different digital signals transmitted by the front-end circuit to the CMOS chip, so that the light irradiated on the micromirror can be selectively reflected to the imaging surface for imaging. Since the deflection of the lens is controlled separately by the underlying CMOS control circuit and the binary information of the reset signal of the lens, the optical field digital flower modulation can be realized. Because DMD is reflected by aluminized micromirror, almost no energy absorption, and controlled by CMOS technology, the speed, accuracy, energy and efficiency of light modulation are far more than other spatial light modulators. DMD technology is widely used, including spectral analysis, maskless lithography, 3D measurement, naked eye 3D display, holographic imaging, compressed sensing, biological microscopy, SLA 3D printing, machine vision, etc.

Operation Principle of Digital Micromirror Devices:

At heart of the Digital Micromirror spatial light modulator is the Digital Micromirror device (DMD), an optical semiconductor module and a MEMS chip in which each lens can be deflected ±10°, ±12°, or ±17.5°, respectively, around the articulated shaft. The DMD chip mainly regulates the rotation angle of each micro mirror on the chip according to different digital signals transmitted by the front-end circuit of the CMOS chip, so that the light shin on the micro mirror can be selectively reflected on the imaging surface for imaging. Since the deflection of the lens is controlled solely by the underlying CMOS control circuit and the binary information of the lens reset signal, the digital modulation of the optical field can be realized. Because DMD is reflected by aluminized micro mirror, almost no energy absorption, and controlled by CMOS technology, the speed, accuracy, energy and efficiency of light modulation is far higher than other space light modulators. DMD technology is widely used, including spectral analysis, maskless lithography, 3D measurement, naked eye 3D display, holographic imaging, compressed sensing, biological microscopy, SLA 3D printing, machine vision, etc.

Compressed sensing	Spectral analysis	3D Measurement
		
Maskless lithography	**3D Display**	**Holographic storage**
		
Super-resolution microscope	**SLA 3D printing**	**Machine vision**
		

List of Main Products:

Item		SFG-F4500	SFG-F4500M	SFG-F3010	SFG-F4710
1	Product model				
2	Chipset	DLPC350 Chipset	DLPC350+DLP4500	DLP3478+DLP3010LC	DLPC3479+DLP4710LC
3	Target surface size	0.45 inch	0.45 inch	0.3 inch	0.47 inch
4	Micromirror size	7.56um	7.56um	5.4um	5.4um
5	Resolution	912X1140	912X1140	1280X720	1920X1080
6	Type of light source	RGB LED	RGB LED	RGB LED	RGB LED
7	Communication interface	USB	USB	USB	USB
8	Synchronous trigger interface	Support	Support	Support	Support
9	Gray level	1-8bit adj.	1-8bit adj.	1-8bit adj.	1-8bit adj.
10	Frame frequency	1bit Max4225Hz/s 8bit Max120Hz/s	1bit Max4225Hz/s 8bit Max120Hz/s	1bit Max2487Hz/s 8bit Max272Hz/s	1bit Max2487Hz/s 8bit Max437Hz/s
11	Uniformity	>90%	>90%	>80%	>90%
12	Projection ratio	1.2	1.69	1.47	1.4
13	Contrast ratio	1000:1	1500:1	600:1	500:1
14	Distortion	≤1.5%	≤0.8%	≤1.5%	≤0.5%
15	Off-axis	100%	0%	0%	0%
16	Projection distance	0.5m to 2.0m	0.5m to 2.0m	0.4m toinfinite	0.4m to 3.5m
17	Lumen number	150ml @ 15W	200ml @ 15W	>200ml	>300ml
18	Application field	3D measurement, 3D scanning, machine vision, vision guidance, computational imaging, spectral analysis, biological microscopy, etc			

