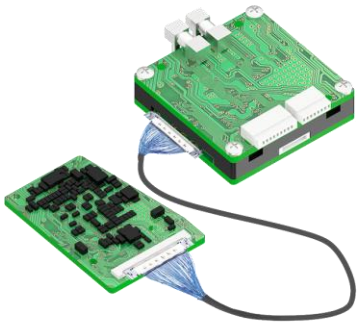


MODO-LN-1080-SDI

Low-Light Visible/NIR Module

1080p low-light imaging · visible/NIR response · SDI + PAL output · RS232/RS422 control

IMAGE RESOLUTION	SPECTRAL RESPONSE	VIDEO OUTPUT	POWER INPUT
1920 × 1080	400–950 nm + 1064 nm	SDI + PAL	12 V ± 1 V

The MODO-LN-1080-SDI Low-Light Visible/NIR Imaging Module is designed for compact electro-optical payloads and observation systems requiring high-sensitivity imaging under low-illumination conditions. It supports 1920 × 1080 full-color imaging, wide visible/NIR spectral response, adaptive image enhancement, electronic defog, wide dynamic range, digital noise reduction and standard video/control interfaces for system integration.

1080p low-light imaging

1920 × 1080 resolution with 4 μm pixel size, 1/1.8-inch optical format and high sensitivity for low-light scenes.

Visible/NIR response

Supports visible-light 400–700 nm, near-infrared 700–950 nm and narrowband 1064 nm response options.

Enhanced image processing

WDR, electronic defog, low-light enhancement, temporal/spatial noise reduction, image mirror and 1×–4× continuous digital zoom.

System-ready interfaces

12 V power input, RS232/RS422 communication, one SDI output at 1920 × 1080 and one PAL video output.

1 Product Overview

The Low-Light Visible/NIR Imaging Module is intended for visible-light and near-infrared imaging applications where compact size, low power consumption and reliable video output are required. It integrates a 1080p low-light sensor, image processing functions, automatic/manual control functions, self-test capability and serial communication interfaces.

2 Sensor Specifications

Category	Parameter	Specification
Image Sensor	**Resolution**	1920 × 1080
	Pixel size	4 μm
	Spectral response	Visible light: 400–700 nm Near infrared: 700–950 nm Narrowband: 1064 nm
	Dynamic range	HDR mode: >100 dB Linear mode: 84 dB
	Frame rate	30 / 60 / 90 fps, default 30 fps
	Optical format	1/1.8 inch
	Sensitivity	10800 mV/lux·s
	Color mode	Full color

3 Functional Capabilities

Category	Parameter	Specification
Automatic Control	**Light adjustment**	Automatic light adjustment, ≤2 s
	White balance	Automatic white balance
Image Enhancement	**Adaptive enhancement**	Adaptive environmental image adjustment
	Electronic defog	Automatic / manual modes; five levels available in manual mode
	Low-light enhancement	Supports clear imaging under the specified low-illumination condition: 0.0 lux @ F1.4
Exposure / Gain	**Exposure control**	Automatic / manual modes; exposure time and gain value can be configured in manual mode
	Gain control	Automatic gain switch with configurable gain value
Image Adjustment	**Brightness / contrast / saturation**	Step-level adjustment supported
	Sharpness	Adjustable sharpness increase/decrease
	Image mirror	Horizontal and vertical mirror supported
	Wide dynamic range	Supported
	Digital noise reduction	Temporal and spatial noise reduction supported
Image Mode	**Color / monochrome switching**	Color and black-white image switching with adaptive brightness adjustment
Zoom / Focus	**Digital zoom**	1×–4× continuous digital zoom; zoom-in and zoom-out control supported
	Focus evaluation	Real-time output of focus sharpness evaluation value
Display / OSD	**Reticle display**	Reticle display/blanking, adjustable position, setting save and automatic

		recall after power-on
System Functions	**Parameter settings**	Save current settings and restore factory settings
	Self-test	Power-on self-test and command self-test with operating status feedback

4 Performance

Category	Parameter	Specification
Performance	**Start-up time**	≤8 s
	Filter support	External filter supported
	Imaging functions	Designed for low-light imaging with adaptive enhancement, WDR, defogging and noise-reduction functions. Final image quality depends on lens configuration, illumination level, target/background condition and system integration.

5 Electrical and Interface Characteristics

Category	Parameter	Specification
Electrical	**Power supply**	12 V ± 1 V
	Power consumption	≤3 W
Communication	**Control interface**	1 × RS232 and 1 × RS422, baud rate 115200 (N, 8, 1)
Video Interface	**SDI output**	One SDI video output, 1920 × 1080
	Analog video output	One PAL video output

6 Physical Characteristics

Category	Parameter	Specification
Mechanical Envelope	**Module dimensions**	≤43 mm × 45 mm × 51 mm (±0.5 mm)
	Weight	≤100 g, excluding lens

7 Environmental Conditions

Category	Parameter	Specification
Temperature	Operating temperature	-40°C to +60°C
	Storage temperature	-45°C to +70°C
Mechanical Environment	Shock	Vertical direction: ≥20 g; transverse and longitudinal directions: ≥15 g; 11 ms per shock event
	Vibration	≥2 g (15 Hz–500 Hz–15 Hz)

8 Delivery and Integration Notes

- The specifications listed in this document describe the standard low-light imaging module. Final delivery configuration may be adjusted according to lens selection, filter configuration, interface definition and platform integration requirements.
- For system integration, joint verification is recommended for mechanical mounting, power stability, RS232/RS422 communication, SDI/PAL video timing, grounding/shielding and optical-axis alignment.
- Low-light imaging performance, defogging effect, WDR performance and focus evaluation should be verified under the final lens, illumination, target/background and platform conditions.