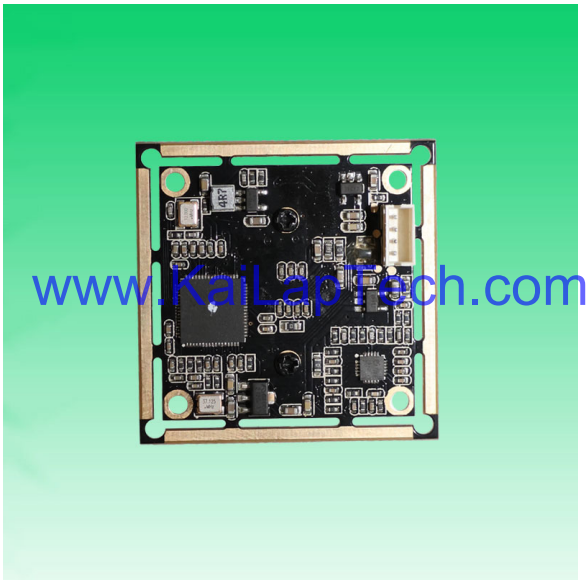
KLT-USB-1559 V1

8.46MP 1559 Sony IMX415 M14 Fixed Focus USB 2.0 Camera Module



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KLT-USB-1559 V1 is an 8MP Fixed Focus USB camera module based on 1/2.8" IMX415 image sensor. It delivers high-speed, 4K resolution ultra sharp image.

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The S-mount (M14) lens holder enables customers to choose different lens as per varies applications. This camera module is ideal solution for face recognition, identity detection, automotive, access control.

Key Features

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- 4K resolution (3864 x 2228) Sony IMX415 sensor
- 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

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KLT-USB-1559 V1

8.46MP 1559 Sony IMX415 M14 Fixed Focus USB 2.0 Camera Module

Camera Module No.	KLT-USB-1559 V1
Resolution	8.46MP
Image Sensor	IMX415
Sensor Type	1/2.8"
Pixel Size	1.4 um x 1.4 um
EFL	3.24 mm
F.NO	2.00
Pixel	3864 x 2228
View Angle	90°(DFOV)
Lens Dimensions	15.30 x 15.30 x 24.20 mm
Module Type	Fixed Focus
Lens Model	KLT-LENS-1559 V1
Interface	USB 2.0
Output Format	MJPG / YUV2
Auto Control	Saturation, Contrast, Acutance White Balance, Exposure
Audio (Optional)	Digital Microphone, Single / Dual-Channel
Input Voltage	DC 5V
Working Current	Max 500mA
PCB Size	38 x 38 mm / 32 x 32 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	-30°C to +85°C
USB Cable	KLT-Cable-U015

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

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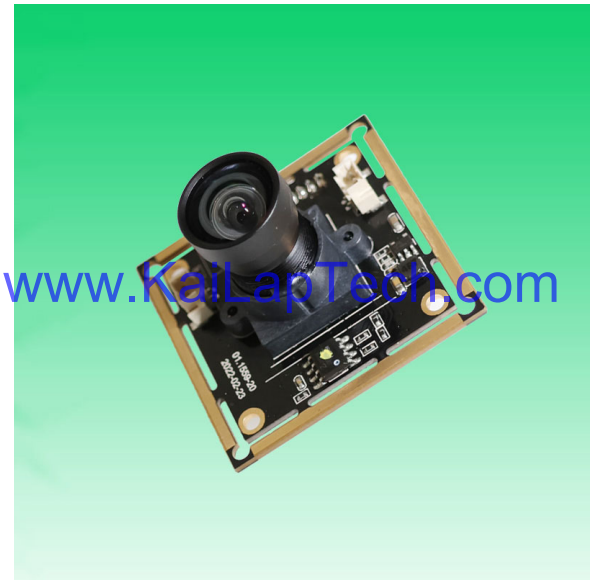
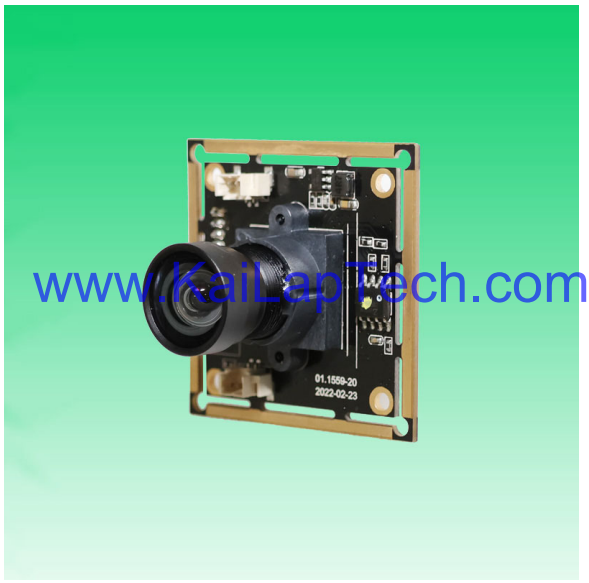
8.46MP 1559 Sony IMX415 M14 Fixed Focus USB 2.0 Camera Module