Item	Product category	Ultra-high definition digital micro-mirror spatial light modulator				
1	Product model	SFG-F6500-S600 	SFG-F6500 -TYPE A 	SFG-F500YX 	SFG-F9000 	SFG-F670S 
2	Chipset	DLPC900+DLP6500 S600	DLPC900+DLP6500 Type A	DLPC900+DLP500YX	DLPC900+DLP9000	DLPC900+DLP670S
3	Target surface size	0.65 inch	0.65 inch	0.5 inch	0.9 inch	0.9 inch
4	Micromirror size	7.56um	7.56um	5.4um	7.56um	7.56um
5	Resolution	1920X1080	1920X1080	2048X1200	2560X1600	2716X1600
6	Wave range	VIS:420nm-700nm	VIS:400nm-700nm	VIS:420nm-700nm	VIS:400nm-700nm	VIS:420nm-700nm
7	Pc Interface	USB	USB	USB	USB	USB
8	Synchronous trigger interface	Support	Support	Support	Support	Support
9	Length of flexible cable	30.5CM	30.5CM	31CM	31CM	31CM
10	DMD installation mode	0° or 45° is optional	0° or 45° is optional	0°	0° or 45° is optional	0°
11	Gray level	1-8bit adjustable	1-8bit adjustable	1-16bit adjustable	1-8bit adjustable	1-8bit adjustable
12	Frame frequency	1bit Max 9523Hz 8bit Max 247Hz	1bit Max 9523Hz 8bit Max 247Hz	1bit Max 16100Hz 8bit Max 2016Hz	1bit Max 9532Hz 8bit Max 1031Hz	1bit Max 9532Hz 8bit Max 1190Hz
13	Storage capacity	48MB	48MB	128MB	128MB	128MB
14	Deflection Angle	±12°	±12°	±17.5°	±12°	±17.5°
15	Combined reflectance	Greater than 78.5%	Greater than 78.5%	Greater than 71.7%	Greater than 71.8%	Greater than 71.8%
16	Damage threshold	Greater than 10W per square centimeter Related to heat dissipation and band range	Greater than 10W per square centimeter Related to heat dissipation and band range	Greater than 10W per square centimeter Related to heat dissipation and band range	Greater than 10W per square centimeter Related to heat dissipation and band range	Greater than 10W per square centimeter Related to heat dissipation and band range
17	Control software	TI GUI	TI GUI	TI GUI	TI GUI	TI GUI
18	Operating system	windows or linux	windows or linux	windows or linux	windows or linux	windows or linux
19	Secondary development	SDK with C++	SDK with C++	SDK with C++	SDK with C++	SDK with C++
20	Application field	Optical field modulation, machine vision, computational imaging, spectral analysis, visual guidance, super resolution microscopy, etc				

Product category	Ultra-high speed digital micro-mirror spatial light modulator					
Product model	SFG-F4320-DDR -0.65-WXGA	SFG-F4320-DDR -0.7-XGA	SFG-F4320-DDR -0.95-1080P	SFG-F4320-DDR -0.96-WUXGA	SFG-F9110-DDR -0.65-1080P	SFG-F9110-DDR -0.9-WQXGA
						
