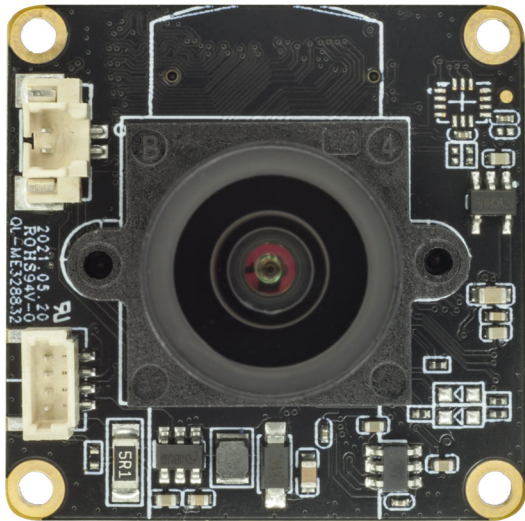
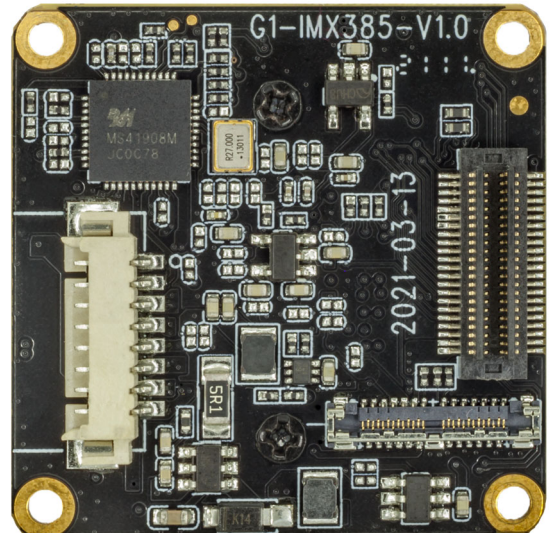


YDS-CMFL50101-IMX385 V1.0

2.13MP Sony IMX385 Fixed Focus Camera Module



Front View



Back View

Overview

The YDS-CMFL50101-IMX385 V1.0 camera module uses the Sony IMX385 high-quality CMOS sensor, which has a diagonal of 8.35mm (1/2 type) CMOS image sensor, a pixel of 3.75um, a color square pixel arrangement, an effective pixel of 2.13 megapixels, super starlight-level photosensitivity, and a minimum illumination of low light color 0.001LUX, black and white 0.0002LUX. It can be used in low-light environments to even out the brightness of brighter and darker areas of the image.

When used with the master board, it can be used for local storage of low-light video shooting or USB UVC output, with the characteristics of true color restoration and excellent image quality.

The board frame size is 32x32mm, and the size from the top of the module lens to the PCB board is 32x32x28.24mm.



