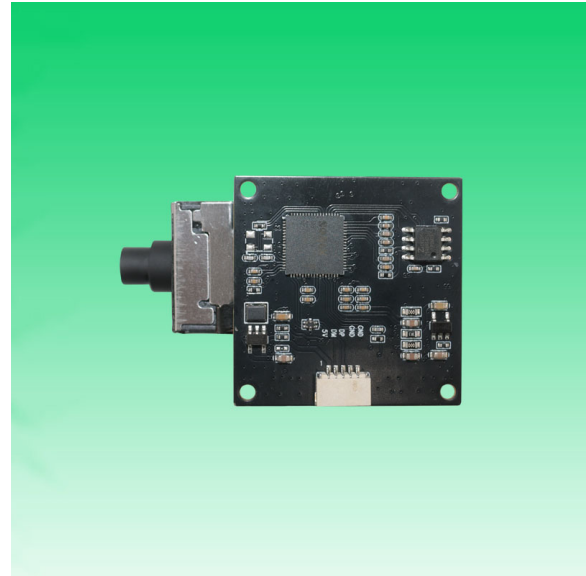
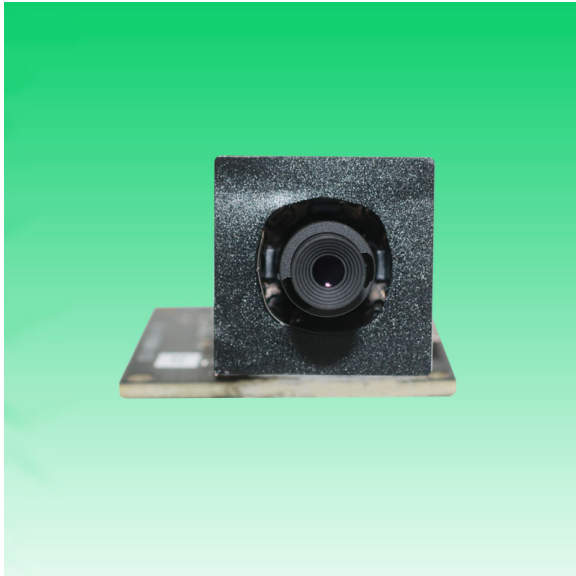
**KLT-OIS-USB5A-FF-IMX317 V2.0****8.51MP Sony IMX317 OIS MGS Fixed Focus USB 2.0 Camera Module**

KLT-OIS-USB5A-FF-IMX317 V2.0 is an 8.51 MP Fixed Focus USB camera module based on 1/2.5" IMX317 image sensor. Micro Gimbal Stabilizer (MGS) enables the camera to take clear and sharp images in moving environment. It delivers high-speed, 4K resolution ultra sharp image. The camera has a dedicated, high-performance fixed focus function providing best-in-class image and video output. This camera module is ideal solution for drones, automotive, agriculture farming, medical equipment, and traffic monitoring.

Key Features

- 4K resolution (3840 x 2160) Sony IMX317 sensor
- Micro Gimbal Stabilizer (MGS) on optical image stabilization (OIS) platform
- High speed USB 2.0 Plug and Play
- MJPG and YUV2 output format
- Low power consumption
- Compact size
- UVC compliant to Windows, Linux, OS with UVC driver
- USB OTG (On-The-Go) support



Camera Module No.	KLT-OIS-USB5A-FF-IMX317 V2.0
Resolution	8.51MP
Image Sensor	IMX317 w/ MGS OIS
Sensor Type	1/2.5"
Pixel Size	1.62 um x 1.62 um
EFL	15.00 mm
F.NO	5.60
Stabilization Method	Optical Image Stabilization (OIS)
Stabilizer Type	Micro Gimbal Stabilizer (MGS)
Stabilizer Axis No.	2 Axis (Pitch and Yaw)
Stabilizer Angle	Max. 3.0°
Stabilizer Power	180 mW
Pixel	3840 x 2160
View Angle	27.1°(DFOV) 23.6°(HFOV) 13.5°(VFOV)
Lens Dimensions	19.00 x 19.00 x 25.20 mm
Module Type	Fixed Focus
Auto Focus VCM Driver IC	None
Interface	USB 2.0
Output Format	MJPEG
Auto Control	Saturation, Contrast, Acutance White Balance, Exposure
Audio	None
Input Voltage	DC 5V
Working Current	Max 500mA
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
Lens Type	650nm IR Cut
Operating Temperature	-10°C to +70°C
USB Cable	USB Cable