Top View



Side View

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Bottom View

Mating Connector

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KLT-USB-1559 V1

8.46MP 1559 Sony IMX415 M14 Fixed Focus USB 2.0 Camera Module

FORMAT	RESOLUTION	FRAME RATE
		USB 2.0
MJPG	800 x 600 (VGA)	25 FPS
	1280 x 720 (720P)	25 FPS
	1920 x 1080 (1080P)	25 FPS
	2880 x 2160 (6MP)	25 FPS
	3840 x 2160 (4K)	25 FPS
YUY2	800 x 600 (VGA)	20 FPS
	1280 x 720 (720P)	10 FPS
	1920 x 1080 (1080P)	5 FPS
	2880 x 2160 (6MP)	2 FPS
	3840 x 2160 (4K)	2 FPS

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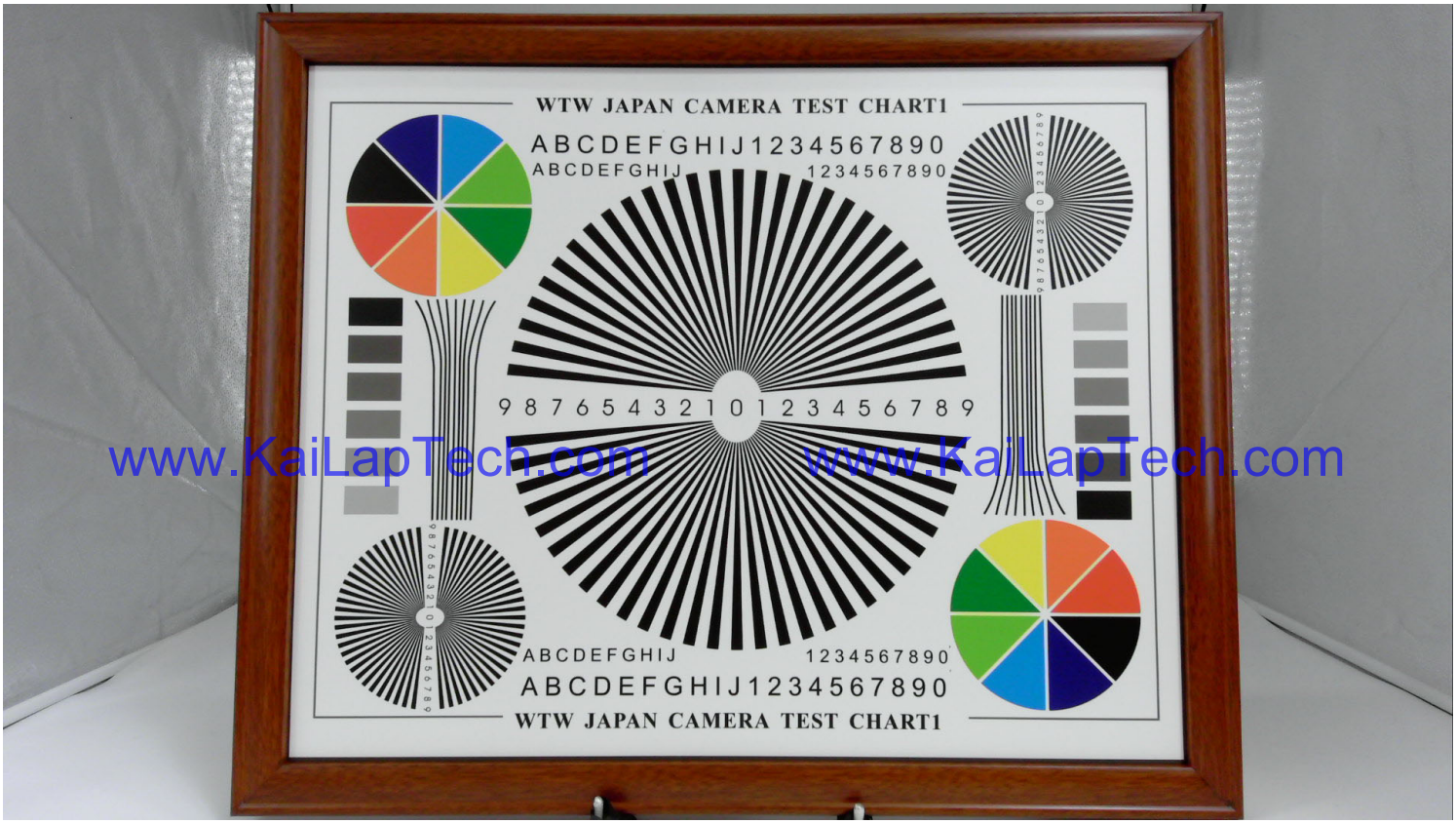