YDS-CMFL50101-IMX385 V1.0 2.13MP Sony IMX385 Fixed Focus Camera Module

Specifications

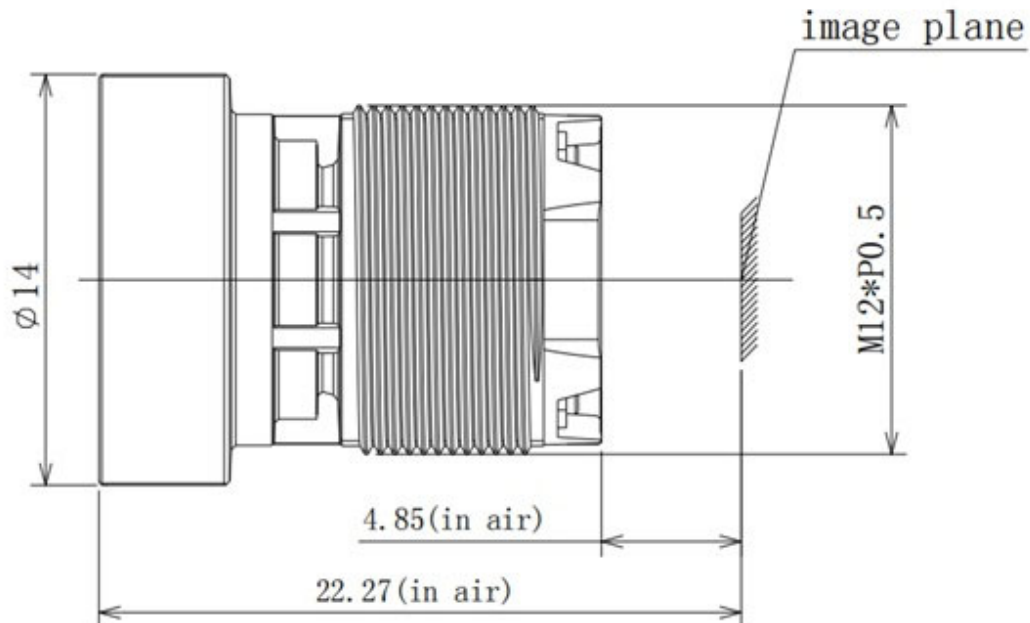
Model No.	YDS-CMFL50101-IMX385 V1.0
Image Sensor	IMX385
Image Sensor Type	CMOS
Effective Pixels	2.13 Megapixels
Sensor Size	1/2"
Pixel Size	3.75 um x 3.75 um
Video Frame Rate	1080P@30FPS/60FPS 720P@30FPS/60FPS/120FPS
Photo Resolution (with Master Board)	20MP (5200x3900) (Differential) 13MP (4160x3120) (Differential) 12MP (4000x3000) (Differential) 10MP (3648x2736) (Differential) 8MP (3264x2448) (Differential) 5MP (2592x1944) (Differential) 3MP (2048x1536) (Differential) 2MP (1920x1080)
Operating Temperature	-10°C to +60°C
Storage Temperature	-20°C to +80°C
Humidity	20% to 80%
PCB Dimensions	32 x 32 mm
Module Size	32 x 32 x 28.24 mm
PCB Screw Hole Spacing	28 x 28 mm
PCB Screw Hole Diameter	2 mm

YDS-CMFL50101-IMX385 V1.0 2.13MP Sony IMX385 Fixed Focus Camera Module

Lens Specifications

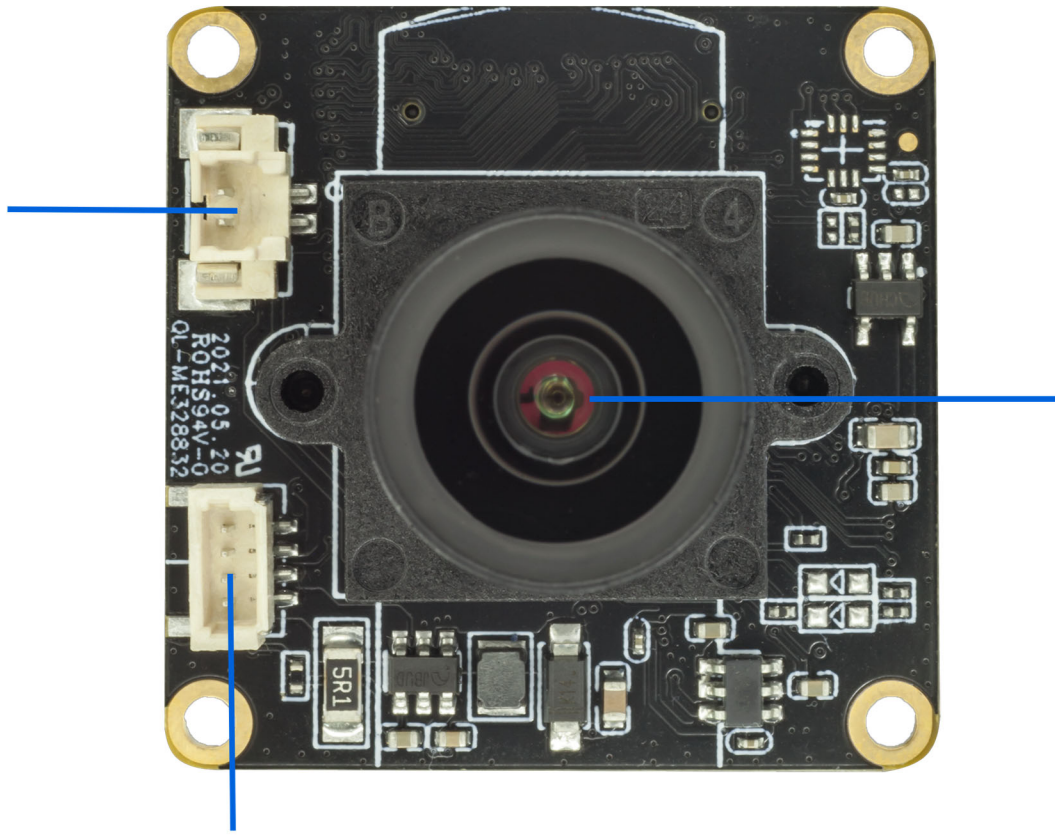
Lens Model No.	HX50101
EFL (Focal Length)	4.46 mm
TTL (Total Length)	22.27 mm
F. No.	1.65
Lens Barrel Thread	M12 x P0.5
Lens Construction	3G5P
Diagonal View Angle (DFOV)	123.5° (DFOV)
Horizontal View Angle (HFOV)	102.3° (HFOV)
Vertical View Angle (VFOV)	53.9° (VFOV)
Chief-Ray Angle	14.3°
Distortion	-46.50%
Relative Illumination	>48.3%
Lens Operating Temperature	-40°C to +85°C
Lens Storage Temperature	-40°C to +95°C