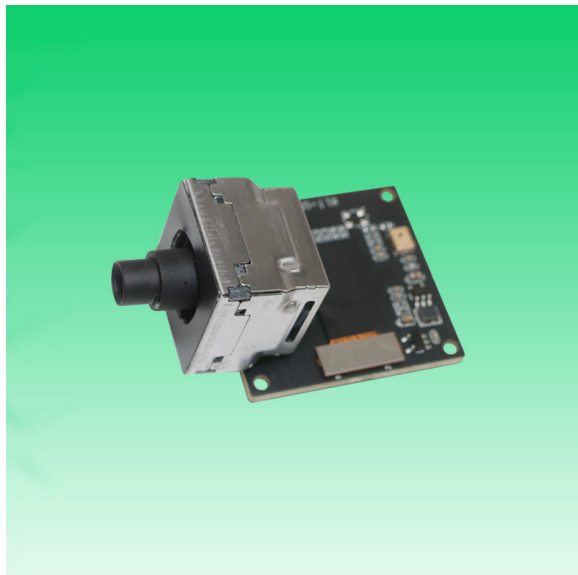


**KLT-OIS-USB5A-FF-IMX317 V2.0****8.51MP Sony IMX317 OIS MGS Fixed Focus USB 2.0 Camera Module**

Top View



Side View



Bottom View



Mating Connector



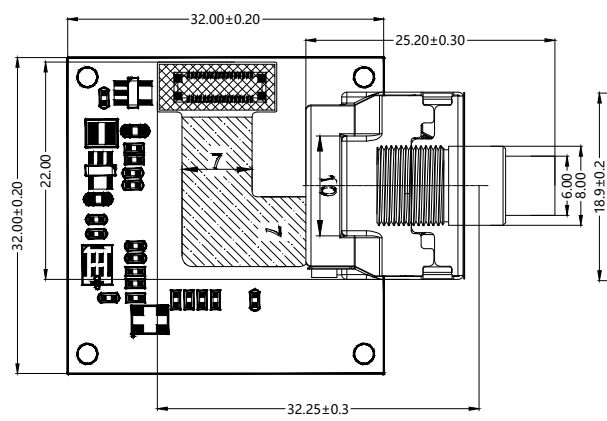
KLT-OIS-USB5A-FF-IMX317 V2.0

8.51MP Sony IMX317 OIS MGS Fixed Focus USB 2.0 Camera Module

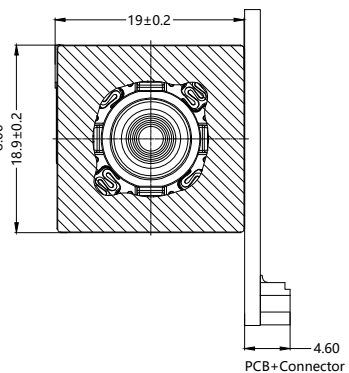
FORMAT	RESOLUTION	FRAME RATE
		USB 2.0
MJPEG	640 x 480 (VGA)	20 FPS
	1280 x 720 (720P)	20 FPS
	1920 x 1080 (1080P)	20 FPS
	2592 x 1944 (5MP)	20 FPS
	3840 x (4K)	20 FPS
YUV2	640 x 480 (VGA)	20 FPS
	1280 x 720 (720P)	10 FPS
	1920 x 1080 (1080P)	2 FPS
	2592 x 1944 (5MP)	1 FPS

PIN NO	SIGNAL
PIN1	USB 5V
02	D-
03	D+
04	DGND
05	DGND

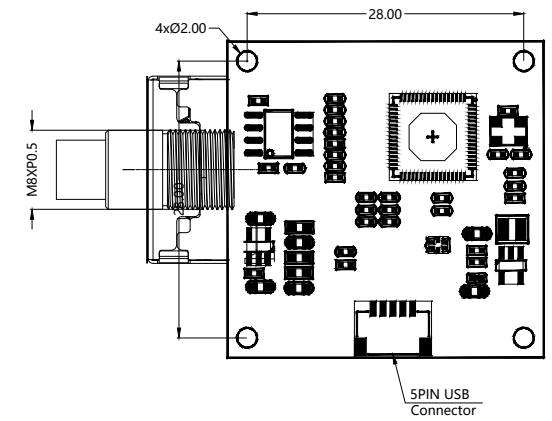
Version	Information
V1.0	First Version
V2.0	Change lens