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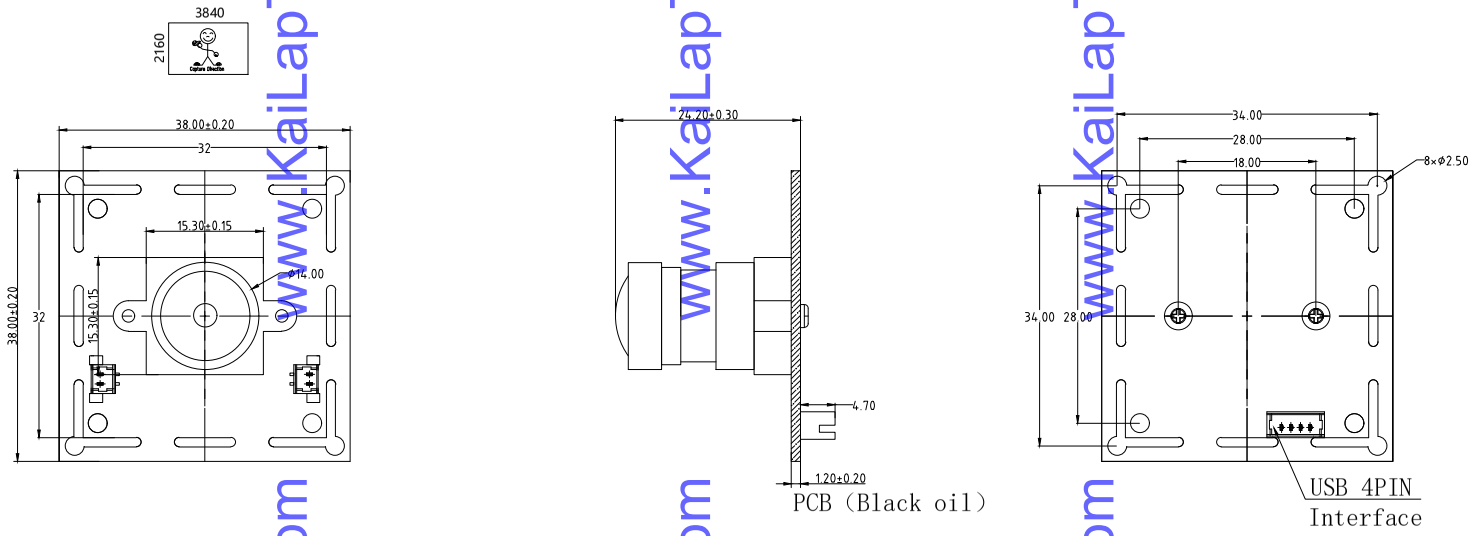
Version	Information	Date
V1.0	First Version	8-19-2022

