

LEOK-50 Information Optical Experiments with LC-SLM

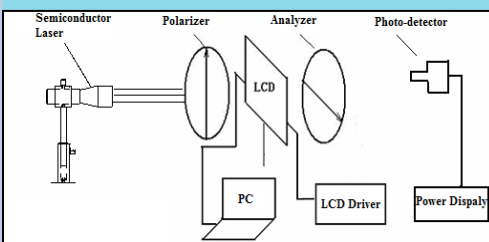


- *Open structure to enhance students' hands-on skills and deepen their understanding of experimental principles*
- *Powerful software for holographic encoding transform of images and their reconstruction*
- *Measurement of electro-optic effect of liquid crystal materials*
- *Comprehensive experimental instructions*

Liquid crystal (LC) is an organic polymer compound that may flow like a liquid, but the molecules may be aligned in a crystal-like orientation. When LC molecules are aligned, the material becomes optically anisotropic. A LC screen is a spatial light modulator (SLM) based on the electro-optic modulation property of the LC material. This type of modulator is electronically addressable so that both input and output signals of the device can be computer-controlled. A LC-SLM can be used for optical signal processing, such as computed holography, interference and diffraction with programmable apertures. It is suitable for optical experiment education in opto-electronic information, physics and other related areas. The instruction manual contains comprehensive materials including experimental configurations, principles and step-by-step instructions.

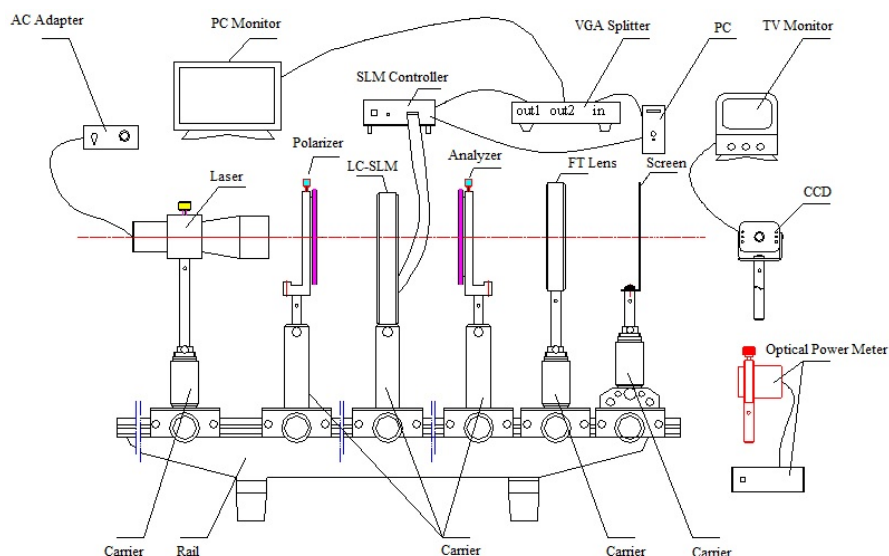
List of Experiments

1. Electro-optic effect of liquid crystal
2. Microstructure measurement of an electronically addressable LC-SLM using diffraction theory
3. Interference of Young's double-slit & multi-slit, and diffraction of various aperture shapes
4. Computed holography
5. Diffraction efficiency measurement of hologram
6. Verification of characteristics of Fourier transform and holography

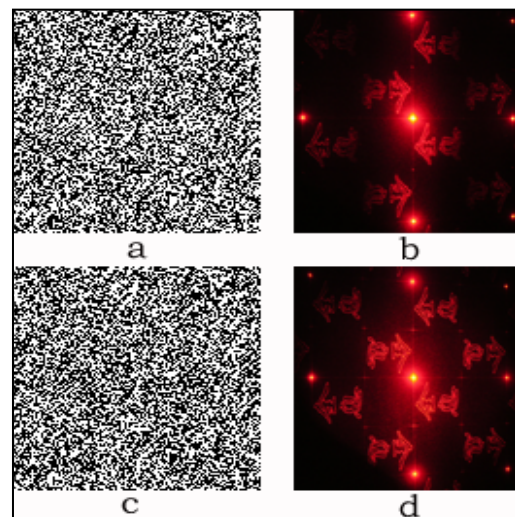


Specifications and Part List

SLM	Display type: transmissive LC	1
	Resolution: 1024 x 768	
	Pixel pitch: 26 μ m	
	Active area: 26.4 mm x 19.8 mm	
	Modulation mode: amplitude	
	Spectral range: 500 ~ 700 nm	
	Signal format: VGA ~ XGA	
	Frame rate: 60 Hz	
SLM Driver		1
Semiconductor Laser with AC Adapter	650 nm	1 set
Polarizer	dia 60 mm with rotation scale	2
CCD Camera		1
Fourier Transform Lens	dia 60 mm, f=300 mm	1
LCD Display	9"	1
Optical Power Meter with Detector		1 set
Optical Rail with Slides	1.5 m in length, 6 slides	1 set
Black Screen		1
VGA Splitter	1 to 2	1
RS232 Cable	9 pins	1
Software CD		1



Schematic of experiment setup



Complementary holograms & reconstruction