TOP VIEW



SIDE VIEW



BOTTOM VIEW

NOTE:
1.The device slave address:0x20;

Parameters:
1、 Sensor specification:
Image Sensor: IMX317
Pixel: 1.62um*1.62um
Lens Type: 1/2.5
Important Voltage Description:
USB 5V (external power supply);

2、 Lens specification:
FOV: 27.1°(D);23.6°(H);13.5°(V);
F/NO.: 5.6
OPT distortion: <-0.5%
Focal length: 15mm
Composition: 4G+IR FILTER
IR Cut Coating: 650nm±10nm@50%

Kai Lap Technologies Group Ltd

Designed By	Kevin	Model Name:	KLT-OIS-USB5A-FF-IMX317 V2.0		
Checked By	Jacky	Projection Type:	Unit:	Date: 2/6/2026	
		Third Angle	mm	Scale:	Sheet:
			1:1	1 of 1	1/0

[Product Information]

IMX317CQC

Ver.1.0

Diagonal 7.20 mm (Type 1/2.5) CMOS Image Sensor with Square Pixel for Color Cameras

Description

The IMX317CQC is a diagonal 7.20 mm (Type 1/2.5) CMOS image sensor with a color square pixel array and approximately 8.51 M effective pixels. 12-bit digital output makes it possible to output the signals of approximately 8.51 M effective pixels with high definition for shooting still pictures. It also operates with three power supply voltages: analog 2.8 V, digital 1.2 V, and 1.8 V for I/O interface and achieves low power consumption. Furthermore, it realizes 12-bit digital output for shooting high-speed and high-definition moving pictures by horizontal and vertical addition and subsampling. Realizing high-sensitivity, low dark current, this sensor also has an electronic shutter function with variable storage time.

In addition, this product is designed for use in consumer use digital still camera and consumer use camcorder. When using this for another application, Sony Semiconductor Solutions Corporation does not guarantee the quality and reliability of the product. Therefore, don't use this for applications other than consumer use digital still camera and consumer use camcorder.

In addition, individual specification change cannot be supported because this is a standard product.

Consult your Sony Semiconductor Solutions Corporation sales representative if you have any questions.

Features

- ◆ CMOS active pixel type pixels
- ◆ Input clock frequency 6 to 27 MHz (CSI-2), 12/24/36/72 MHz (Sub-LVDS)
- ◆ Both MIPI Specifications (CSI-2 high-speed serial interface) and Sub-LVDS supported
- ◆ All-pixel scan mode
 - Various readout modes (*)
- ◆ High-sensitivity, low dark current, no smear, excellent anti-blooming characteristics
- ◆ Vertical and horizontal arbitrary cropping function
- ◆ Variable-speed shutter function (minimum unit: 1 horizontal period)
- ◆ Low power consumption
- ◆ Digital Overlap High Dynamic Range (DOL-HDR) function
- ◆ H driver, V driver and serial communication circuit on chip
- ◆ CDS/PGA on chip: Gain +27 dB (step pitch 0.1 dB)
- ◆ 10-bit/12-bit A/D conversion on chip
- ◆ R, G, B primary color mosaic filters on chip
- ◆ All-pixel simultaneous reset supported
- ◆ 92-pin high-precision ceramic package

* Please refer to the datasheet for binning/subsampling details of readout modes.

Sony reserves the right to change products and specifications without prior notice.
Sony logo is a registered trademark of Sony Corporation.

Device Structure

- ◆ CMOS image sensor
- ◆ Image size Diagonal 7.20 mm (Type 1/2.5)
- ◆ Total number of pixels 3864 (H) × 2218 (V) approx. 8.57 M pixels
- ◆ Number of effective pixels 3864 (H) × 2202 (V) approx. 8.51 M pixels
- ◆ Number of active pixels 3864 (H) × 2196 (V) approx. 8.49 M pixels diagonal 7.20 mm
- ◆ Number of recommended recording pixels 3840 (H) × 2160 (V) 8.29 M pixels aspect ratio 16:9
- ◆ Chip size 8.365 mm (H) × 6.615 mm (V) (include scribe area)
- ◆ Unit cell size 1.62 μm (H) × 1.62 μm (V)
- ◆ Optical black Horizontal (H) direction: Front 0 pixel, Rear 0 pixel
Vertical (V) direction: Front 16 pixels, Rear 0 pixel
- ◆ Package 92 pin LGA

