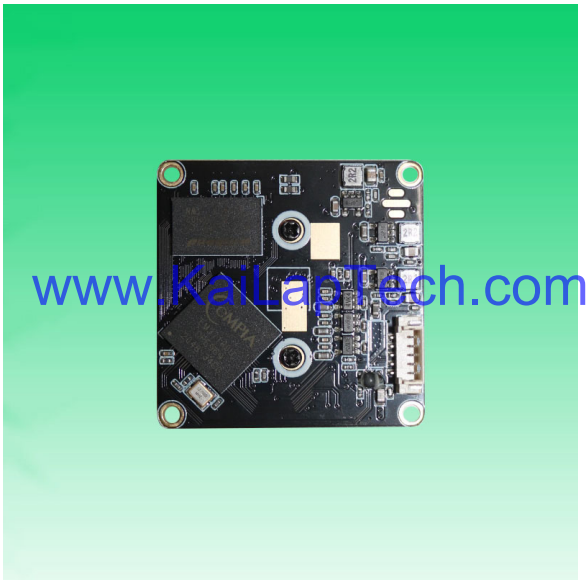
KLT-USB-0697 V1

13MP Sony IMX214 Fixed Focus USB 2.0 Camera Module



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KLT-USB-0697 V1 is a 13MP Fixed Focus USB camera module based on 1/3.06" IMX214 image sensor. It delivers high-speed, 4K resolution ultra sharp image.

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The compact size lens holder enables fitting in small mobile devices. This camera module is ideal solution for face recognition, identity detection, access control.

Key Features

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- 4K resolution (4224 x 3192) Sony IMX214 sensor
- High speed USB 2.0 Plug and Play
- MJPG output format
- Low power consumption
- Compact size
- UVC compliant to Windows, Linux, OS with UVC driver
- USB OTG (On-The-Go) support

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KLT-USB-0697 V1

13MP Sony IMX214 Fixed Focus USB 2.0 Camera Module

Camera Module No.	KLT-USB-0697 V1
Resolution	13MP
Image Sensor	IMX214
Sensor Type	1/3.06"
Pixel Size	1.12 um x 1.12 um
EFL	TBD
F.NO	2.20
Pixel	4224 x 3136
View Angle	69°(DFOV)
Lens Dimensions	14.50 x 14.50 x 9.33 mm
Module Type	Fixed Focus
Lens Model	KLT-LENS-0697 V1
Interface	USB 2.0
Output Format	MJPG
Auto Control	Saturation, Contrast, Acutance White Balance, Exposure
Audio	None
Input Voltage	DC 5V
Working Current	Max 500mA
PCB Size	38 x 38 mm
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	-20°C to +70°C
USB Cable	KLT-Cable-U013

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

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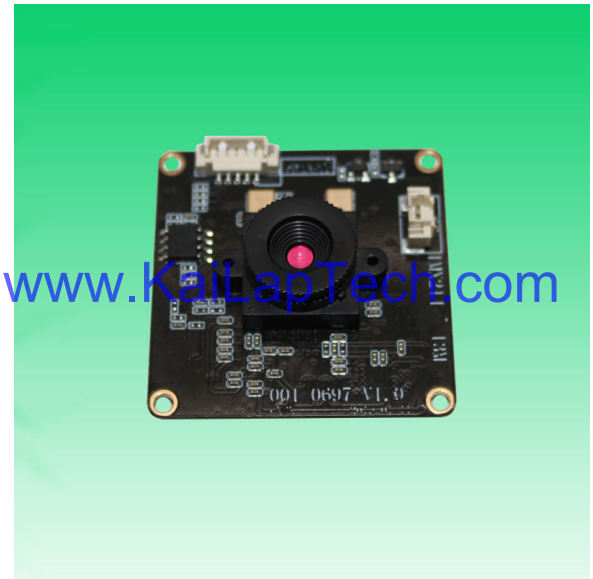
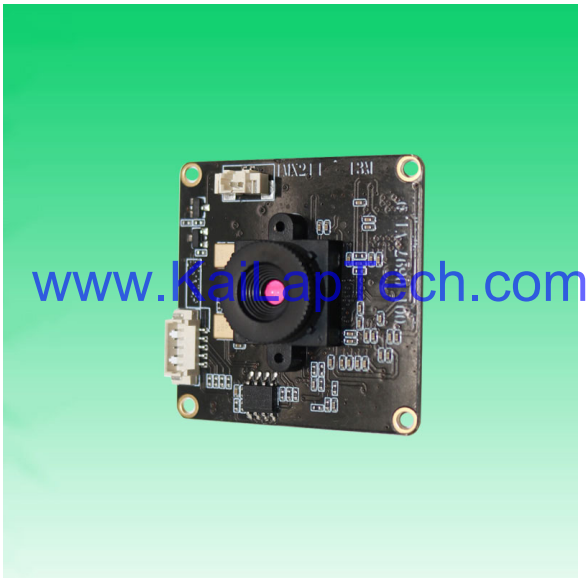
KLT-USB-0697 V1

