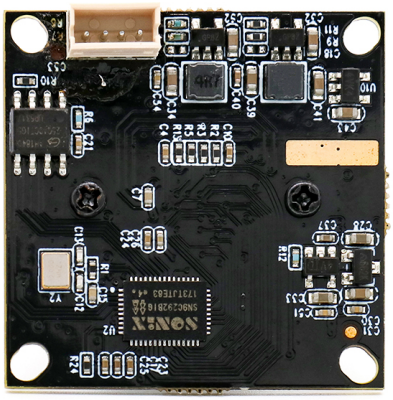
HAMPO-USB-0394-V1.0

2MP AR0230 M12 Fixed Focus USB 2.0 Camera Module



HAMPO-USB-0394-V1.0 is a 2MP WDR camera module with a wide view of angle no distortion lens,the dynamic range up to 96dB.This USB camera modules with build-in microphone, support H.264 super compression of video coding,compliant with UVC protocol, based on 1/2.7" AR0230 CMOS image sensor with pixel size of 3.0 x 3.0 μm Suitable for: data collection , security camera , face recognition, liveness detection, access control system, advertisement machine, smart terminal .

Key Features:

- Full HD Resolution&Built-in Mic
- HD Sensor AR0230 Chip
- High Dynamic Range: The camera module with WDR technology, the max dynamic range could up to 96dB
- Support H.264 Output
- Plug&Play: UVC-compliant, just connect the camera to PC computer, laptop, Android device or Raspberry Pi with the USB cable without extra drivers to be installed.

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2MP AR0230 M12 Fixed Focus USB 2.0 Camera Module

Camera Module No.	HAMPO-USB-0394-V1.0
Resolution	2 MP
Frame Rate	30fps
Sensor Type	1/2.7"
Pixel Size	3um x 3um
EFL	3.0 mm
F.NO	2.4
Dynamic Range	96 dB
View Angle	88°(DFOV) 80°(HFOV) 50°(VFOV)
Lens TTL	22.5 mm
Module Type	Fixed Focus
Lens Model	HAMPO-LENS- 2181
Interface	USB 2.0
Output Format	YUY2/MJPG/H.264
Auto Control	Saturation, Contrast, Acutance White Balance, Exposure
Audio	Digital Mic
Input Voltage	DC 5V
Working Current	Max 300mA
PCB Size	32mm*32mm
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
Mount	M12*P0.5mm

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

HI-SPEED CERTIFIED USB 2.0 Windows ANDROID Mac OS Linux Raspberry Pi

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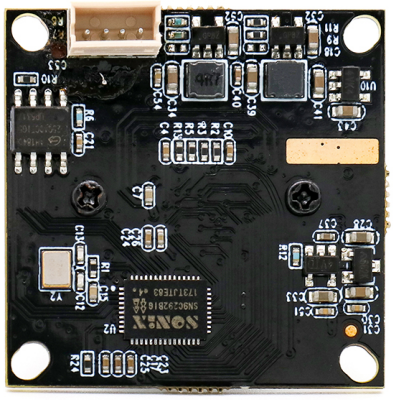
Top View

Side View



Bottom View

Side View

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2MP AR0230 M12 Fixed Focus USB 2.0 Camera Module

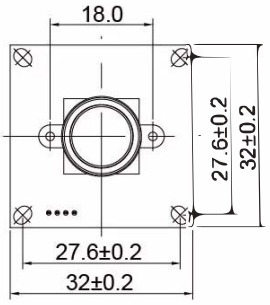
FORMAT	RESOLUTION	FRAME RATE
		USB 2.0
MJPG	640 x 480 (VGA)	**30 FPS**
	1024 x 768 (Super VGA)	**30 FPS**
	1280 x 720 (720P)	**30 FPS**
	1920x 1080 (2MP)	**30 FPS**
YUY2	640 x 480 (VGA)	**30 FPS**
	1024 x 768 (Super VGA)	**10 FPS**
	1280x 720 (720P)	**10 FPS**
	1920 x 1080 (2MP)	**5 FPS**

Product specifications

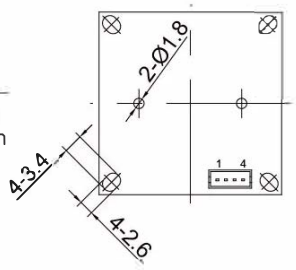
RoHS

Lens parameter:2G2P+IR650
EFL:3.60±5%mm
F.NO:2.8±5%
View Angle: D88°,H80°,V50°
Distortion:<-0.32%
Chip Type:1/2.7"
Array Size:2.1MP
Thread Size:M12*P0.5mm