Image Sensor Characteristics

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F5.6)	Typ.	1145 digit	1/30 s integration
Saturation signal	Min.	3050 digit	

Basic Drive Mode

Drive mode	Number of recording pixels	Max frame rate [frame/s]		Output data bit length [bit]
		CSI-2	Sub-LVDS	
Readout mode 0	3840 (H) × 2160 (V) approx. 8.29 M pixels	32.81	32.73	12
Readout mode 1	3840 (H) × 2160 (V) approx. 8.29 M pixels	62.52	62.06	10
Readout mode 2	1920 (H) × 1080 (V) approx. 2.07 M pixels	65.82	65.61	12
Readout mode 3	1920 (H) × 1080 (V) approx. 2.07 M pixels	124.80	124.40	10
Readout mode 4	1920 (H) × 1080 (V) approx. 2.07 M pixels	124.80	124.40	10
Readout mode 5	1280 (H) × 720 (V) approx. 0.92 M pixels	185.73	184.86	10
Readout mode 6	1280 (H) × 540 (V) approx. 0.69 M pixels	249.26	247.70	10



Micro Gimbal Stabilizer (MGS) OIS Camera Modules

Micro Gimbal Stabilizer (MGS) is the patented mechanical optical image stabilizer (OIS) for camera modules. The MGS technology is tilting the image sensor and lens together, enabling anti-shaking performance for moving devices to take a sharp and clear image, even in the low light environment.



Features

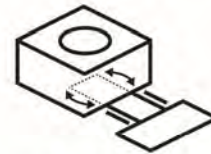
2-Axis Compensation
Small, Light Weight
18.80x18.80x15.80mm



Smallest
Gimbal



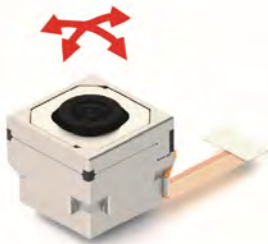
Multi-Axis
Compensation



Embedded
Moving FPC



One-stop
Solution



Stabilizer



Max. View Angle



Integrated
Design



Patents

Applications



**5G Smart
Helmet**



**Sport
Camera**



Drones



Robots

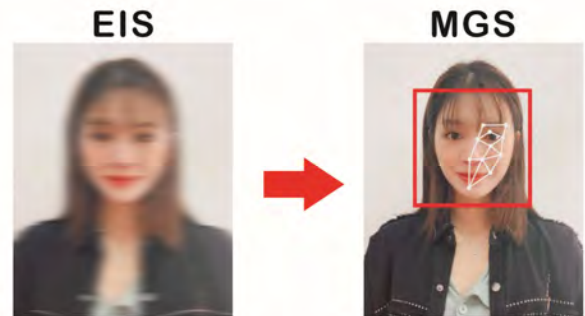
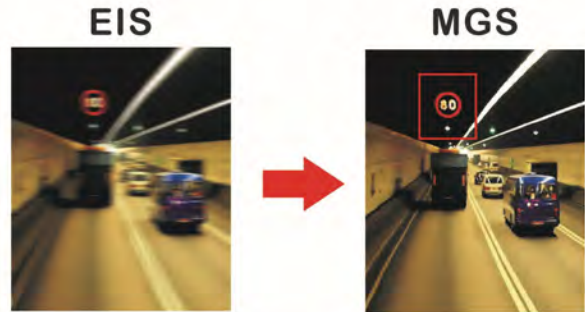
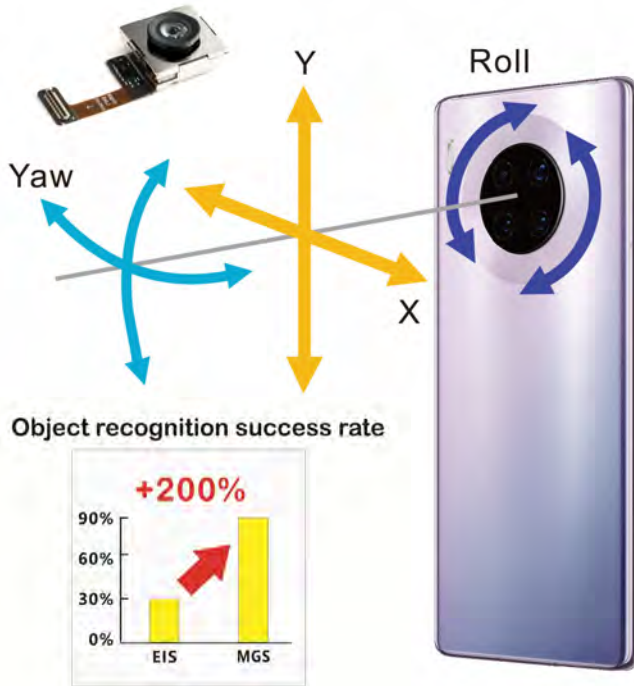


