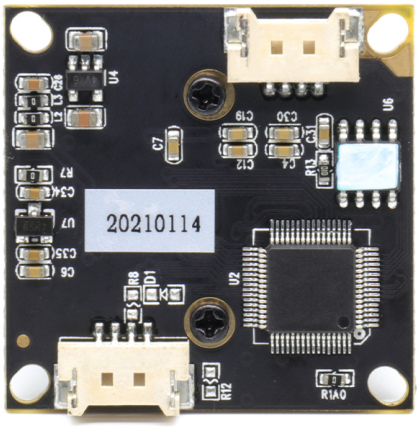
HAMPO-USB-0093-V1.0

5MP Micron MI5100 M12 Fixed Focus USB 2.0 Camera Module



HAMPO-USB-0093-V1.0 has a pixel of up to 500M, and the sensor size is 1/2.5". It has the advantages of good picture quality, high pixel, high color reduction, and is the most perfect choice for high shot skin detection camera, and can also be used in financial, administrative, education, industry etc. The sensor itself has a native resolution of 5 megapixels and has a fixed focus lens onboard. What's more, the camera uses roll-up exposure, and has a wide dynamic range of up to 70dB, enabling it to take sharp images in complex lighting conditions.

Key Features

- Excellent Quality Image Aptina Top Sensor. 5 Megapixel USB camera moudule adopt high quality Aptina CMOS MI5100 Sensor, deliver sharp images effectively.
- High Speed USB 2.0 OTG： High speed 2.0 USB port 5 megapixel usb camera support HD pixels: 1280x720@30fps / 1920x1080@ 15fps / 2592x1944@15fps, Max. Resolution : 2592(H) X 1944(V). Using high pixel technology for sharp image and accurate color reproduction. Usb camera module is good to use for high leval products image intergation or housekeeping
- 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 Skin detection system, ATM machine, Medical machine or other machine vision application.

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Camera Module No.	HAMPO-USB-0093-V1.0
Resolution	5MP
Image Sensor	MI5100
Sensor Type	1/2.5"
Pixel Size	2.2 um x 2.2 um
EFL	2.8 mm
F.NO	2.2
Pixel	2592 x 1944
View Angle	112°(DFOV) 100°(HFOV) 80°(VFOV)
Lens TTL	22 mm
Module Type	Fixed Focus
Lens Model	HAMPO-LENS-2625
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 300mA
PCB Size	32mm x 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
USB Cable	USB-Cable-U015

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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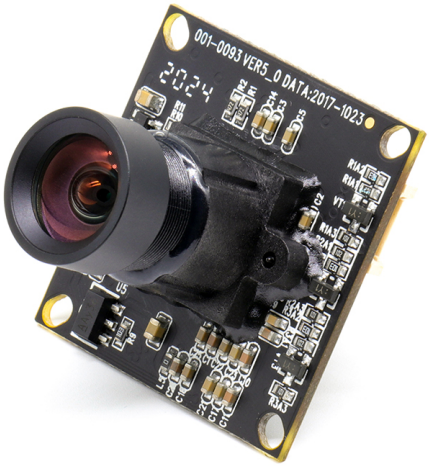
Top View



Side View

Bottom View

Mating Connector

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FORMAT	RESOLUTION	FRAME RATE
		USB 2.0
MJPG	1024 x 768 (Super VGA)	30 FPS
	1280 x 720 (720P)	30 FPS
	1920x 1080 (2MP)	15 FPS
	2592x 1944 (5MP)	15 FPS
YUY2	1024 x 768 (Super VGA)	30 FPS
	1280x 720 (720P)	10 FPS
	1920 x 1080 (2MP)	5 FPS
	2592x 1944 (5MP)	5 FPS

RoHS

Lens parameter:4G2P+IR

EFL:2.8

F.NO:2.2

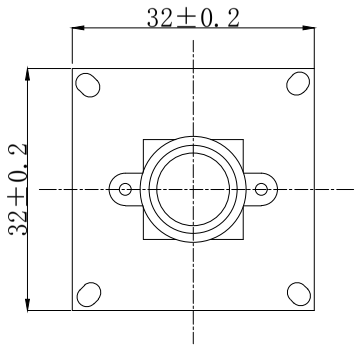
View Angle:D112° H100° V80°

Distortion:<3.28%

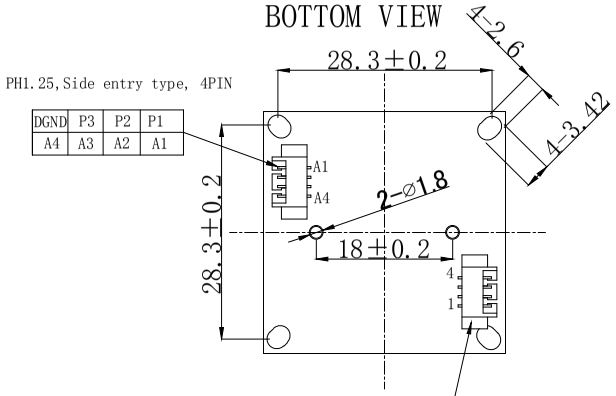
Chip Type:1/2.5"