Lens Drawing



YDS-CMFL50101-IMX385 V1.0 2.13MP Sony IMX385 Fixed Focus Camera Module

IR-CUT INTERFACE
濾光片切换器接口

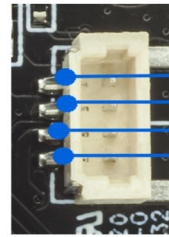
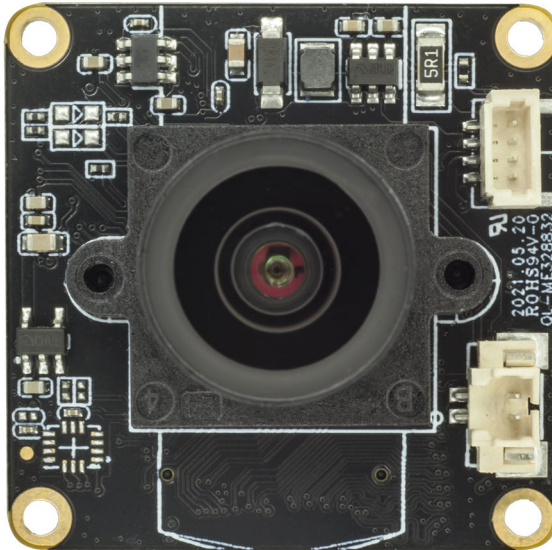


HX50101 镜头模组

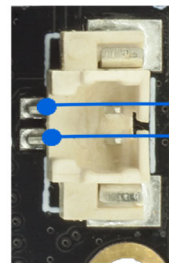
两组LED补光灯接口
LEDS * 2 INTERFACE

Note: You can choose between TBT board-to-board socket or connecting to the master board via coaxial cable. Users can use them flexibly according to the construction scenarios.

YDS-CMFL50101-IMX385 V1.0 2.13MP Sony IMX385 Fixed Focus Camera Module

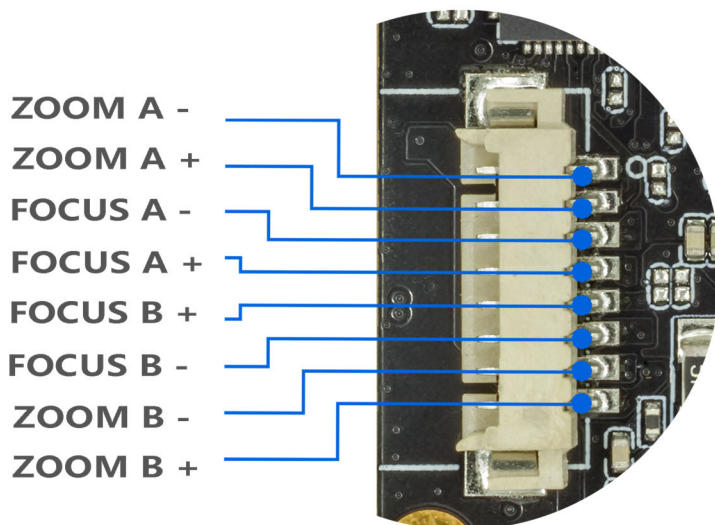


LED B -
LED B +
LED A -
LED A +

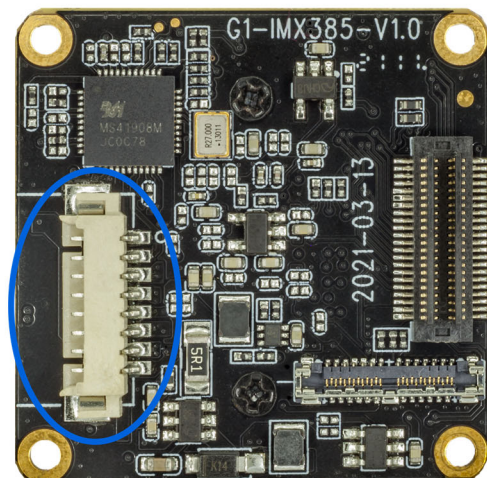


IR-CUT -
IR-CUT +

The two groups of fill light interfaces support the expansion of infrared lights and white light boards to provide fill light for the device. Note: The IR-Cut filter switch interface is used by lenses with filters, but this camera module does not support this function.



