

USB 2.0 mini Camera



1、Feature:

HD 1080P USB camera module
 Synchronization technology
 High speed USB 2.0 interface
 High quality image
 Low power consumption
 Small outline for embedded application
 UVC compliance for use in OS Windows,Linux,Android,Mac

2. SPECIFICATIONS

Sensor	1/2.8 sensor		
Effective Pixel	1920(H) X 1080(V)		
pixel	1080P		
Pixel Size	3um X 3um		
Lux	0.1LUX		
Scanning mode	Progressive scan		
Scanning frequency H	30HZ/25HZ		
Scanning frequency V	60HZ/50HZ		
dynamic range	110dB		
SNR	>=50dB		
Video output format	MJPEG/YUY2		
Adjustable parameters	Brightness, contrast, hue, saturation, sharpness, gamma, white balance, backlight, gain, exposure, image flip		
SENSOR Data Output	DVP		
Resolution and frame rate	MJPEG		YUY2
	1920x1080 at 25fps 1024x768 at 25fps	1280x720 at 25fps	1920x1080 at 5fps 1280x720 at 10fps
	800x600 at 25fps	640x480 at 25fps	800x600 at 20fps 640x480 at 30fps
Lens type	3.0mm lens without distortion (image distortion < 1%)		
Lens parameters	M12 lens (650 nm bandpass filter, HFOV: 86 VFOV: 55 DFOV: 140)		
interface	5pin 1.25mm USB2.0		
USB Interface Speed	480Mb/S		
Power Supply	5V±5%		
power	Max 1W		
size	15 x 15mm		
weight	TBD		
Stable working temperature	-30~70 °C		
Storage temperature-humidity	-40~80 °C/0~90RH		
Product Standards	USB-IF WHQL RoHS		
Guarantee Period	1 years		

3. Appearance Specification

Appearance				
No.	Item	Requirement	Test Method	Substandard Classification
1	Module Appearance	Modules surface without dirt, no visible scratches, no impurities in the holder	8X Magnifier	A
2	Lens	Under the light intensity of 800 ± 100 Lux head-down, 45-degree reflected light inspection, shall have no visible scars or dirty	8X Magnifier	A
3	PCB	1) surface without dirt, print legible; 2) Edge burr length is less than 1mm, a width of less than 0.3mm; 3) Edge gap length is less than 1mm, a width of less than 0.1mm per edge more than two	8X Magnifier	A
Appearance size				
No.	Item	Requirement	Test Method	Substandard Classification
1	High	Meet the requirements of the drawings	Digital Caliper	A
2	Length	Meet the requirements of the drawings	Digital Caliper	A
3	Width	Meet the requirements of the drawings	Digital Caliper	A

4. Image Specification

Optical performance testing requirements				
No.	Item	Requirement	Test Method	Substandard Classification
1	Dust	Under the white field, acquire images, visual screen not allowed visible foreign matter	Test fixture, Small light boxes. 6500K white backlight	A
2	Imaging Direction	Meet the requirements of the drawings	Test fixture	A

3	Dead & Wound Pixel	1) Dark field: Highlights less than 400pixel; 2 adjacent pixel cluster type highlights less than 20; no more than three pixel cluster type highlights. 2) White field: The total dark points less than 400pixel; 2 adjacent pixel cluster-type dark spots less than 20; no more than three pixel cluster type dark spots.	Test software, Small light boxes. 6500K white backlight	A
4	Resolution	960pixel, Center not less than 600LW / PH	MTF test program	A
5	FOV	horizontal: Vertical: Diagonal:	Test fixture, FOV target board	A
6	Shading	the center of the four corners, 90% of examination field average brightness, at least up to 45% of the center examination field, the brightness of each angle up to 35% of the center brightness (sampling frame size is 40 * 40 pixels, sensor Vignette compensation unopened).	Test software, small light boxes (3400Lux,6500K white backlight)	A
7	Color	color reproduction deviation less than 20%	Test software Color checker card	A
8	TV distortion	Pincushion distortion (positive number) or barrel distortion (negative) not more than 1%	Test software ISO12233	A
9	Grayscale	Adjacent distinguished two gray-scale brightness difference value must be less than 8	Test software, Grayscale Standard Board	A
10	CA	Less than 0.5	Test software ISO12233	A