**Wearable
Cameras**

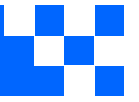


Micro Gimbal Stabilizer (MGS) for Mobile Phones

Micro Gimbal Stabilizer (MGS) is fitting in the compact size, enabling the smartphones and tablet PC to take clear images in the moving environment.



MGS camera significantly reduces blurry in low light environment, and supports dynamic face and object recognition with 2 times faster rate.



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Cameras Applications



Automotive Driver Pilot



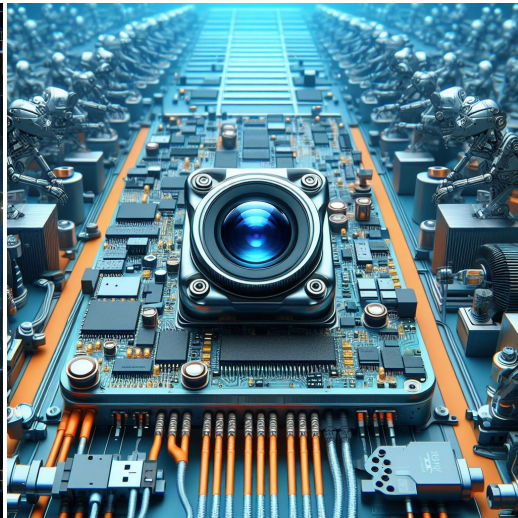
Live Streaming



Video Conference



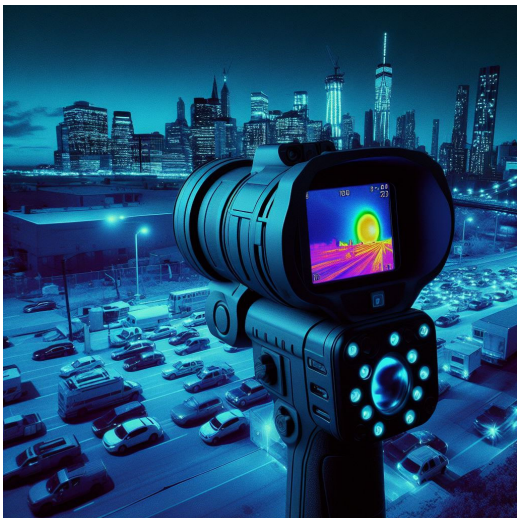
Eye Tracker Biometric Detection



Machine Vision



Agricultural Monitor



Night Vision Security



Drone and Sports Eagle Eyes



Interactive Pet Camera

www.KaiLapTech.com sales@KaiLapTech.com Tel: (852) 6908 1256 Fax: (852) 3017 6778