ZOOM A -
ZOOM A +
FOCUS A -
FOCUS A +
FOCUS B +
FOCUS B -
ZOOM B -
ZOOM B +



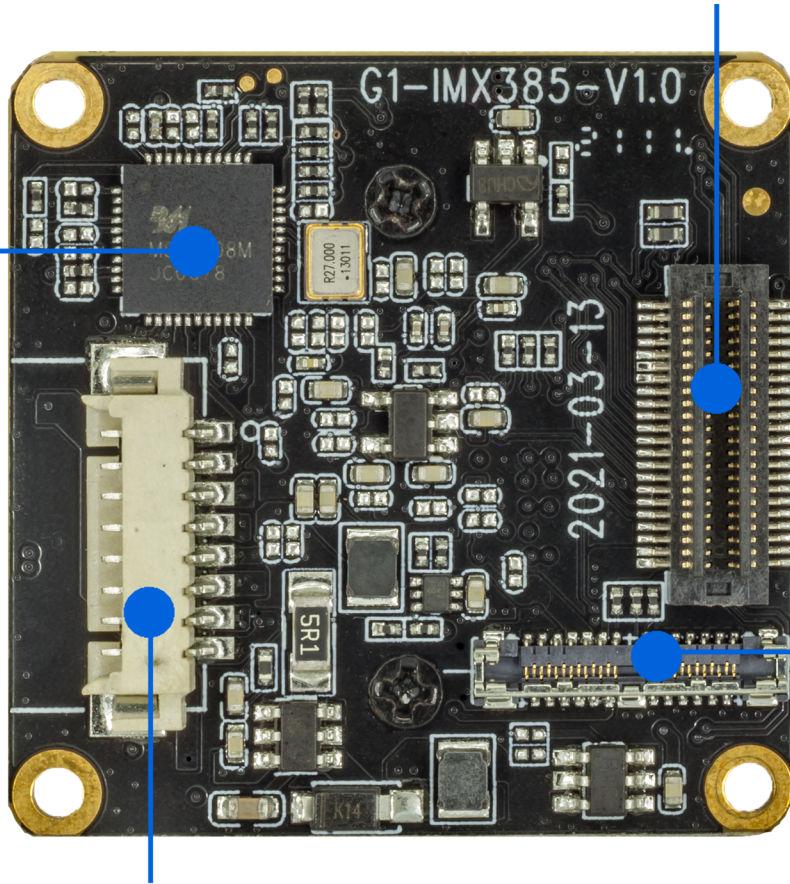
The auto focus interface leads to the connection automatically focusing motor to achieve the zoom function, but this camera module does not support zoom function.

YDS-CMFL50101-IMX385 V1.0 2.13MP Sony IMX385 Fixed Focus Camera Module

通过板对板连接器支持自动AF变焦镜头 Sensor、IR-CUT、LED等

Connect AF Zoom Lens, Sensor, IR-CUT, Led

变焦镜头驱动芯片
Zoom lens driver chip



通同轴线连接MIPI
Sensor
Mipi Sensor interface

变焦马达接口
Zoom motor interface

IMX385LQR

Diagonal 8.35 mm (Type 1/2) Approx. 2.13M-Effective Pixel
Color CMOS Image Sensor

CMOS Image Sensor for Industrial Applications that Realizes High Sensitivity Approximately Twice That of the Existing Product

Sony Semiconductor Solutions Corporation has developed the CMOS image sensor "IMX385LQR" for industrial applications. This new image sensor realizes high sensitivity approximately twice that of the existing product (IMX185LQJ)*1.

The IMX385LQR pursues picture quality at low illuminance most needed by cameras for industrial applications and mounts pixels with a sensitivity of 2350 mV, which is the highest sensitivity among Sony image sensors for industrial applications*2. In addition, SNR1s of 0.13 lx*3, which is the highest performance among Sony Full HD-compatible image

sensors for industrial applications, is achieved by mounting an internal programmable gain amplifier and high conversion gain pixels. Superior performance as an image sensor for industrial applications is further achieved by combining HDR (High Dynamic Range) technology with technology that improves sensitivity in the near-infrared light region.