Chipset	DLPC410+DLP650LNIR	DLPC410 + DLP7000 or DLP5500	DLPC410+DLP9500	DLPC410+DLP9600	DLPC910+DLP6500	DLPC910+DLP9000X
Target surface size	0.65 inch	0.7 inch or 0.55 inch	0.95 inch	0.96 inch	0.65 inch	0.9 inch
Micromirror size	10.8um	13.68um or 10.8um	10.8um	10.8um	7.56um	7.56um
Resolution	1280X800	1024X768	1920X1080	1920X1200	1920X1080	2560X1600
Wave range	VIS:420-700nm NIR:700nm-2500nm	VIS:400nm-700nm UV:363nm-420nm	VIS:400nm-700nm UV:363nm-420nm	VIS:400nm-700nm	VIS:400nm-700nm	VIS:400nm-700nm UV:355nm-420nm
Pc Interface	Gigabit Ethernet, USB3.0, 10-Gigabit Ethernet	Gigabit Ethernet, USB3.0, or 10-Gigabit Ethernet	Gigabit Ethernet, USB3.0, or 10-Gigabit Ethernet	Gigabit Ethernet, USB3.0, or 10-Gigabit Ethernet	Gigabit Ethernet, USB3.0, or 10-Gigabit Ethernet	Gigabit Ethernet, USB3.0, or 10-Gigabit Ethernet
Synchronous trigger interface	Support	Support	Support	Support	Support	Support
Length of flexible cable	31CM	31CM	31CM	31CM	31CM	31CM
DMD installation mode	0° or 45° is optional	0° or 45° is optional	0° or 45° is optional	0° or 45° is optional	0° or 45° is optional	0° or 45° is optional
Gray level	1-16bit adjustable	1-16bit adjustable	1-16bit adjustable	1-16bit adjustable	1-16bit adjustable	1-16bit adjustable
Frame frequency	1bit Max 11764Hz 8bit Max 522.19Hz	1bit Max 27995Hz 8bit Max 657.56Hz	1bit Max 20746Hz 8bit Max 617.05Hz	1bit Max 18518Hz 8bit Max 585.82Hz	1bit Max 10940.9Hz 8bit Max 508.54Hz	1bit Max 11764z 8bit Max 522.19Hz
Storage capacity	64Gb or 128Gb	64Gb or 128Gb	64Gb or 128Gb	64Gb or 128Gb	64Gb or 128Gb	64Gb or 128Gb
Deflection Angle	±12°	±12°	±12°	±12°	±12°	±12°
Combined reflectance	Greater than 78.5%	Greater than 78.5%	Greater than 78.5%	Greater than 78.5%	Greater than 78.5%	Greater than 78.5%
Damage threshold	(Greater than 10W per square centimeter Related to heat dissipation and band range	Greater than 10W per square centimeter Related to heat dissipation and band range	Greater than 10W per square centimeter Related to heat dissipation and band range	Greater than 10W per square centimeter Related to heat dissipation and band range	Greater than 10W per square centimeter Related to heat dissipation and band range	Greater than 10W per square centimeter Related to heat dissipation and band range
Control software	HS_DMD_Control	HS_DMD_Control	HS_DMD_Control	HS_DMD_Control	HS_DMD_Control	HS_DMD_Control
Operating system	windows or linux	windows or linux	windows or linux	windows or linux	windows or linux	windows or linux
Secondary development	++, python, labview, matlab, C#, etc	C++, python, labview, matlab, C#, etc	C++, python, labview, matlab, C#, etc	C++, python, labview, matlab, C#, etc	C++, python, labview, matlab, C#, etc	C++, python, labview, matlab, C#, etc
Application field	Maskless lithography, laser direct imaging, holographic imaging, light field modulation, machine vision, vision guidance, computational imaging, spectral analysis, biological microscopy, circuit board exposure, etc					

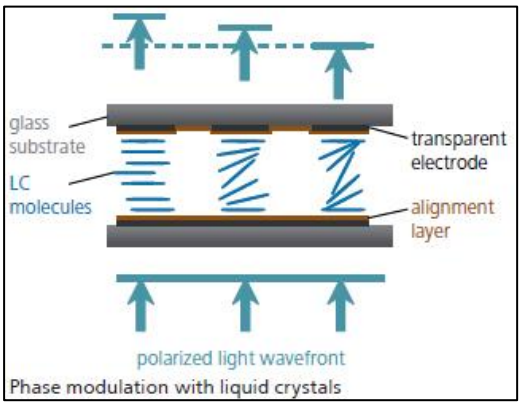
Product category	Ultra-large capacity digital micro-mirror spatial light modulator				
Product model	SFG-F4320-SSD -0.65-WXGA	SFG-F4320-SSD -0.7-XGA	SFG-F4320-SSD -0.95-1080P	SFG-F9110-SSD -0.65-1080P	SFG-F9110-SSD -0.9-WQXGA
					