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Cameras Applications



IMAGING DEVICES





Camera Module Pinout Definition Reference Chart

OmniVision	Sony	Samsung	On-Semi	Aptina	Himax	GalaxyCore	PixArt	SmartSens	Sensors	
Pin Signal										
Description										
DGND GND										ground for digital circuit
AGND										ground for analog circuit
PCLK DCK										DVP PCLK output
XCLR PWDN XSHUTDOWN STANDBY										power down active high with internal pull-down resistor
MCLK XVCLK XCLK INCK										system input clock
RESET RST										reset active low with internal pull-up resistor
NC NULL										no connect
SDA SIO_D SIOD										SCCB data
SCL SIO_C SIOC										SCCB input clock
VSYNC XVS FSYNC										DVP VSYNC output
HREF XHS										DVP HREF output
DOVDD										power for I/O circuit
AFVDD										power for VCM circuit
AVDD										power for analog circuit
DVDD										power for digital circuit
STROBE FSTROBE										strobe output
FSIN										synchronize the VSYNC signal from the other sensor
SID										SCCB last bit ID input
ILPWM										mechanical shutter output indicator
FREQ										frame exposure / mechanical shutter
GPIO										general purpose inputs
SLASEL										I2C slave address select
AFEN										CEN chip enable active high on VCM driver IC
MIPI Interface										
MDN0 DN0 MD0N DATA_N DMO1N										MIPI 1st data lane negative output
MDP0 DP0 MD0P DATA_P DMO1P										MIPI 1st data lane positive output
MDN1 DN1 MD1N DATA2_N DMO2N										MIPI 2nd data lane negative output
MDP1 DP1 MD1P DATA2_P DMO2P										MIPI 2nd data lane positive output
MDN2 DN2 MD2N DATA3_N DMO3N										MIPI 3rd data lane negative output
MDP2 DP2 MD2P DATA3_P DMO3P										MIPI 3rd data lane positive output
MDN3 DN3 MD3N DATA4_N DMO4N										MIPI 4th data lane negative output
MDP3 DP3 MD3P DATA4_P DMO4P										MIPI 4th data lane positive output
MCN CLKN CLK_N DCKN										MIPI clock negative output
MCP CLKP MCP CLK_P DCKN										MIPI clock positive output
DVP Parallel Interface										
D0 DO0 Y0										DVP data output port 0
D1 DO1 Y1										DVP data output port 1
D2 DO2 Y2										DVP data output port 2
D3 DO3 Y3										DVP data output port 3
D4 DO4 Y4										DVP data output port 4
D5 DO5 Y5										DVP data output port 5
D6 DO6 Y6										DVP data output port 6
D7 DO7 Y7										DVP data output port 7
D8 DO8 Y8										DVP data output port 8
D9 DO9 Y9										DVP data output port 9
D10 DO10 Y10										DVP data output port 10
D11 DO11 Y11										DVP data output port 11



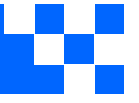
Camera Reliability Test

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



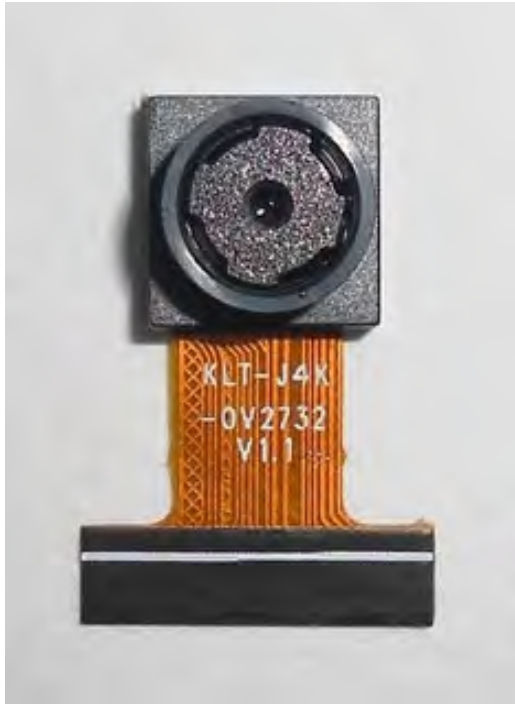


Inspection Item		Inspection Method	Standard of Inspection		
Category	Item				
Appearance	FPC/ PCB	Color	The Naked Eye	Major Difference is Not Allowed.	
		Be Torn/Chopped	The Naked Eye	Copper Crack Exposure is Not Allowed.	
		Marking	The Naked Eye	Clear, Recognizable (Within 30cm Distance)	
	Holder	Scratches	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		