*1: See the New Product Information released in August 2013.

*2: As of January 2017 (based on in-house research)

*3: Low illuminance performance index advocated by Sony for image sensors for industrial applications

- High sensitivity characteristics using a new-generation 3.75 μm pixel (Sensitivity improved to approximately twice that of the existing product)
- Overwhelming low illuminance performance of SNR1s: 0.13 lx
- DOL-HDR function
- Versatile interface (Low-voltage LVDS serial, MIPI CSI-2)

Exmor

*Exmor is a trademark of Sony Corporation. The Exmor is a version of Sony's high performance CMOS image sensor with high-speed processing, low noise and low power dissipation by using column-parallel A/D conversion.

Overwhelming low illuminance performance

Cameras for industrial applications are required to produce color images with high picture quality even in dark conditions. High sensitivity characteristics of 2350 mV, which is approximately twice that of the existing Type 1/2 Full HD product (IMX185LQJ) with the same 3.75 μm pixel size have been achieved by mounting a new pixel with the highest sensitivity among Sony image sensors for industrial applications.

In addition, mounting high conversion rate pixels achieved SNR1s of 0.13 lx, which is the highest performance among Sony Full HD-compatible image sensors for industrial applications.

Furthermore, combination with technology for improving sensitivity in the near infrared light region also improves picture quality under near-infrared LED lighting.

DOL-HDR function

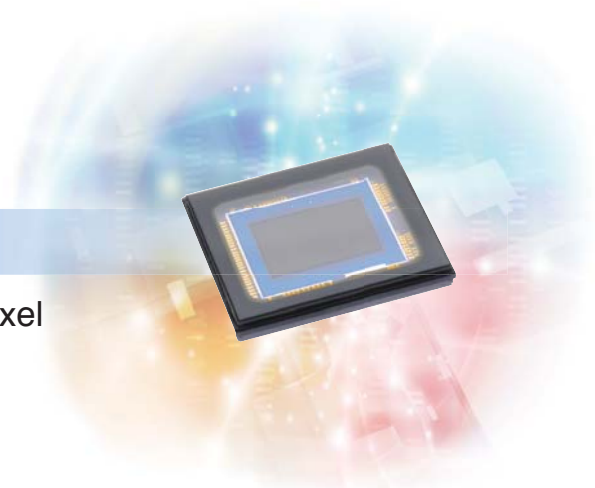
The IMX385LQR supports a DOL (digital overlap) -type HDR function. This function uses a method that outputs the data for three frames with different storage times line by line instead of

frame by frame, enabling improvement of picture quality especially under low illuminance when compared to the existing multiple exposure HDR function.

Versatile interface

The IMX385LQR is equipped with two different types of output interface (low-voltage LVDS serial, MIPI CSI-2) to meet the diverse needs of customers. The low-voltage LVDS serial interface has a maximum output data rate of 445.5 Mbps/ch,

and the number of output channels can be selected from 1 ch, 2 ch, or 4 ch. The MIPI CSI-2 interface has a maximum output data rate of 742.5 Mbps/lane, and the number of output lanes can be selected from 1 lane, 2 lanes, or 4 lanes.



<Photograph 1> Sample Images at high illuminance

Condition: 450 lx F2.0 (ADC12 bit mode, 30 frame/s, Internal gain: 0 dB)



<Photograph 2> Sample Images at low illuminance

Condition: 1 lx F2.0 (ADC12 bit mode, 30 frame/s, Internal gain 30 dB + High conversion efficiency mode)



<Table 1> Device Structure

Item		IMX385LQR
Output image size		Diagonal 8.35 mm (Type 1/2) aspect ratio 16:9
Number of effective pixels		1945 (H) × 1097 (V) approx. 2.13M pixels
Unit cell size		3.75 μm (H) × 3.75 μm (V)
Optical blacks	Horizontal	Front: 4 pixels, rear: 0 pixels
	Vertical	Front: 16 pixels, rear: 0 pixels
Input drive frequency		37.125 MHz, 74.25 MHz
Output Interface		Sub-LVDS (444.5 Mbps / ch, Max. 4 ch) MIPI CSI-2 (742.5 Mbps / lane Max. 4 lane)
Package		128-pin LGA
Supply voltage V _{DD} (Typ.)		3.3 V / 1.8 V / 1.2 V

