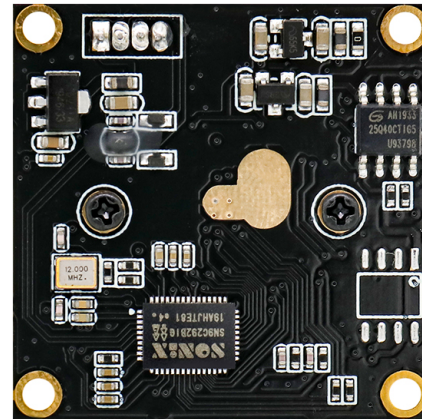
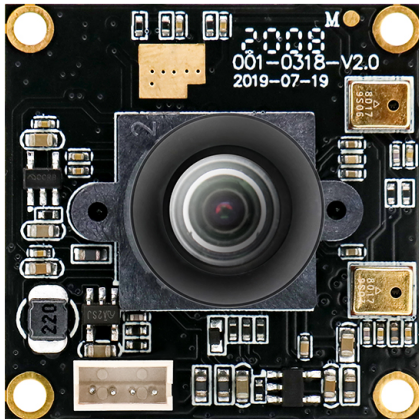




HAMPO-USB-0318-V1.0

2MP Sony IMX291 M12 Fixed Focus USB 2.0 Camera Module



HAMPO-USB-0318-V1.0 is a Full HD ultra-low light USB camera module, the starlight illumination could reach 0.001Lux. This Full HD camera module is based on 1/2.8" Sony® STARVIS™ IMX291 CMOS sensor with 2.9- μ m pixel size. Its high sensitivity in both visible and near infrared region helps to produce extraordinary images under extreme low-light conditions or even no light (nearly 0 lux) conditions. These capabilities make it ideally suited for home video surveillance system, day and night low light vision security camera system, dashcam and other machine vision etc. application.

Key Features

- **HD Resolution and Low Light:** This camera adopts the SONY 2MP IMX291 Color COMS sensor with an 72dB wide dynamic range, can capture the minimum illumination 0.001Lux.
- **Capture Video with Audio:** High frame rates, H.264 30fps@1920×1080; MJPG 30fps@1920×1080; YUY2 30fps@640x 480; Audio, Single microphone (optional dual channel).
- **Plug&Play:** UVC-compliant, support Windows XP/7/8/10, Linux, and Mac OS, just connect the camera to PC, laptop or Raspberry Pi with the USB cable without extra drivers to be installed.
- **Applications:** this tiny camera board can be installed in the most hidden and narrow position for a home video surveillance system, day&night low light vision security camera system, dashcam or other machine vision application.



HAMPO-USB-0318-V1.0

2MP Sony IMX291 M12 Fixed Focus USB 2.0 Camera Module

Camera Module No.	HAMPO-USB-0318-V1.0
Resolution	2MP
Image Sensor	IMX291
Sensor Type	1/2.8"
Pixel Size	2.9 um x 2.9 um
EFL	3.6 mm
F.NO	3.0
Pixel	1945 x 1109
View Angle	96°(DFOV) 80°(HFOV) 65°(VFOV)
Lens TTL	19 mm
Module Type	Fixed Focus
Lens Model	HAMPO-LENS-3428
Interface	USB 2.0
Output Format	H.264 / MJPG / YUV2
Auto Control	Saturation, Contrast, Acutance White Balance, Exposure
Audio	Digital Mic
Input Voltage	DC 5V
Working Current	Max 300mA
PCB Size	38mm x 38mm
System Compatibility	Windows XP (SP2, SP3), Vista, 7, 8, 10, 11 Android, Mac OS, Linux or OS with UVC Driver Raspberry Pi by USB Port
Software for USB Camera	AMCAP, Webcam Viewer, V4L2 Controls Contacam, VLC Player, MotionEye OS iSpy, ZoneMider, Yawcam
IR filter	650nm IR
Operating Temperature	-30°C to +85°C
USB Cable	USB-Cable-U015

Wide Compatibility with Windows, Android, Mac OS, Linux, or Raspberry Pi



Windows®



android



Mac™ OS



Linux



Raspberry Pi



HAMPO-USB-0318-V1.0

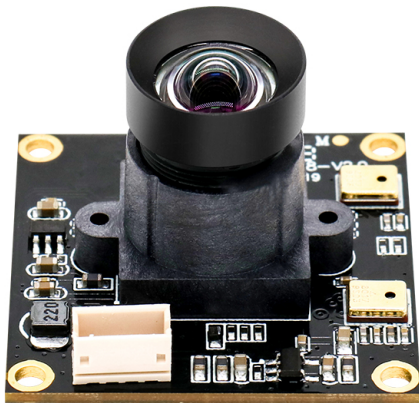
2MP Sony IMX291 M12 Fixed Focus USB 2.0 Camera Module