KLT Package Solutions

KLT Camera Module



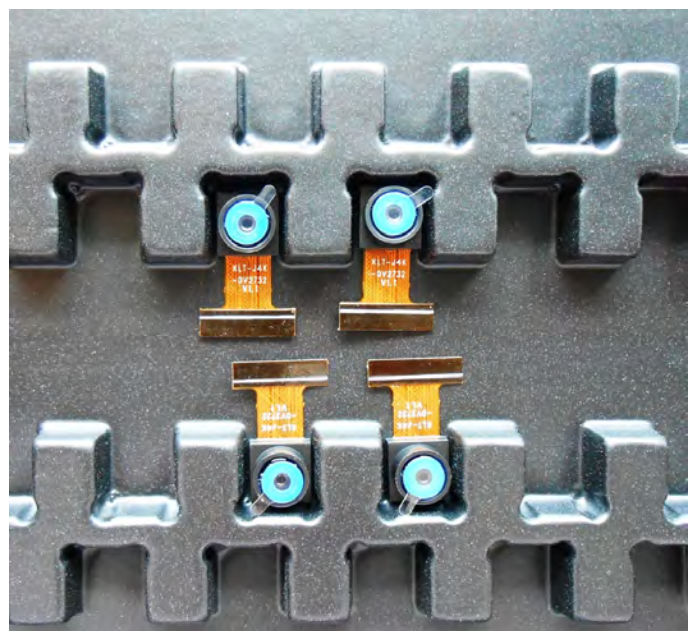
Complete with Lens Protection Film

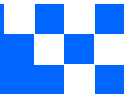


Tray with Grid and Space



Place Cameras on the Tray





Camera Modules Package Solution

Full Tray of Cameras



Cover Tray with Lid



Put Tray into Anti-Static Bag



Vacuum the Anti-Static Bag





Camera Modules Package Solution

Sealed Vacuum Bag with Labels

1. Model and Description 2. Quantity 3. Shipping Date 4. Caution





Large Order Package Solution

Place Foam Sheets Between Trays



Foam Sheets are Slightly Larger than Trays

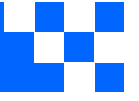


Place Foam Sheets and Trays into Box



Foam Sheets are Tightly Fitting Box





Small Order Package Solution

Place Foam Sheets and Trays into Small Box



Foam Sheets are Nicely Fitting the Small Box



Package in Small Box for Shipment



Place Small Boxes into Larger Box





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Carbon Box Package Solution

Seal the Carbon Box

Final Package Labelled Box



Carbon Box Ready for Shipment

1. Delivery Address and Phone No. 2. Box No. and Ship Date 3. Fragile Caution





Sample Order Package Solution

Place Sample into Small Anti-Static Bag



Place Connectors into Small Ant-Static Bag



Sample Labels on the Small Bag

1. Camera Module or Connector Model
2. Shipping Date and Quantity
3. Caution





Connectors Large Order Package Solution

Connectors in a Wheel



Label Connectors in the Wheel



The Wheel is Perfectly Fitting the Box



Connectors Box Ready for Shipment





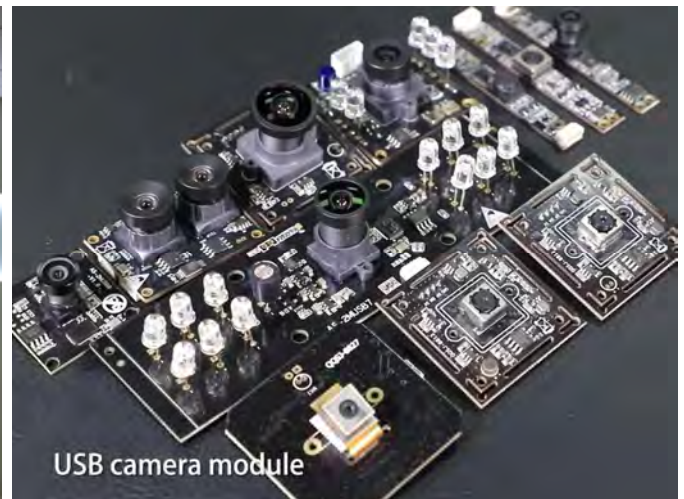
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Company Kai Lap Technologies (KLT)

Kai Lap Technologies Group Limited. (KLT) was established in 2009, a next-generation technology driven manufacturer specialized in research, design, and produce of audio and video products. KLT is occupying 20,000 square feet automated plants with 100 employees of annual throughput 30,000,000 units cameras.

KLT 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. KLT 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

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





CMOS CAMERA MODULES



your BEST camera module partner

KLT Strength

Powerful Factory



Professional Service



Promised Delivery



www.KaiLapTech.com sales@KaiLapTech.com Tel: (852) 6908 1256 Fax: (852) 3017 6778

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