Array Size:5MP

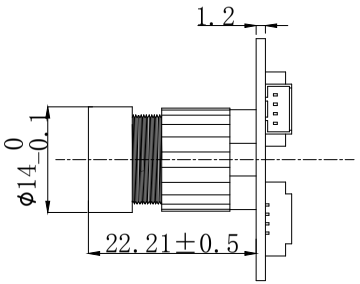
TOP VIEW



BOTTOM VIEW



SIDE VIEW



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		2.03.0093-053 PCBA	
∠ ± 0.5°	MATERIAL	/	SCALE	UNIT	SHEET	SIZE	PART NO.
	TREATMENT	/	1:1	mm	1/1	A4	/

1/2.5-Inch 5Mp CMOS Digital Image Sensor

MT9P001

For the latest data sheet, refer to Micron's Web site: www.micron.com/imaging

Features

- DigitalClarity® imaging technology
- High frame rate
- Superior low-light performance
- Low dark current
- Global reset release, which starts the exposure of all rows simultaneously
- Bulb exposure mode, for arbitrary exposure times
- Snapshot mode to take frames on demand
- Horizontal and vertical mirror image
- Column and row skip modes to reduce image size without reducing field of view (FOV)
- Column and row binning modes to improve image quality when resizing
- Simple two-wire serial interface
- Programmable controls: gain, frame rate, frame size, exposure
- Automatic black level calibration
- On-chip PLL

Applications

- Digital still cameras
- Digital video cameras
- PC cameras
- Converged DSCs/camcorders
- Cellular phones
- PDAs

General Description

The Micron® Imaging MT9P001 is a 1/2.5-inch CMOS active-pixel digital image sensor with an active imaging pixel array of 2592H x 1944V. It incorporates sophisticated camera functions on-chip such as windowing, column and row skip mode, and snapshot mode. It is programmable through a simple two-wire serial interface.

Table 1: Key Performance Parameters

Parameter		Value
Optical format		1/2.5-inch (4:3)
Active imager size		5.70mm(H) x 4.28mm(V) 7.13mm diagonal
Active pixels		2592H x 1944V
Pixel size		2.2 x 2.2µm
Color filter array		RGB Bayer pattern
Shutter type		Global reset release (GRR), Snapshot only Electronic rolling shutter (ERS)
Maximum data rate/ master clock		96 Mp/s at 96 MHz (2.8V I/O) 48 Mp/s at 48MHz (1.8V I/O)
Frame rate	Full resolution	Programmable up to 15 fps
	VGA (640 x 480)	Programmable up to 70 fps
ADC resolution		12-bit, on-chip
Responsivity		1.4 V/lux-sec (550nm)
Pixel dynamic range		70.1dB
SNR_{MAX}		38.1dB
Supply Voltage	I/O	1.7—3.1V
	Digital	1.7—1.9V (1.8V nominal)
	Analog	2.6—3.1V (2.8V nominal)
Power consumption		381mW at 15 fps full resolution
Operating temperature		–30°C to +70°C
Packaging		48-pin iLCC, Die

The 5-megapixel CMOS image sensor features DigitalClarity—Micron's breakthrough low-noise CMOS imaging technology that achieves CCD image quality (based on signal-to-noise ratio and low-light sensitivity) while maintaining the inherent size, cost, and integration advantages of CMOS.

Ordering Information

Table 2: Available Part Numbers

Part Number	Description
MT9P001I12STC	48-pin iLCC

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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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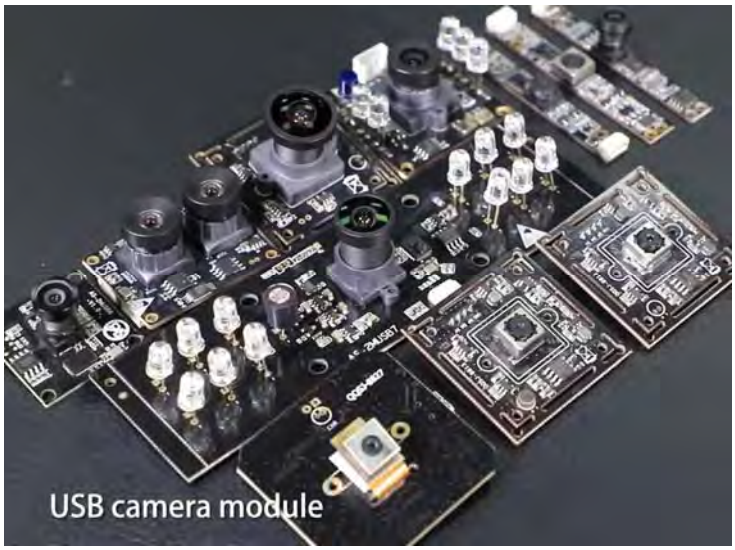
Company HAMPO

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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