13MP Sony IMX214 Fixed Focus USB 2.0 Camera Module



Top View



Side View

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Bottom View

Mating Connector

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KLT-USB-0697 V1

13MP Sony IMX214 Fixed Focus USB 2.0 Camera Module

FORMAT	RESOLUTION	FRAME RATE
		USB 2.0
MJPG	640 x 480 (VGA)	25 FPS
	1280 x 720 (720P)	25 FPS
	1920 x 1080 (1080P)	25 FPS
	2592 x 1944 (5MP)	10 FPS
	3840 x 2160 (8MP)	7 FPS
	4208 x 3120 (13MP)	7 FPS

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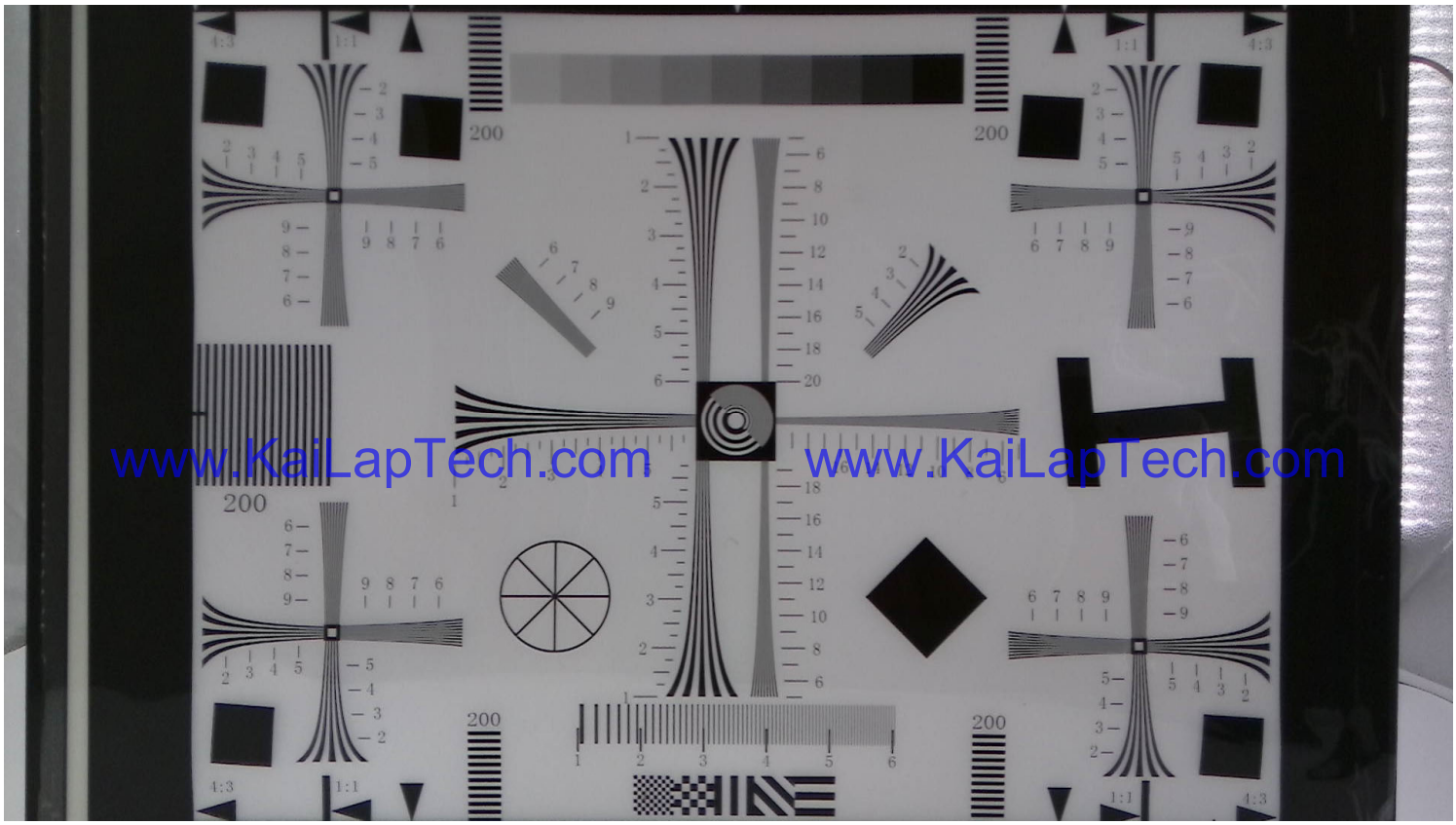