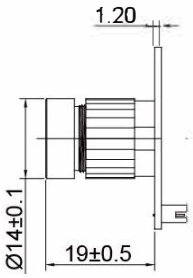
TOP VIEW



BOTTOM VIEW

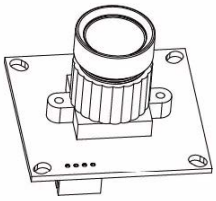


SIDE VIEW



PH1.5,Top entry type, 4PIN

DGND	DP	DM	USB5V
PIN1	PIN2	PIN3	PIN4



UNSPECIFIED TOL:		SIGNATURE	DATE	R & D Center	DONGGUAN HAMPO ELECTRONIC TECHNOLOGY CO ,LTD	
XXX ± 0.005	DWN.BY	MIKE	2022.07.01			
XX ± 0.05	CHK.BY			PART NAME	USB Camera	
X ± 0.1	APP.BY			DWG NO	2.03.0384.012	
∠ ± 0.5°	MATERIAL	/	SCALE	UNIT / SHEET	SIZE	PART NO.
	TREATMENT	/	1:1	mm / 1/1	A4	/

1/2.7-Inch 2.1 Mp/Full HD Digital Image Sensor

AR0230CS Datasheet, Rev. 8

For the latest datasheet, please visit www.onsemi.com

Features

- Superior low-light performance
- Latest 3.0 μm pixel with ON Semiconductor DR-Pix™ technology with Dual Conversion Gain
- Full HD support at up to 1080P 60 fps for superior video performance
- Linear or high dynamic range capture
- Optional adaptive local tone mapping (ALTM)
- Pixel or Line interleaved T1/T2 output
- Support for external mechanical shutter
- On-chip phase-locked loop (PLL) oscillator
- Integrated position-based color and lens shading correction
- Slave mode for precise frame-rate control
- Stereo/3D camera support
- Statistics engine
- Data interfaces: four-lane serial high-speed pixel interface (HiSPi) differential signaling (SLVS and HiVCM), or parallel
- Auto black level calibration
- High-speed configurable context switching
- Temperature sensor

Applications

- Video surveillance
- 1080p60 (Surveillance) video applications
- High dynamic range imaging

General Description

ON Semiconductor's AR0230CS is a 1/2.7-inch CMOS digital image sensor with an active-pixel array of 1928Hx1088V. It captures images in either linear or high dynamic range modes, with a rolling-shutter readout. It includes sophisticated camera functions such as in-pixel binning, windowing and both video and single frame modes. It is designed for both low light and high dynamic range scene performance. It is programmable through a simple two-wire serial interface. The AR0230CS produces extraordinarily clear, sharp digital pictures, and its ability to capture both continuous video and single frames makes it the perfect choice for a wide range of applications, including surveillance and HD video.

Table 1: Key Parameters

Parameter		Typical Value
Optical format		1/2.7-inch (6.6 mm)
Active pixels		1928(H) x 1088(V) (16:9 mode)
Pixel size		3.0 μm x 3.0 μm
Color filter array		RGB Bayer
Shutter type		Electronic rolling shutter and GRR
Input clock range		6 – 48 MHz
Output clock maximum		148.5 Mp/s (4-lane HiSPi) 74.25 Mp/s (Parallel)
Output	Serial	HiSPi 10-, 12-, 14-, 16-, or 20-bit
	Parallel	10-, 12-bit
Frame rate	1080p	60 fps
Responsivity		4.0 V/lux-sec
SNR_{MAX}		41 dB
Max Dynamic range		Up to 96 dB
Supply voltage	I/O	1.8 or 2.8 V
	Digital	1.8 V
	Analog	2.8 V
	HiSPi	0.3 V - 0.6 V (SLVS), 1.7 V - 1.9 V (HiVcm)
Power consumption (typical)		386 mW (Linear, 1080p30, 25C, parallel output) 558 mW (HDR, 1080p30, 25C, parallel output)
Operating temperature		–30°C to +85°C ambient
Package options		10x10 mm 80-pin iBGA

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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

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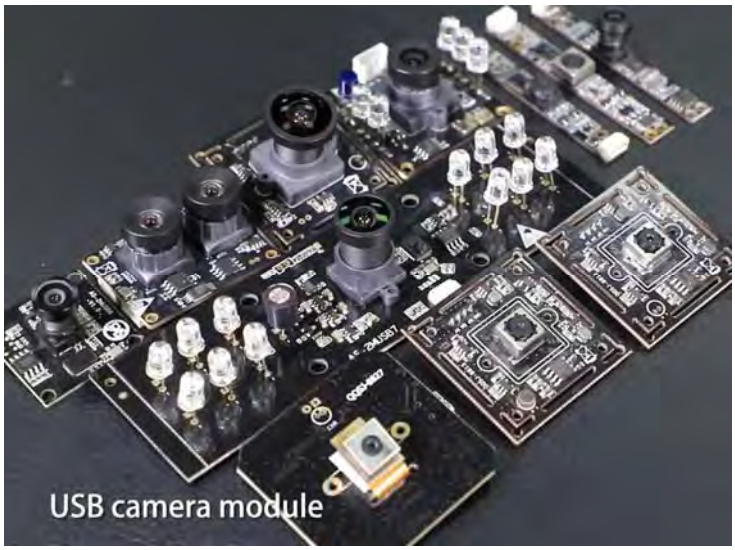
Company HAMPO

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 subsequential events.

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