<Table 2> Image Sensor Characteristics

Item		Value	Remarks
Sensitivity (F5.6)	Typ.	2350 mV	1/30s accumulation
Saturation signal	Min.	1210 mV	T _j = 60 °C

<Table 3> Basic Drive Mode

Drive mode	Recommended number of recording pixels	Frame rate [frame/s]	ADC [bit]
All-pixel scan (12 bit)	1920 (H) × 1080 (V)	60	12
All-pixel scan (12 bit)	1920 (H) × 1080 (V)	30	12
All-pixel scan (10 bit)	1920 (H) × 1080 (V)	120	10
All-pixel scan (10 bit)	1920 (H) × 1080 (V)	60	10
All-pixel scan (10 bit)	1920 (H) × 1080 (V)	30	10

<Table 4> HDR Drive Mode

Drive mode	Recommended number of recording pixels	Frame rate (through synthesis) [frame/s]	ADC [bit]
All-pixel scan (12 bit) DOL *1 2F sequential control	1920 (H) × 1080 (V)	30	12
All-pixel scan (10 bit) DOL *1 3F sequential control	1920 (H) × 1080 (V)	30	10

*1 There are restrictions on the storage time setting values when using DOL.

*Sony reserves the right to change products and specifications without prior notice.

Cameras Applications



Automotive Driver Pilot



Live Streaming



Video Conference



Eye Tracker Biometric Detection



Machine Vision



Agricultural Monitor



Night Vision Security



Drone and Sports Eagle Eyes



Interactive Pet Camera



YDS CAMERA MODULE

your best camera partner

Camera Module Pinout Definition Reference Chart

OmniVision	Sony	Samsung	On-Semi	Aptina	Himax	GalaxyCore	PixArt	SmartSens	Sensors
Pin Signal		Description							
DGND	GND								ground for digital circuit
AGND									ground for analog circuit
PCLK	DCK								DVP PCLK output
XCLR	PWDN	XSHUTDOWN	STANDBY						power down active high with internal pull-down resistor
MCLK	XVCLK	XCLK	INCK						system input clock
RESET	RST								reset active low with internal pull-up resistor
NC	NULL								no connect
SDA	SIO_D	SIOD							SCCB data
SCL	SIO_C	SIOC							SCCB input clock
VSYNC	XVS	FSYNC							DVP VSYNC output
HREF	XHS								DVP HREF output
DOVDD									power for I/O circuit
AFVDD									power for VCM circuit
AVDD									power for analog circuit
DVDD									power for digital circuit
STROBE	FSTROBE								strobe output
FSIN									synchronize the VSYNC signal from the other sensor
SID									SCCB last bit ID input
ILPWM									mechanical shutter output indicator
FREX									frame exposure / mechanical shutter
GPIO									general purpose inputs
SLASEL									I2C slave address select
AFEN									CEN chip enable active high on VCM driver IC
MIPI Interface									
MDN0	DN0	MD0N	DATA_N	DMO1N					MIPI 1st data lane negative output
MDP0	DP0	MD0P	DATA_P	DMO1P					MIPI 1st data lane positive output
MDN1	DN1	MD1N	DATA2_N	DMO2N					MIPI 2nd data lane negative output
MDP1	DP1	MD1P	DATA2_P	DMO2P					MIPI 2nd data lane positive output
MDN2	DN2	MD2N	DATA3_N	DMO3N					MIPI 3rd data lane negative output
MDP2	DP2	MD2P	DATA3_P	DMO3P					MIPI 3rd data lane positive output
MDN3	DN3	MD3N	DATA4_N	DMO4N					MIPI 4th data lane negative output
MDP3	DP3	MD3P	DATA4_P	DMO4P					MIPI 4th data lane positive output
MCN	CLKN	CLK_N	DCKN						MIPI clock negative output
MCP	CLKP	MCP	CLK_P	DCKN					MIPI clock positive output
DVP Parallel Interface									
D0	DO0	Y0							DVP data output port 0
D1	DO1	Y1							DVP data output port 1
D2	DO2	Y2							DVP data output port 2
D3	DO3	Y3							DVP data output port 3
D4	DO4	Y4							DVP data output port 4
D5	DO5	Y5							DVP data output port 5
D6	DO6	Y6							DVP data output port 6
D7	DO7	Y7							DVP data output port 7
D8	DO8	Y8							DVP data output port 8
D9	DO9	Y9							DVP data output port 9
D10	DO10	Y10							DVP data output port 10
D11	DO11	Y11							DVP data output port 11

