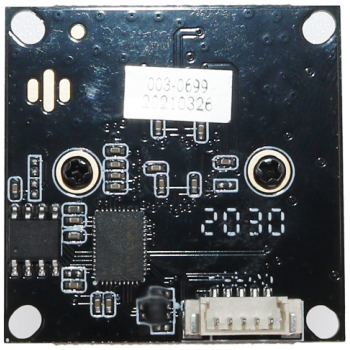
HAMPO-USB-0699-V1.0

1MP OMNIVISION OV9281 M12 Fixed Focus USB 2.0 Camera Module



HAMPO-USB-0699-V1.0 is a HD Monochrome (Black & White) global shutter camera for accurate and fast capture of moving scenes at 60 fps in 720p resolution. This Global shutter USB camera features OV9281 CMOS Image Sensor with pixel size of 3.0 x 3.0 µm and a dedicated high-performance Digital Signal Processor (DSP),This global shutter camera captures images at a high frame rate, which helps to minimize frame-to-frame distortion and reduce motion blur while capturing fast-moving objects to produce smoother images with greater scene details.

Key Features

- Global Shutter: Shoot high-speed moving objects in crisp sharp images. Avoid the rolling artifacts to get a much more accurate complete picture than the rolling shutter cameras. Reserved external trigger ports, support trigger via external signal.
- Resolution: 1MP (1280H x 800V) HD definition 60fps at per second;
- 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.
- Applications: The sensor's excellent low-light sensitivity and the low distortion lens allow it to perform better in any application that needs gesture and eye tracking, iris and physiognomy recognition, depth and motion detection.

HAMPO-USB-0699-V1.0
1MP OMNIVISION OV9281 M12 Fixed Focus USB 2.0 Camera Module

Camera Module No.	HAMPO-USB-0699-V1.0
Resolution	1MP
Image Sensor	OV9281
Sensor Type	1/4"
Pixel Size	3um x 3um
EFL	3.8 mm
F.NO	1.8
Pixel	1280*720
View Angle	105°(DFOV) 99°(HFOV) 83°(VFOV)
Lens TTL	14mm
Module Type	Fixed Focus
Lens Model	HAMPO-LENS- 3428
Interface	USB 2.0
Output Format	MJPG / YUV2
Auto Control	Saturation, Contrast, Acutance White Balance, Exposure
Audio	Digital Mic
Input Voltage	DC 5V
Working Current	Max 200mA
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
Thread Size	M12x P0.5

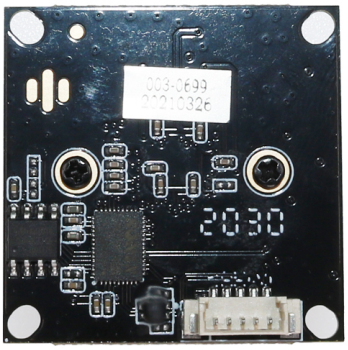
Wide Compatibility with Windows, Android, Mac OS, Linux, or Raspberry Pi

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

HAMPO-USB-0699-V1.0
1MP OMNIVISION OV9281 M12 Fixed Focus USB 2.0 Camera Module

Top View

Side View



Bottom View

Side View

HAMPO-USB-0699-V1.0
1MP OMNIVISION OV9281 M12 Fixed Focus USB 2.0 Camera Module

Product specifications

RoHS

Lens parameter:/

EFL:3.6

F.NO:1.8

View Angle:D105°H99° V83°

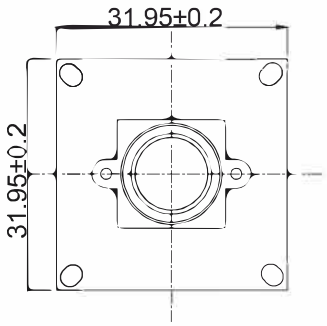
Distortion:<5.7%

Chip Type:1/2.7"