Chipset	DLPC410+DLP650LNIR	DLPC410 + DLP7000 or DLP5500	DLPC410+DLP9500	DLPC910+DLP6500	DLPC910+DLP9000X
Target surface size	0.65 inch	0.7 inch or 0.55 inch	0.95 inch	0.65 inch	0.9 inch
Micromirror size	10.8um	13.68um or 10.8um	10.8um	7.56um	7.56um
Resolution	1280X800	1024X768	1920X1080	1920X1080	2560X1600
Wave range	VIS:420-700nm NIR:700nm-2500nm	VIS:400nm-700nm UV:363nm-420nm	VIS:400nm-700nm UV:363nm-420nm	VIS:400nm-700nm	VIS:400nm-700nm UV:355nm-420nm
Pc Interface	Gigabit Ethernet, USB3.0, or 10-Gigabit Ethernet	Gigabit Ethernet, USB3.0, or 10-Gigabit Ethernet	Gigabit Ethernet, USB3.0, or 10-Gigabit Ethernet	Gigabit Ethernet, USB3.0, or 10-Gigabit Ethernet	Gigabit Ethernet, USB3.0, or 10-Gigabit Ethernet
Synchronous trigger interface	Support	Support	Support	Support	Support
Length of flexible cable	31CM	31CM	31CM	31CM	31CM
DMD installation mode	0° or 45° is optional	0° or 45° is optional	0° or 45° is optional	0° or 45° is optional	0° or 45° is optional
Gray level	1-16bit adjustable	1-16bit adjustable	1-16bit adjustable	1-16bit adjustable	1-16bit adjustable
Frame frequency	1bit Max 11764z 8bit Max 522.19Hz	1bit Max 27995Hz 8bit Max 657.56Hz	1bit Max 20746Hz 8bit Max 617.05Hz	1bit Max 10940.9Hz 8bit Max 508.54Hz	1bit Max 11764Hz 8bit Max 522.19Hz
Storage capacity	1T、2T or 4T	2T、4T or 8T	3T、6T or 12T	2T、4T or 8T	3T、6T or12T
Deflection Angle	±12°	±12°	±12°	±12°	±12°
Combined reflectance	Greater than 78.5%	Greater than 78.5%	Greater than 78.5%	Greater than 78.5%	Greater than 78.5%
Damage threshold	Greater than 10W per square centimeter Related to heat dissipation and band range	Greater than 10W per square centimeter Related to heat dissipation and band range	Greater than 10W per square centimeter Related to heat dissipation and band range	Greater than 10W per square centimeter Related to heat dissipation and band range	Greater than 10W per square centimeter Related to heat dissipation and band range
Control software	HC_DMD_Control	HC_DMD_Control	HC_DMD_Control	HC_DMD_Control	HC_DMD_Control
Operating system	windows or linux	windows or linux	windows or linux	windows or linux	windows or linux
Secondary development	C++, python, labview, matlab, C#, etc	C++, python, labview, matlab, C#, etc	C++, python, labview, matlab, C#, etc	C++, python, labview, matlab, C#, etc	C++, python, labview, matlab, C#, etc
Application field	Maskless lithography, laser direct imaging, holographic imaging, light field modulation, machine vision, vision guidance, computational imaging, spectral analysis, biological microscopy, circuit board exposure, etc				

STJ Series Spatial Light Modulators

In order to modulate light according to your requirements, we offer you various integrated optical modulators and liquid crystal based modulators, as well as the appropriate control unit.

Our light modulators are ideal for the amplitude, phase and polarization modulation of laser light in the visible and infrared spectral range. Our products are perfectly tailored to your applications. In addition to standard light modulators, we also develop and manufacture customer-specific components.

Liquid Crystal Light Modulators are for the control of phase, amplitude and polarization state



The liquid crystal light modulators are used to control optical characteristics safely and reliably without mechanical moving parts.