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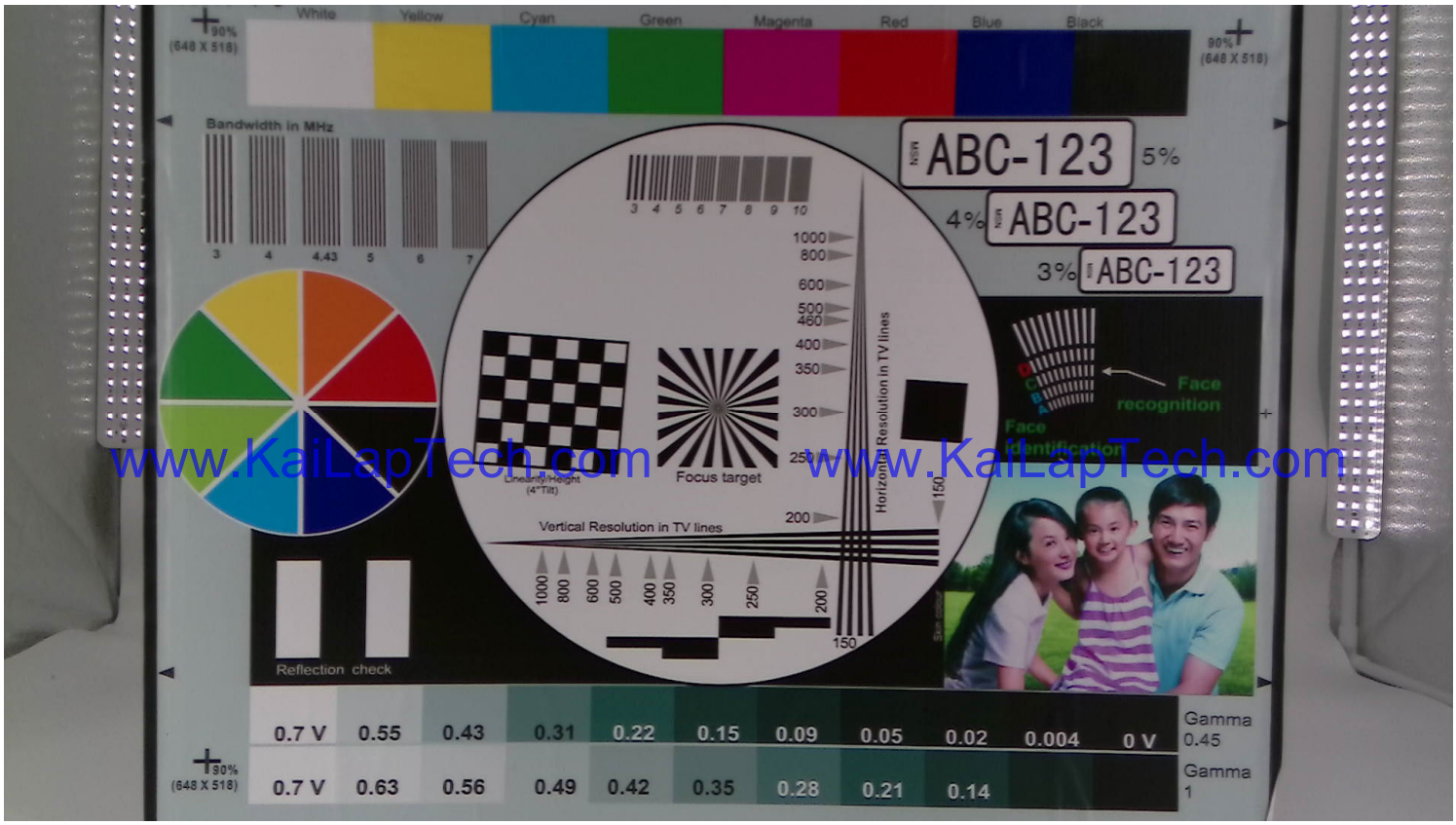