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



TOP VIEW SIDE VIEW BOTTOM VIEW

Parameter:

1、Sensor specification:

Image Sensor: IMX415

Pixel: 1.45um×1.45um

Lens Type: 1/2.8

Important Voltage Description: USB 5V (external power supply);

2、Lens specification:

FOV: 90°(D)

F/NO.: TBD

TV distortion: TBD

Focal length: TBD

Composition: 2G2P+IR FILTER

IR Cut Coating: 650nm±10nm@50%

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Designed By	Kevin	Model Name:	KLT-USB-1559 V1
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 Information]

Ver.1.0

IMX415-AAQR

Diagonal 6.43 mm (Type 1/2.8) CMOS Solid-state Image Sensor with Square Pixel for Color Cameras

Description

The IMX415-AAQR is a diagonal 6.4 mm (Type 1/2.8) CMOS active pixel type solid-state image sensor with a square pixel array and 8.46 M effective pixels. This chip operates with analog 2.9 V, digital 1.1 V, and interface 1.8 V triple power supply, and has low power consumption. High sensitivity, low dark current and no smear are achieved through the adoption of R, G and B primary color mosaic filters. This chip features an electronic shutter with variable charge-integration time.
(Applications: Surveillance cameras, FA cameras, Industrial cameras)

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Features

- ◆CMOS active pixel type dots
- ◆Built-in timing adjustment circuit, H/V driver and serial communication circuit
- ◆Input frequency: 24 MHz / 27 MHz / 37.125 MHz / 72 MHz / 74.25 MHz
- ◆Number of recommended recording pixels: 3840 (H) × 2160 (V) approx. 8.29 M pixels
- ◆Readout mode
  All-pixel scan mode
  Horizontal / Vertical 2/2-line binning mode
  Window cropping mode
  Horizontal / Vertical direction - Normal / Inverted readout mode
- ◆Readout rate
  Maximum frame rate in
  All-pixel scan mode: 12 bit: 60.3 frame/s, 10 bit: 90.9 frame/s
- ◆High dynamic range (HDR) function
  Multiple exposure HDR
  Digital overlap HDR
- ◆Synchronizing sensors function
- ◆Variable-speed shutter function (resolution 1H units)
- ◆CDS / PGA function
  0 dB to 30 dB : Analog Gain 30 dB (step pitch 0.3 dB)
  30.3 dB to 72 dB : Analog Gain 30 dB + Digital Gain 0.3 dB to 42 dB (step pitch 0.3 dB)
- ◆Supports I/O
  CSI-2 serial data output (2 Lane / 4 Lane), RAW10 / RAW12 output
- ◆Recommended exit pupil distance: –30 mm to –∞

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STARVIS

* STARVIS is a trademark of Sony Corporation. The STARVIS is back-illuminated pixel technology used in CMOS image sensors for surveillance camera applications. It features a sensitivity of 2000 mV or more per 1 μm^2 (color product, when imaging with a 706 cd/m^2 light source, F5.6 in 1 s accumulation equivalent), and realizes high picture quality in the visible-light and near infrared light regions.

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Device Structure

- ◆CMOS image sensor
- ◆Image size: Diagonal 6.4 mm (Type 1/2.8) approx. 8.40 M pixels, All pixels
- ◆Total number of pixels: 3864 (H) × 2228 (V) approx. 8.60 M pixels
- ◆Number of effective pixels: 3864 (H) × 2192 (V) approx. 8.46 M pixels
- ◆Number of active pixels: 3864 (H) × 2176 (V) approx. 8.40 M pixels
- ◆Number of recommended recording pixels: 3840 (H) × 2160 (V) approx. 8.29 M pixels
- ◆Unit cell size: 1.45 µm (H) × 1.45 µm (V)
- ◆Optical black: Horizontal (H) direction: Front 0 pixel, rear 0 pixel
  Vertical (V) direction: Front 36 pixels, rear 0 pixel
- ◆Dummy: Horizontal (H) direction: Front 0 pixel, rear 0 pixel
  Vertical (V) direction: Front 1 pixel, rear 1 pixel
- ◆Package: 114 pin LGA