Liquid crystal light modulators are excellently suited for modulating the phase, amplitude or polarization state of a light wave. They are based on the electrical control of optical properties of a nematic liquid crystal layer.

An example of the capabilities of our liquid crystal laboratory is the spatial light modulator based on a linear array of individually controllable strips. The modulators work for light in the 430 to 1600nm wavelength range. They are equipped with a single-mask or a dual-mask array. The dual-mask array makes it possible to control the phase and amplitude simultaneously and independently.

Each of the 320 or 640 strips can be controlled separately with 12-bit resolution. All STJ-SLM-series liquid crystal modulators are easy to connect to your computer via USB.

On request, we manufacture customer-specific light modulators that are precisely adapted to your individual requirements, including electronics development.

Benefits

- Extensive LabView instruction set, MATLAB and C-libraries for an easy and comfortable operation
- ADC port, e.g. for feedback pulse optimization
- Optional custom-made AR coatings
- Optional removable mirror for reflective mode

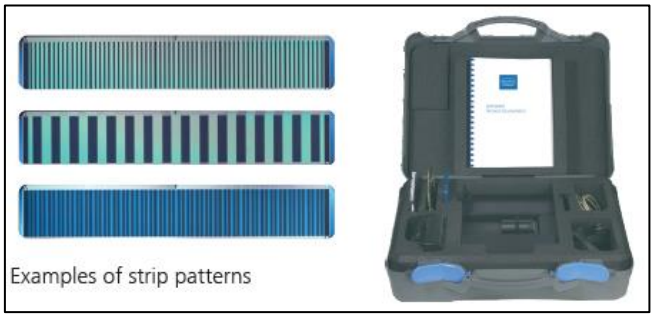
Application

High-resolution laser light modulation in phase and amplitude particularly for pulse shaping of ultrashort laser pulses and high power lasers

	Single Mask Configuration		Dual Mask Configuration	
Part number	STJ-SLM-S640	STJ-SLM-S320	STJ-SLM-S640d	STJ-SLM-S320d
Active area	64 mm x 10 mm	32 mm x 13 mm	64 mm x 10 mm	32 mm x 13 mm
Number of addressable strips	640	320	2× 640	2× 320
Strip size	97 µm× 10 mm	97 µm× 13 mm	97µm× 10mm	97 µm× 13 mm
Liquid crystal orientation (Extraordinary axis n_e)	0 ° (horizontally aligned) (other orientations on request)		± 45 °	
Transmission (@ 450 nm ... 1100 nm, without polarizers)	> 80 %		> 75 %	
Gap	3 µm (0.12 mil)			
LC type	nematic			
Phase modulation Phase shift @430nm Phase shift @1600 nm	approx. 7 π approx. 2 π			
Wavelength range	430 nm ... 1600 nm			
Pulse Damage Threshold	100 J/cm2 (485 nm, 52fs, 1.85 kHz), 1100 J/cm2 (780 nm, 250fs, 1.85 kHz)			
Driving voltage	0 V ... 8 V | 0 V ... 5 V (switchable); 12 bit resolution			
Frame buffers	0 ... 63			
ADC port	0 V ... 1.0 V; 12 bit resolution			
Interfaces	USB 2.0 | Ethernet			
Trigger in/out	via opto-coupler			
Functions	extended instruction set integrated in firmware (based on SLM-S640/12 instruction set)			
Software driver requirements and programming interface	Microsoft Windows: LabView and MATLAB drivers C-Interface: Microsoft Windows			
Mirror (optional)	enabling operation in reflective configuration (removable for operation in transmissive configuration)			
Antireflective coating (optional)	customized coatings on request (broad or narrow band)			

Delivery includes

- LC display with controller unit and PC connection
- USB cable
- ADC / Trigger cable
- Power supply
- Printed documentation
- LabView, MATLAB and C-library drivers for Microsoft Windows
- Demonstration software
- Transportation case


Examples of strip patterns