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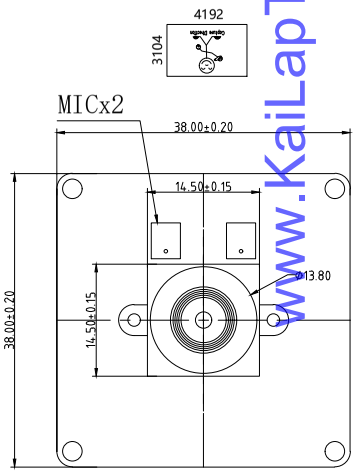
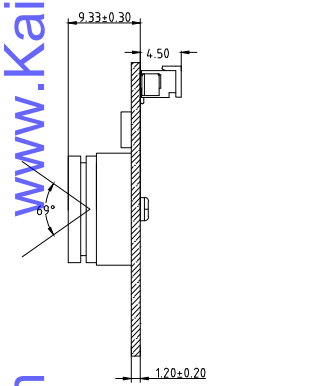
Version	Information	Date
V1.0	First Version	5-24-2022

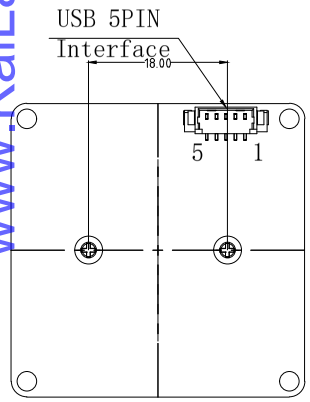
PIN NO	SIGNAL
PIN1	USB 5V
02	D-
03	D+
04	DGND
05	DGND



TOP VIEW



SIDE VIEW



BOTTOM VIEW

Parameter:

1、Sensor specification:

Image Sensor: 13MP
Pixel: 1.12um×1.12um
Lens Type: 1/3.06
Important Voltage Description: USB 5V (external power supply);

2、Lens specification:

FOV: 69°(D)
F/NO.: 2.2
TV distortion: <1.0%
Focal length: TBD
Composition: 5P+IR FILTER
IR Cut Coating: 650nm±10nm@50%

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Designed By	Kevin	Model Name:	KLT-USB-003-0697
Checked By	Aouly_Yan	Projection Type: Third Angle	Unit: mm / Material: ---------- / Scale: 1:1 / Sheet: 1 of 1 / Version: 1/0

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SONY

[Product Brief]

Ver.1.0

IMX214

Diagonal 5.867mm (Type 1/3.06) 13M Pixel CMOS Image Sensor with Square Pixel for Color Cameras

Description

IMX214 is a diagonal 5.867mm(Type 1/3.06) 13M pixel CMOS active pixel type stacked image sensor with a square pixel array. It adopts Exmor RS™ technology to achieve high speed image capturing by column parallel A/D converter circuits and high sensitivity and low noise image (comparing with conventional CMOS image sensor) through the backside illuminated imaging pixel structure. R, G, and B pigment primary color mosaic filter is employed.
By introducing spacially varying exposure technology, high dynamic range still pictures and movies are achievable. It equips an electronic shutter with variable integration time. It operates with three power supply voltages: analog 2.7 V, digital 1.0V and 1.8 V for input/output interface and achieves low power consumption.
IMX214 is designed for use in cellular phones or tablet devices*.

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.

Functions and Features

- ◆Back illuminated and stacked CMOS image sensor Exmor RS
- ◆Single Frame High Dynamic Range (HDR) with equivalent full pixels.
- ◆High signal to noise ratio (SNR).
- ◆Full resolution @30fps (Normal / HDR) 4K2K @30fps (Normal / HDR)1080p @60fps (Normal / HDR)
- ◆Output video format of RAW10/8, COMP8/6
- ◆Pixel binning readout and H/V sub sampling function
- ◆Advanced Noise Reduction (Chroma noise reduction and luminance noise reduction)
- ◆Independent flipping and mirroring.
- ◆CSI 2 serial data output (MIPI 2lane/4lane, Max. 1.2Gbps/lane, DPHY spec. ver. 1.1 compliant)
- ◆2wire serial communication
- ◆Two PLLs for independent clock generation for pixel control and data output interface.
- ◆Advanced Noise Reduction.
- ◆Dynamic Defect Pixel Correction.
- ◆Zero shutter lag.
- ◆Power on reset function
- ◆Dual sensor synchronization operation.
- ◆8K bit of OTP ROM for users.
- ◆Built in temperature sensor

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NOTE)
1. When using this product for another application, Sony does not guarantee the quality and reliability of product. Therefore, don't use this for applications other than cellular phone and Tablet PCs. Consult your Sony sales representative if you have any questions.