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Image Sensor Characteristics

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F5.6)	Typ.	2048 Digit	1/30 s accumulation 12 bit converted value
Saturation signal	Min.	3895 Digit	12 bit converted value

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Basic Drive Mode

Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
All pixel	3840 (H) × 2160 (V) approx. 8.29 M pixels	90.9	CSI-2	10
Horizontal/ Vertical 2/2-line binning	1920 (H) × 1080 (V) approx. 2.07 M pixels	90.9	CSI-2	10

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SONY

[Product Information]

Ver.1.0

IMX415-AAMR

Diagonal 6.43 mm (Type 1/2.8) CMOS Solid-state Image Sensor with Square Pixel for Monochrome Cameras

Description

The IMX415-AAMR is a diagonal 6.4 mm (Type 1/2.8) CMOS active pixel type solid-state image sensor with a square pixel array and 8.46 M effective pixels. This chip operates with analog 2.9 V, digital 1.1 V, and interface 1.8 V triple power supply, and has low power consumption. High sensitivity, low dark current and no smear are achieved. This chip features an electronic shutter with variable charge-integration time.

(Applications: Surveillance cameras, FA cameras, Industrial cameras)

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Features

- ◆CMOS active pixel type dots
- ◆Built-in timing adjustment circuit, H/V driver and serial communication circuit
- ◆Input frequency: 24 MHz / 27 MHz / 37.125 MHz / 72 MHz / 74.25 MHz
- ◆Number of recommended recording pixels: 3840 (H) × 2160 (V) approx. 8.29 M pixels
- ◆Readout mode

  All-pixel scan mode

  2 × 2 adjacent pixel binning mode

  Window cropping mode

  Horizontal / Vertical direction - Normal / Inverted readout mode
- ◆Readout rate

  Maximum frame rate in

  All-pixel scan mode: 12 bit: 60.3 frame/s, 10 bit: 90.9 frame/s
- ◆High dynamic range (HDR) function

  Multiple exposure HDR

  Digital overlap HDR
- ◆Synchronizing sensors function
- ◆Variable-speed shutter function (resolution 1H units)
- ◆CDS / PGA function

  0 dB to 30 dB : Analog Gain 30 dB (step pitch 0.3 dB)

  30.3 dB to 72 dB : Analog Gain 30 dB + Digital Gain 0.3 dB to 42 dB (step pitch 0.3 dB)
- ◆Supports I/O

  CSI-2 serial data output (2 Lane / 4 Lane), RAW10 / RAW12 output
- ◆Recommended exit pupil distance: –100 mm to –∞

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STARVIS

* STARVIS is a trademark of Sony Corporation. The STARVIS is back-illuminated pixel technology used in CMOS image sensors for surveillance camera applications. It features a sensitivity of 2000 mV or more per 1 μm^2 (color product, when imaging with a 706 cd/m^2 light source, F5.6 in 1 s accumulation equivalent), and realizes high picture quality in the visible-light and near infrared light regions.

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Device Structure

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- ◆Number of recommended recording pixels: 3840 (H) × 2160 (V) approx. 8.29 M pixels
- ◆Unit cell size: 1.45 µm (H) × 1.45 µm (V)
- ◆Optical black: Horizontal (H) direction: Front 0 pixel, rear 0 pixel
  Vertical (V) direction: Front 36 pixels, rear 0 pixel
- ◆Dummy: Horizontal (H) direction: Front 0 pixel, rear 0 pixel
  Vertical (V) direction: Front 1 pixel, rear 1 pixel
- ◆Package: 114 pin LGA

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Image Sensor Characteristics

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F8)	Typ.	1570 Digit	1/30 s accumulation 12 bit converted value
Saturation signal	Min.	3895 Digit	12 bit converted value

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Basic Drive Mode

Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
All pixel	3840 (H) × 2160 (V) approx. 8.29 M pixels	90.9	CSI-2	10
2 × 2 adjacent pixel binning	1920 (H) × 1080 (V) approx. 2.07 M pixels	90.9	CSI-2	10