Top View



Side View



Bottom View



Mating Connector



HAMPO-USB-0318-V1.0

2MP Sony IMX291 M12 Fixed Focus USB 2.0 Camera Module

FORMAT	RESOLUTION	FRAME RATE
		USB 2.0
MJPG	640 x 480 (VGA)	30 FPS
	1024 x 768 (Super VGA)	30 FPS
	1280 x 720 (720P)	30 FPS
	1920x 1080 (2MP)	30 FPS
YUY2	640 x 480 (VGA)	30 FPS
	1024 x 768 (Super VGA)	10 FPS
	1280x 720 (720P)	10 FPS
	1920 x 1080 (2MP)	5 FPS

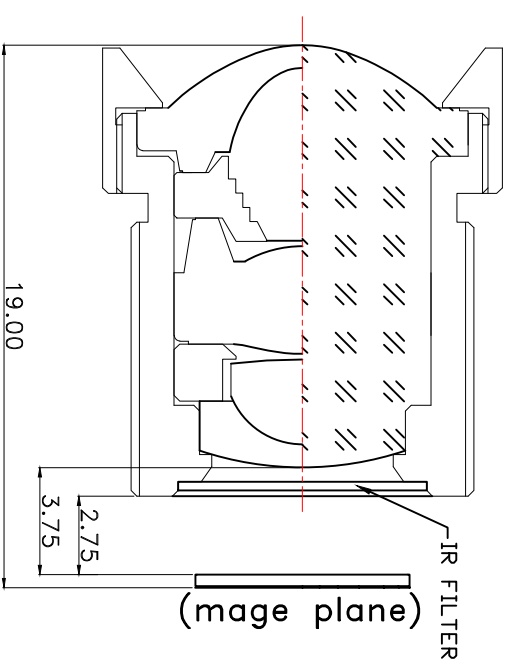
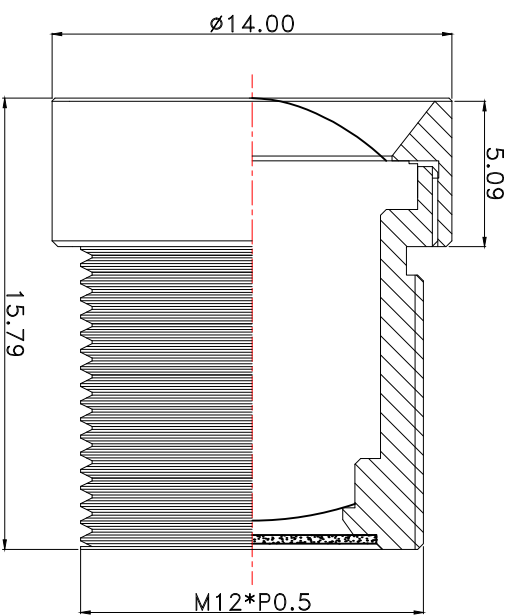


PRODUCT NAME :

1. SPECIFICATION :

- 1.SENSOR SIZE
- 2.FOCAL LENGTH (EFL)
- 3.F/NO (INFINITE)
- 4.BACK FOCAL LENGTH
- 5.FLANGE BACK LENGTH
- 6.FIELD OF VIEW
- 7.OPTICAL DISTORTION
- 8.Thread Size
- 9.Element
- 10.IR FILTER SPEC.(Built-in,Others available)

M15100	
f =	3.6 mm
F/NO =	3.0
BFL =	3.75 mm
FB =	2.75 mm
96°(H=80° V=65°)	
<	0.35%
M12XP0.5	
2G2P+IR	



2. OPTICAL LAYOUT : 5 : 1

REV	DESCRIPTION	DATE	NAME	VIEW	REV	00	SCALE	DRAWN
①								
②								
③								
④								

DATE	CHECKED
BORDER A4	APPROVED

Diagonal 6.46 mm (Type 1/2.8) CMOS Solid-state Image Sensor with Square Pixel for Color Cameras

IMX291LQR-C

STARVIS

Description

The IMX291LQR-C is a diagonal 6.46 mm (Type 1/2.8) CMOS active pixel type solid-state image sensor with a square pixel array and 2.13 M effective pixels. This chip operates with analog 2.9 V, digital 1.2 V, and interface 1.8 V triple power supply, and has low power consumption. High sensitivity, low dark current and no smear are achieved through the adoption of R, G and B primary color mosaic filters. This chip features an electronic shutter with variable charge-integration time.

(Applications: Surveillance cameras, FA cameras, Industrial cameras)

Features

- ◆ CMOS active pixel type dots
- ◆ Built-in timing adjustment circuit, H/V driver and serial communication circuit
- ◆ Input frequency: 74.25 MHz / 37.125 MHz
- ◆ Number of recommended recording pixels: 1920 (H) × 1080 (V) approx. 2.07M pixel
- ◆ Readout mode
 - All-pixel scan mode
 - 720p-HD readout mode
 - Window cropping mode
 - Vertical / Horizontal direction-normal / inverted readout mode
- ◆ Readout rate
 - Maximum frame rate in Full HD 1080p mode: 120 frame / s
- ◆ Wide dynamic range (WDR) function
 - Multiple exposure WDR
- ◆ Variable-speed shutter function (resolution 1H units)
- ◆ 10-bit / 12-bit A/D converter
- ◆ Conversion gain switching (HCG Mode / LCG Mode)
- ◆ CDS / PGA function
 - 0 dB to 30 dB: Analog Gain 30 dB (step pitch 0.3 dB)
 - 30.3 dB to 72 dB: Analog Gain 30 dB + Digital Gain 0.3 to 42 dB (step pitch 0.3 dB)
- ◆ Supports I/O switching
 - CMOS logic parallel SDR output
 - Low voltage LVDS (150 m Vp-p) serial (2 ch / 4 ch / 8 ch switching) DDR output
 - CSI-2 serial data output (2 Lane / 4 Lane, RAW10 / RAW12 output)
- ◆ Recommended exit pupil distance: -30 mm to $-\infty$