Device Structure

- ◆CMOS image sensor
- ◆Image size : Diagonal 5.867mm (Type 1/3.06)
- ◆Total number of pixels : 4224 (H) ×3200(V) approx. 13.51M pixels
- ◆Number of effective pixels : 4224 (H) ×3136 (V)approx. 13.25 M pixels
- ◆Number of active pixels : 4208 (H) ×3120 (V) approx. 13.13 M pixels
- ◆Chip size : 6.100mm (H) × 4.524mm (V)
- ◆Unit cell size : 1.12 μm (H) × 1.12 μm (V)
- ◆Substrate material : Silicon

Functional Description

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System Outline

IMX214 is a CMOS active pixel type image sensor which adopts the Exmor RS ™ technology to achieve high sensitivity, low noise and high speed image capturing. It is embedded with backside illuminated imaging pixel, low noise analog amplifier,
column parallel A/D converters which enables high speed capturing, digital amplifier, image binning circuit, timing control circuit for imaging size and frame rate, CSI2 image data high speed serial interface, PLL oscillator, and serial communication interface to control these functions.
Several additional image processing functions and peripheral circuits are also included for easy system optimization by the users. A one time programmable memory is embedded in the chip for storing the user data. It has 8 K-bit for users, 10 K-bit as a whole.

Block Diagram

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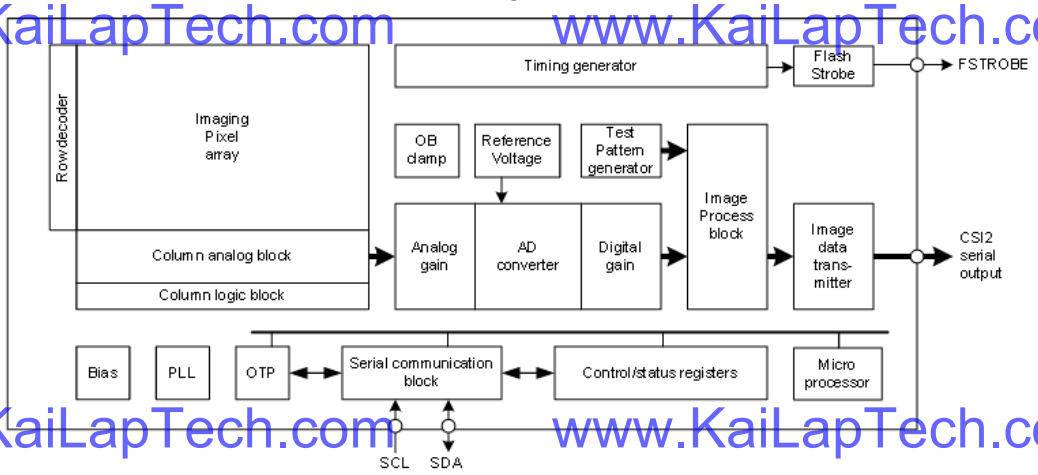

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Exmor RS

* Exmor RS is a trademark of Sony Corporation. The Exmor RS is a Sony's CMOS image sensor with high-resolution, high-performance and compact size by replacing a supporting substrate in Exmor R™ which changed fundamental structure of Exmor™ pixel adopted column parallel A/D converter to back-illuminated type, with layered chips formed signal processing circuits.

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Application circuits shown, if any, are typical examples illustrating the operation of the devices. Sony cannot assume responsibility for any problems arising out of the use of these circuits.

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Cameras Applications

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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