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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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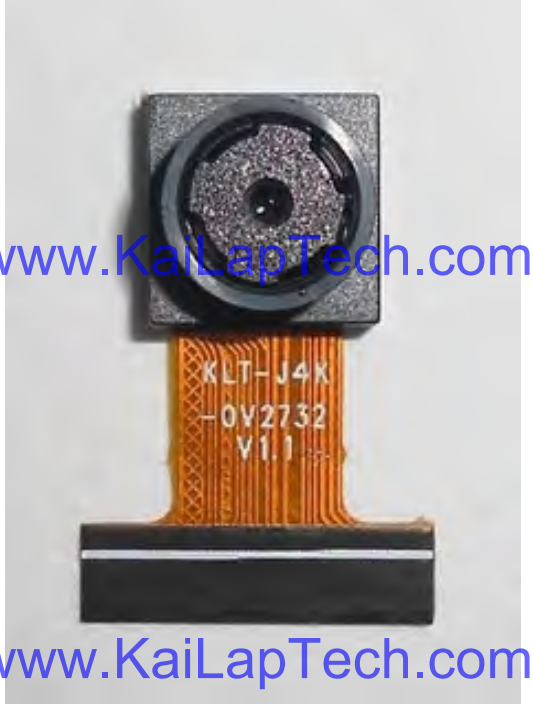
KLT Package Solutions

KLT Camera Module



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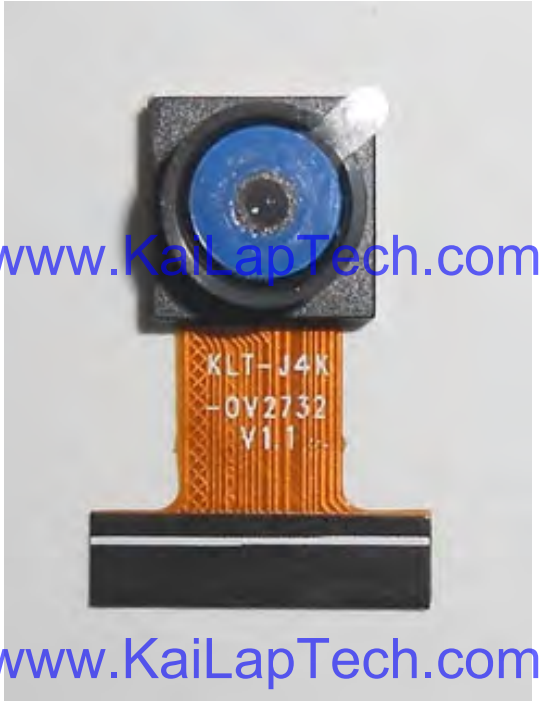
Complete with Lens Protection Film



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Tray with Grid and Space

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Place Cameras on the Tray

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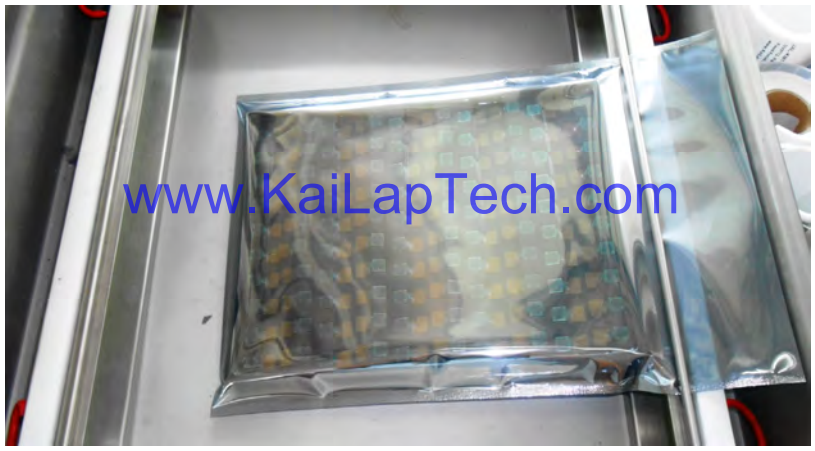
Camera Modules Package Solution

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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