Exmor R

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Application circuits shown, if any, are typical examples illustrating the operation of the devices. Sony cannot assume responsibility for any problems arising out of the use of these circuits.

Device Structure

- ◆ CMOS image sensor
- ◆ Image size
Type 1/2.8
- ◆ Total number of pixels
1945 (H) × 1109 (V) approx. 2.16 M pixels
- ◆ Number of effective pixels
1945 (H) × 1097 (V) approx. 2.13 M pixels
- ◆ Number of active pixels
1937 (H) × 1097 (V) approx. 2.12 M pixels
- ◆ Number of recommended recording pixels
1920 (H) × 1080 (V) approx. 2.07 M pixels
- ◆ Unit cell size
2.9 μm (H) × 2.9 μm (V)
- ◆ Optical black
Horizontal (H) direction: Front 0 pixels, rear 0 pixels
Vertical (V) direction: Front 10 pixels, rear 0 pixels
- ◆ Dummy
Horizontal (H) direction: Front 0 pixels, rear 3 pixels
Vertical (V) direction: Front 0 pixels, rear 0 pixels
- ◆ Substrate material
Silicon

Absolute Maximum Ratings

Item	Symbol	Min.	Max.	Unit	Remarks
Supply voltage (analog 2.9 V)	AV_{DD}	-0.3	3.3	V	
Supply voltage (interface 1.8 V)	OV_{DD}	-0.3	3.3	V	
Supply voltage (digital 1.2 V)	DV_{DD}	-0.3	2.0	V	
Input voltage	V_I	-0.3	$OV_{DD} + 0.3$	V	Not exceed 3.3 V
Output voltage	VO	-0.3	$OV_{DD} + 0.3$	V	Not exceed 3.3 V

Application Conditions

Item	Symbol	Min.	Typ.	Max.	Unit
Supply voltage (analog 2.9 V)	AV_{DD}	2.80	2.90	3.00	V
Supply voltage (Interface 1.8 V)	OV_{DD}	1.70	1.80	1.90	V
Supply voltage (digital 1.2 V)	DV_{DD}	1.10	1.20	1.30	V
Performance guarantee temperature	T_{spec}	-10	—	60	°C
Operating guarantee temperature	T_{opr}	-30	—	85	°C
Storage guarantee temperature	T_{stg}	-40	—	85	°C

USE RESTRICTION NOTICE

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- The Products are intended for incorporation into such general electronic equipment as office products, communication products, measurement products, and home electronics products in accordance with the terms and conditions set forth in this specifications book and otherwise notified by Sony from time to time.
- You should not use the Products for critical applications which may pose a life- or injury-threatening risk or are highly likely to cause significant property damage in the event of failure of the Products. You should consult your sales representative beforehand when you consider using the Products for such critical applications. In addition, you should not use the Products in weapon or military equipment.
- Sony disclaims and does not assume any liability and damages arising out of misuse, improper use, modification, use of the Products for the above-mentioned critical applications, weapon and military equipment, or any deviation from the requirements set forth in this specifications book.

Design for Safety

- Sony is making continuous efforts to further improve the quality and reliability of the Products; however, failure of a certain percentage of the Products is inevitable. Therefore, you should take sufficient care to ensure the safe design of your products such as component redundancy, anti-conflagration features, and features to prevent mis-operation in order to avoid accidents resulting in injury or death, fire or other social damage as a result of such failure.

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- If the Products are controlled items under the export control laws or regulations of various countries, approval may be required for the export of the Products under the said laws or regulations. You should be responsible for compliance with the said laws or regulations.

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- The terms and conditions in the Sony additional specifications, which will be made available to you when you order the Products, shall also be applicable to your use of the Products as well as to this specifications book. You should review those terms and conditions when you consider purchasing and/or using the Products.



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	

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Company HAMPO

Dongguan Hampo Electronic Technology Co., Ltd. was established in 2015, a next-generation technology driven manufacturer specialized in research, design, and produce of audio and video products. Hampo is occupying 150,000 square feet automated plants with 500 employees of annual throughput 180,000,000 units cameras.

Hampo 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. Hampo 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

Hampo provides the following limited warranty if you purchased the Product(s) directly from Hampo company or from Hampo's website, www.hampotech.com. Product(s) purchased from other sellers or sources are not covered by this Limited Warranty. Hampo 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, Hampo 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 Hampo is solely limited to repair and/or replacement on the terms set forth above. Hampo is not reliable or responsible for any subsequent events.