Failure article category description:

- a) serious failure: Upon examination determined that the batch failed, or a direct impact on product quality, function, performance specifications, etc. Substandard, Indicated by the letter A;
- b) general failure: General failure means could satisfy the following conditions Substandard goods, Indicated by the letter B.
 - I) does not affect the final product appearance quality;
 - II) does not affect the final product technical performance;
 - III) raw materials or final products does not affect the next step processing or assembly.

5.Sample Plan

No.	Test items	Sampling frequency	Test methods	Remark
Imaging and reliability program				
1	stain	Each batch N=5,C=0	Same as production	Production all-checking Program
2	Imaging direction	Each batch N=5,C=0	Test Fixture	Production all-checking Program
3	Bad points &Cluster type bad points	Each batch N=5,C=0	Same as production	Production all-checking Program
4	Resolution	Each batch N=5,C=0	MTF test program	Production all-checking Program
5	FOV	Each batch N=5,C=0	Test Fixture, FOV standard board	Sample stage full inspection assessment project QA draw-checking project
6	Image plane evenness	Each batch N=5,C=0	Test software, Small boxes (3400Lux, 6500K white backlight)	Production all-checking Program
7	Dispersion	Each batch N=5,C=0	Test software Color checker card	Sample stage full review assessment Project QA draw-checking project
8	Geometric distortion	Each batch N=5,C=0	Test software ISO12233	Sample stage full review assessment Project QA draw-checking project
9	Grayscale	Each batch N=5,C=0	Test software Grayscale Standard Board	Sample stage full review assessment Project QA draw-checking project
10	Reliability Test	Prototyping phases: sampling plan: 2PCS / each production batch, the acceptance level 0/1 Stable production phases: sampling plan: Each project 5PCS / month, acceptance level 0/1		
Appearance items				
1	Module Appearance	AQL=0.65	8X Magnifier	Production all-checking Program

2	Lens	AQL=0.65	8X Magnifier	Production all-checking Program
3	PCB	AQL=0.65	45X Microscope	Production all-checking Program
4	Connector	AQL=0.65	45X Microscope	Production all-checking Program
Dimensions				
1	high	AQL=0.65	Same as production	Production all-checking Program
2	Length	AQL=0.65	Same as production	Production all-checking Program
3	Width	AQL=0.65	Same as production	Production all-checking Program

6. Reliability Specification

No.	Test items	Conditions and requirements	Test Equipment
1	Cryogenic storage	-30℃ , 96hours Heating and cooling time each 30min	Low oven
2	Low temperature operation	-30℃ , 96hours Heating and cooling time each 30min	Cryostat
3	High Temperature Storage	80℃ , 96hours Heating and cooling time each 30min	Hot box
4	High temperature operation	70℃ , 96hours Heating and cooling time each 30min	Hot box
5	High temperature and humidity storage	60℃ , 90%RH, 120hours Heating and cooling time each 30min	High temperature & Humidistat Box
6	High temperature and Humidity operation	40℃ , 90%RH, 48hours Heating and cooling time each 30min	High temperature & Humidistat Box
7	Thermal Shock Test	-30 ℃) → 80 ℃ (each 30min) high and low mutual conversion time less than 5 minutes Total: 10cycles	Low temperature box High temperature box
8	Free drop test (after packing)	height 150cm, 10 times	Oak Floor
9	Vibration test (after packing)	10Hz ~ 200Hz ~ 10Hz, the amplitude 2mm, XYZ three directions, Vibration 2 hours	Vibration test bench
10	Static test (power failure)	150Pf, 330 Euro ± 8KV, air discharge Measuring 10 times	Static tester