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Camera Reliability Test

Reliability Inspection Item		Testing Method	Acceptance Criteria	
Category	Item			
Environmental	Storage Temperature	High 60°C 96 Hours	Temperature Chamber	No Abnormal Situation
		Low -20°C 96 Hours	Temperature Chamber	No Abnormal Situation
	Operation Temperature	High 60°C 24 Hours	Temperature Chamber	No Abnormal Situation
		Low -20°C 24 Hours	Temperature Chamber	No Abnormal Situation
	Humidity	60°C 80% 24 Hours	Temperature Chamber	No Abnormal Situation
	Thermal Shock	High 60°C 0.5 Hours Low -20°C 0.5 Hours Cycling in 24 Hours	Temperature Chamber	No Abnormal Situation
Physical	Drop Test (Free Falling)	Without Package 60cm	10 Times on Wood Floor	Electrically Functional
		With Package 60cm	10 Times on Wood Floor	Electrically Functional
	Vibration Test	50Hz X-Axis 2mm 30min	Vibration Table	Electrically Functional
		50Hz Y-Axis 2mm 30min	Vibration Table	Electrically Functional
		50Hz Z-Axis 2mm 30min	Vibration Table	Electrically Functional
	Cable Tensile Strength Test	Loading Weight 4 kg 60 Seconds Cycling in 24 Hours	Tensile Testing Machine	Electrically Functional
Electrical	ESD Test	Contact Discharge 2 KV	ESD Testing Machine	Electrically Functional
		Air Discharge 4 KV	ESD Testing Machine	Electrically Functional
	Aging Test	On/Off 30 Seconds Cycling in 24 Hours	Power Switch	Electrically Functional
	USB Connector	On/Off 250 Times	Plug and Unplug	Electrically Functional



Camera Inspection Standard

Inspection Item		Inspection Method	Standard of Inspection		
Category	Item				
Appearance	FPC/ PCB	Color	The Naked Eye	Major Difference is Not Allowed.	
		Be Torn/Chopped	The Naked Eye	Copper Crack Exposure is Not Allowed.	
		Marking	The Naked Eye	Clear, Recognizable (Within 30cm Distance)	
	Holder	Scratches	The Naked Eye	The Inside Crack Exposure is Not Allowed	
		Gap	The Naked Eye	Meet the Height Standard	
		Screw	The Naked Eye	Make Sure Screws Are Presented (If Any)	
		Damage	The Naked Eye	The Inside Crack Exposure is Not Allowed	
	Lens	Scratch	The Naked Eye	No Effect On Resolution Standard	
		Contamination	The Naked Eye	No Effect On Resolution Standard	
		Oil Film	The Naked Eye	No Effect On Resolution Standard	
		Cover Tape	The Naked Eye	No Issue On Appearance.	
	Function	Image	No Communication	Test Board	Not Allowed
			Bright Pixel	Black Board	Not Allowed In the Image Center
Dark Pixel			White board	Not Allowed In the Image Center	
Blurry			The Naked Eye	Not Allowed	
No Image			The Naked Eye	Not Allowed	
Vertical Line			The Naked Eye	Not Allowed	
Horizontal Line			The Naked Eye	Not Allowed	
Light Leakage			The Naked Eye	Not Allowed	
Blinking Image			The Naked Eye	Not Allowed	
Bruise			Inspection Jig	Not Allowed	
Resolution			Chart	Follows Outgoing Inspection Chart Standard	
Color			The Naked Eye	No Issue	
Noise			The Naked Eye	Not Allowed	
Corner Dark			The Naked Eye	Less Than 100px By 100px	
Color Resolution			The Naked Eye	No Issue	
Dimension	Height	The Naked Eye	Follows Approval Data Sheet		
	Width	The Naked Eye	Follows Approval Data Sheet		
	Length	The Naked Eye	Follows Approval Data Sheet		
	Overall	The Naked Eye	Follows Approval Data Sheet		

