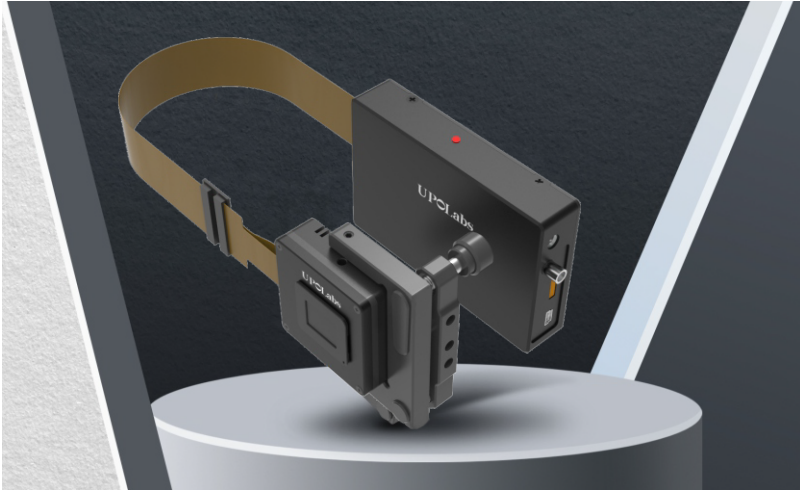


# TEC Thermal Control Version Liquid Crystal Spatial Light Modulator

## HDSL80R Series



The HDSL80R Pro Liquid Crystal Spatial Light Modulator consists of a driver, FPC flexible cable, and LCoS temperature controller.

The users can define by themselves the working temperature of LCoS optical chips to cater to the scenario in which the modulator would be used

## Product Parameter

Type	Modulation Mode	Resolution	Frame Rate	Pixel Size	Bit Depth	Fill Factor	Amplitude Contrast	Phase Retardance	Wavelength
HDSL80R Pro	Phase-only	1920*1200	60Hz	8 $\mu$ m	8 / 10bit	> 95%	/	2.6 $\pi$ @1064nm	420~1100nm
HDSL80R Pro-NIR								2.5 $\pi$ @1064nm	1064 $\pm$ 100nm
HDSL80R Pro-TELCO								2.6 $\pi$ @1550nm	1550 $\pm$ 100nm
HDSL80R Pro-G								2.8 $\pi$ @532nm	420~600nm
HDSL80RA Pro	Amplitude-only						~1000:1	/	420~1100nm

Phase Stability: 0.003 $\pi$ @24h

Linearity: 99.9% [Test method: Power Test to decode the phase, ambient temperature of 25 °C, 532nm laser source]

Damage Threshold: Standard version > 5W/cm<sup>2</sup>, Water-cooling Version > 10W/cm<sup>2</sup>.

## Thermal Control System

The working temperature of LCoS optical chips is adjusted by a thermal control system consisting of LCoS thermal controller, TEC controller and LETO TEC CONTROLLER software, which is designed to adjust and maintain a constant LCoS optical chip temperature. This system is a modular structure allowing easy module replacement defined by the users.

### Thermal Control System

Temperature Range	30°C~55°C
Setting Accuracy of Target Temperature	$\leq \pm 0.1^\circ\text{C}$
Temperature Range of Ambient Environment	Room temperature( Typically 25°C)
Maximum Power of Incident Laser	10W/cm <sup>2</sup> (Passive cooling mode)



### LCoS Thermal Controller

- ◆ At room temperature (typically 25°C), the work temperature of LCoS Optical Chip Backboard can be kept constant between 30°C and 55°C, maximum to 65°C
- ◆ Utilize cooling fins for heat exchange, avoiding fan vibration generated by air cooling mode
- ◆ Provides a two-dimension Adjustable Mounts to fine tune pitch/deflection angle of LCoS optical chip



### TEC Controller

- ◆ To connect LCoS Thermal Controller with a computer for sending commands to control it
- ◆ Maximum work temperature: 65°C



### LETO TEC CONTROLLER Software

- ◆ Temperature setting of LCoS optical chip
- ◆ Algorithm adjustment
- ◆ Real-time display of temperature curve
- ◆ Temperature Test Record
- ◆ Constant temperature setting of LCoS optical chip

## Application

- ◆ Space optical communication
- ◆ Quantum research
- ◆ Cold atom control
- ◆ Other scenarios requiring high phase accuracy and stability