Array Size:3MP

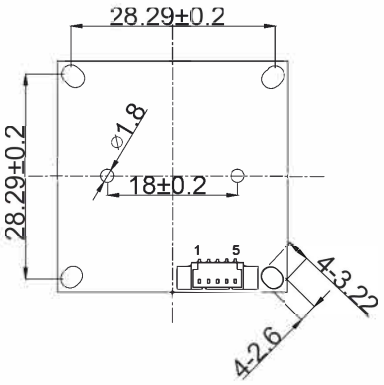
Lens Size:14mm

TOP VIEW

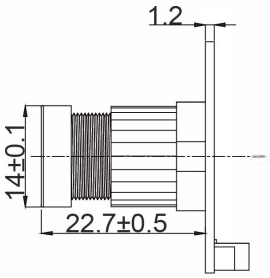


Capture Direction

BOTTOM VIEW



SIDE VIEW



PH1.25,Top entry type, 5PIN

PIN5	DGND
PIN4	DGND
PIN3	DP
PIN2	DM
PIN1	USB5V

NOTE

1.The unmarked tolerance of linear dimension is ±0.1mm

2.Sensor :OV09281

UNSPECIFIED TOL:		SIGNATURE	DATE	R & D Center		DONGGUAN HAMPO ELECTRONIC TECHNOLOGY CO.,LTD	
.XXX ± 0.005	DWN.BY	ALLEN	2022.04.18				
.XX ± 0.05	CHK.BY			PART NAME		USB Camera	
.X ± 0.1	APP.BY			DWG NO		2.03.0699.011-PCBA	
∠ ± 0.5°	MATERIAL	/	SCALE	UNIT	SHEET	SIZE	PART NO.
	TREATMENT	/	1:1	mm	1/1	A4	/

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b&w CMOS 1 megapixel (1280 x 800) image sensor with OmniPixel3-GS™ technology

datasheet (CSP5)
PRELIMINARY SPECIFICATION

version 1.3
march 2017

To learn more about OmniVision Technologies, visit www.ovt.com.

applications

- industrial bar code scanning

ordering information

- **OV09281-H64A** (b&w, lead-free)
  64-pin CSP5

features

- 3 µm x 3 µm pixel with OmniPixel3-GS™ technology
- automatic black level calibration (ABLC)
- programmable controls for frame rate, mirror and flip, cropping and windowing
- support output formats: 8/10-bit RAW
- fast mode switching
- supports 2x2 monochrome binning
- two-lane MIPI serial output interface
- DVP parallel output interface
- supports horizontal and vertical 2:1 and 4:1 monochrome subsampling
- support for image sizes: 1280x800, 1280x720, 640x480, 640x400
- embedded 256 bits of one-time programmable (OTP) memory for part identification
- two on-chip phase lock loops (PLLs)
- LED PWM
- built-in strobe control

key specifications (typical)

- **active array size:** 1296 x 816
- **power supply:**
  analog: 2.8V (nominal)
  core: 1.2V (nominal)
  I/O: 1.8V (nominal)
- **power requirements:**
  active: 156 mW
  standby: 150 µA
  XSHUTDOWN: 150 µA
- **temperature range:**
  operating: -30°C to +85°C junction temperature
  stable image: 0°C to 50°C junction temperature
- **output interface:** 2-lane MIPI serial output and DVP parallel output
- **output formats:** 8/10-bit RAW
- **lens size:** 1/4"
- **input clock frequency:** 6~27 MHz
- **lens chief ray angle:** 9° linear
- **max S/N ratio:** 38 dB
- **dynamic range:** 68 dB
- **maximum image transfer rate:**
  1280 x 800: 120 fps (see **table 2-1**)
- **sensitivity:**
  13000 mV/µW.cm^{-2}.sec) @ 850nm
  6500 mV/µW.cm^{-2}.sec) @ 940nm
- **scan mode:** progressive
- **minimum exposure time:** 1 row period
- **maximum exposure time:** frame length -25 row periods, where frame length is set by registers {0x380E, 0x380F}
- **pixel size:** 3 µm x 3 µm
- **dark current:** 80e^{-}/sec @ 50°C junction temperature
- **image area:** 3896 µm x 2453 µm
- **package dimensions:** 5237 µm x 4463 µm

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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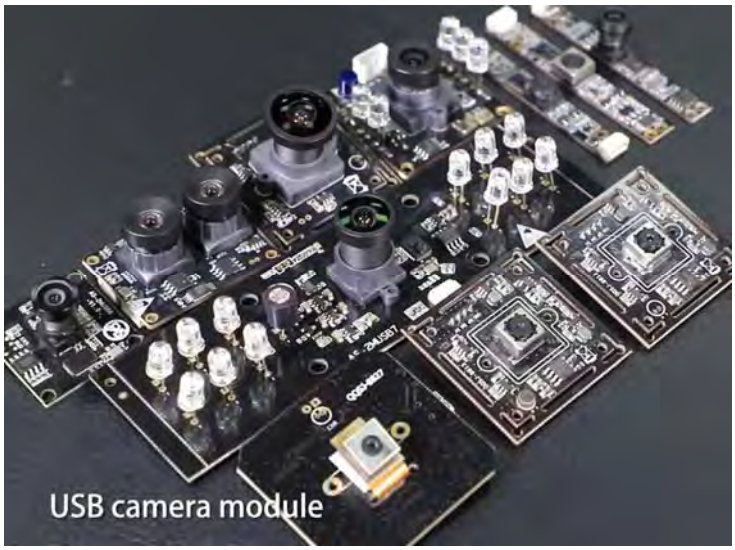
Company HAMPO

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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