YDSCAM Package Solutions

YDS Camera Module



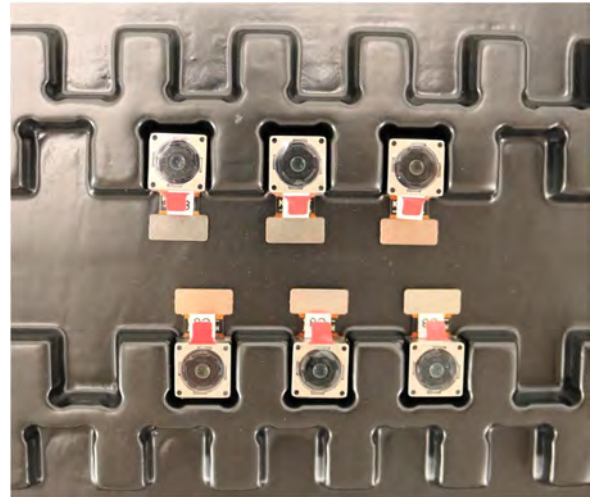
Complete with Lens Protection Film



Tray with Grid and Space

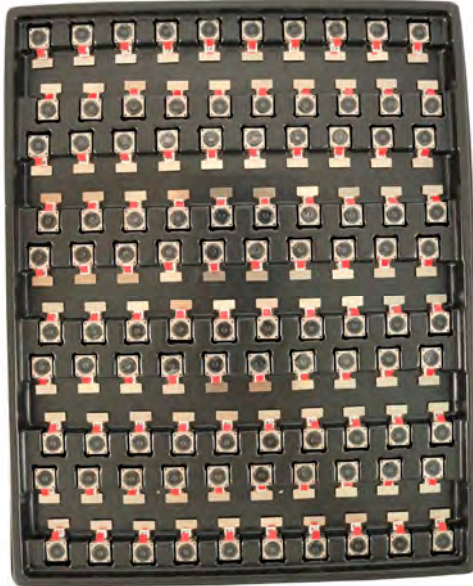


Place Cameras on the Tray



YDSCAM Package Solutions

Full Tray of Cameras



Cover Tray with Lid



Place Tray into Anti-Static Bag



Vacuum the Anti-Static Bag



YDSCAM Package Solutions

Sealed Vacuum Anti-Static Bag with Labels

1. Model and Description 2. Quantity 3. Manufacturing Date Code 4. Caution



YDSCAM Package Solutions

Place Foam Sheets Between Tray Bags



Foam Sheets are Larger Than Trays



Place Foam Sheets and Trays into Box



Foam Sheets are Tightly Fitting in Box



Seal the Carbon Box



Label the Carbon Shipping Box





YDSCAM Package Solutions

USB Camera Module

Complete with Lens Protection Film



Place Camera Sample into Anti-Static Bag

Place USB Cameras into Tray



Seal the Tray with Anti-Static Bag

Label the Carbon Shipping Box



YDSCAM Package Solutions

Place Camera Sample into Anti-Static Bag



Place Connectors into Anti-Static Bag



Label the Sample Bags



Place Connectors into Reel



Place Samples into the Carbon Box



Place Connectors into the Carbon Box





YDS CAMERA MODULE

your best camera partner

Company YDSCAM

YingDeShun Co. Ltd. (YDS) was established in 2017, a next-generation technology driven manufacturer specialized in research, design, and produce of audio and video products. YDS is occupying 20,000 square feet automated plants with 100 employees of annual throughput 30,000,000 units cameras.

YDS provides OEM, ODM design, contract manufacturing, and builds the camera products. You may provide the requirements to us, even with a hand draft, our sales and engineering work together to meet your needs. We consider ourselves your last-term partner in developing practical and innovative solutions.

Our team covers everything from initial concept development to mass produced product. YDS specializes in customized camera design, raw material, electronic engineering, firmware/software development, product testing, and packing design. Our experienced strategic supply systems offer a robust and dependable manufacturing capacity for orders of various sizes.



Limited Warranty

YDS provides the following limited warranty if you purchased the Product(s) directly from YDS company or from YDS's website www.YDSCAM.com. Product(s) purchased from other sellers or sources are not covered by this Limited Warranty. YDS guarantees that the Product(s) will be free from defects in materials and workmanship under normal use for a period of one (1) year from the date you receive the product ("Warranty Period").

For all Product(s) that contain or develop material defects in materials or workmanship during the Warranty Period, YDS will, at its sole option, either: (i) repair the Product(s); (ii) replace the Product(s) with a new or refurbished Product(s) (replacement Product(s) being of identical model or functional equivalent); or (iii) provide you a refund of the price you paid for the Product(s).

This Limited Warranty of YDS is solely limited to repair and/or replacement on the terms set forth above. YDS is not reliable or responsible for any subsequent events.



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YDS Strength

Powerful Factory



Professional Service



Promised Delivery



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