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Camera Inspection Standard

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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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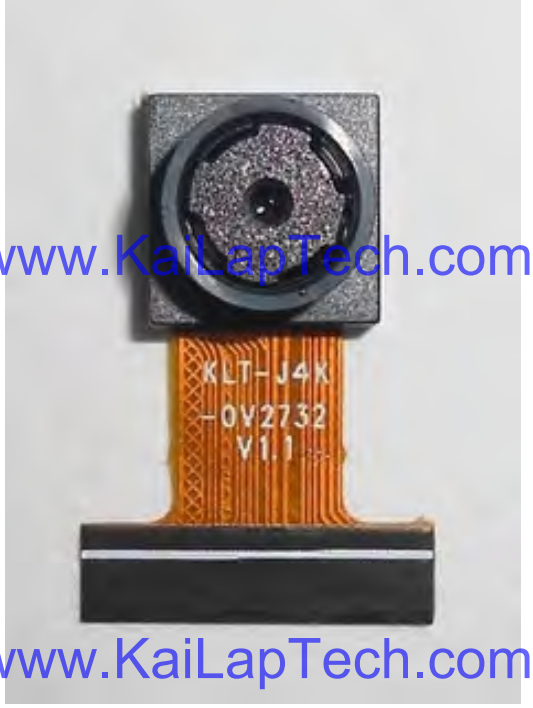
KLT Package Solutions

KLT Camera Module



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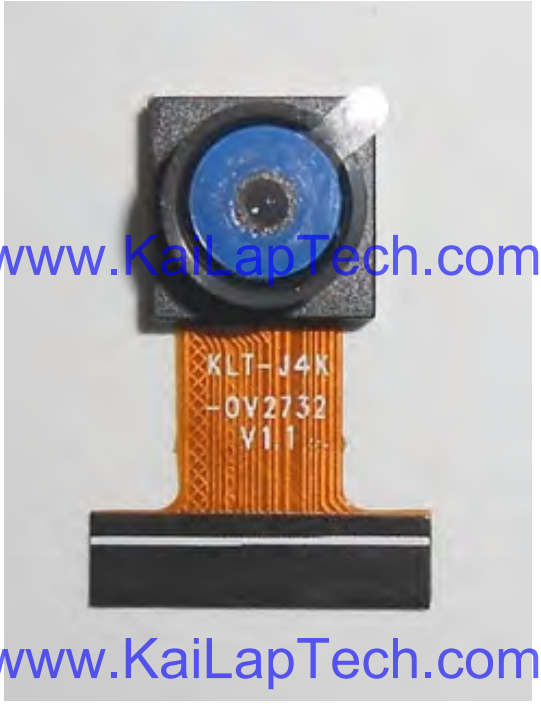
Complete with Lens Protection Film



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Tray with Grid and Space

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Place Cameras on the Tray

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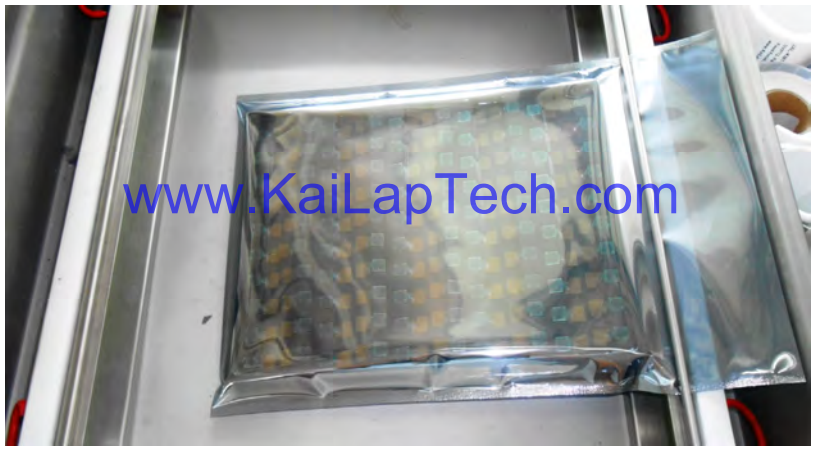
Camera Modules Package Solution

Full Tray of Cameras

Cover Tray with Lid

Put Tray into Anti-Static Bag

Vacuum the Anti-Static Bag



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Camera Modules Package Solution

Sealed Vacuum Bag with Labels
1. Model and Description 2. Quantity 3. Shipping Date 4. Caution

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Large Order Package Solution

Place Foam Sheets Between Trays

Foam Sheets are Slightly Larger than Trays

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Place Foam Sheets and Trays into Box

Foam Sheets are Tightly Fitting Box

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Small Order Package Solution

Place Foam Sheets and Trays into Small Box

Foam Sheets are Nicely Fitting the Small Box

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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

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Sample Order Package Solution

Place Sample into Small Anti-Static Bag

Place Connectors into Small Ant-Static Bag

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Sample Labels on the Small Bag
1. Camera Module or Connector Model 2. Shipping Date and Quantity 3. Caution

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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.

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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").

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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 subsequential events.

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KLT Strength

Powerful Factory

Professional Service

Promised Delivery

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