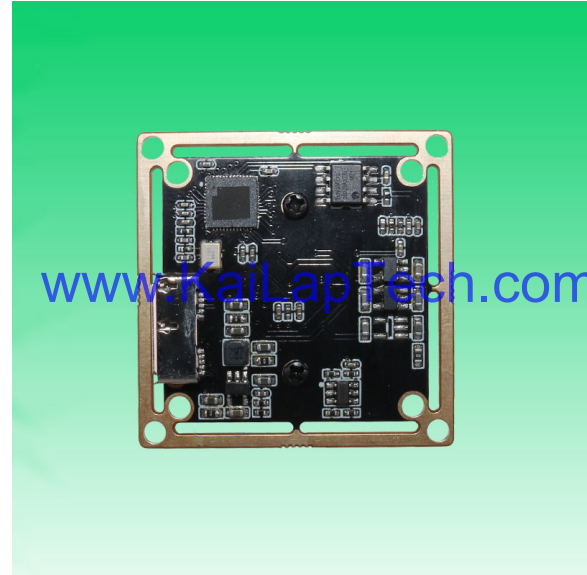


**KLT-U3FF-IMX335 V1.0****5MP Sony IMX335 M16 Fixed Focus USB 3.0 Camera Module**

KLT-U3FF-IMX335 V1.0 is a 5MP Fixed Focus USB camera module based on 1/2.8" IMX335 image sensor. It delivers high-speed, 2K resolution ultra sharp image.

The S-mount (M16) lens holder enables customers to choose different lens as per varies applications. This camera module is ideal solution for face recognition, identity detection, access control.

Key Features

- 2K resolution (2592 x 1944) Sony IMX335 sensor
- High speed USB 3.0 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



KLT-U3FF-IMX335 V1.0

5MP Sony IMX335 M16 Fixed Focus USB 3.0 Camera Module

Camera Module No.	KLT-U3FF-IMX335 V1.0
Resolution	5MP
Image Sensor	IMX335
Sensor Type	1/2.8"
Pixel Size	2.0 um x 2.0 um
EFL	3.91 mm
F.NO	1.08
Pixel	2592 x 1944
View Angle	106.0°(DFOV) 92.6°(HFOV) 48.6°(VFOV)
Lens Dimensions	23.50 x 19.50 x 36.94 mm
Module Type	Fixed Focus
Lens Model	KLT-LENS-PH6005E-H043B
Interface	USB 3.0
Output Format	MJPEG / YUV2
Auto Control	Saturation, Contrast, Acutance White Balance, Exposure
Audio	None
Input Voltage	DC 5V
Working Current	Max 500mA
PCB Size	38mm x 38mm / 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
Lens Type	650nm IR Cut
Operating Temperature	-30°C to +85°C
USB Cable	KLT-Cable-U007

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





KLT-U3FF-IMX335 V1.0

5MP Sony IMX335 M16 Fixed Focus USB 3.0 Camera Module



Top View



Side View

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Bottom View



Mating Connector



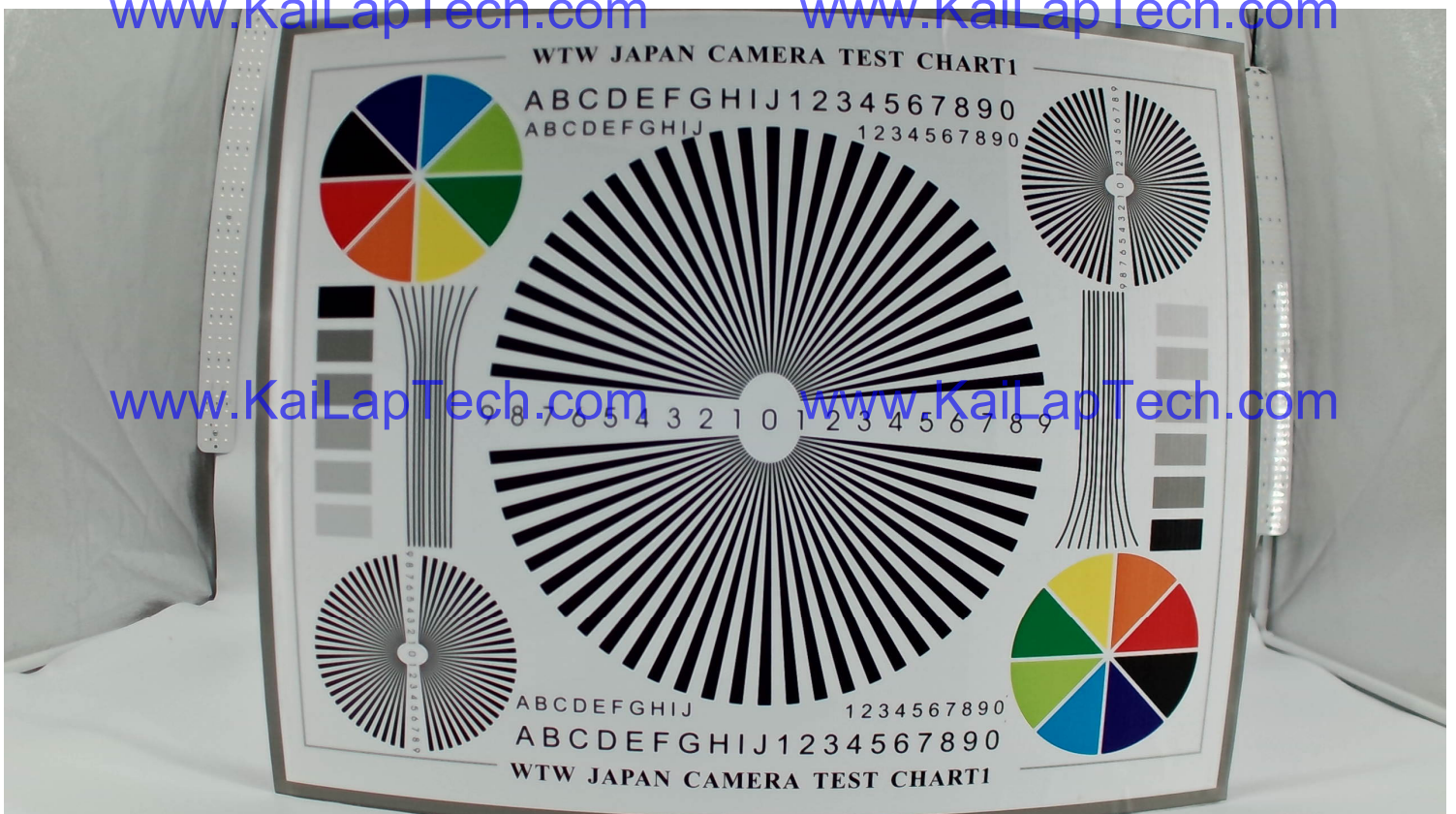
KLT-U3FF-IMX335 V1.0

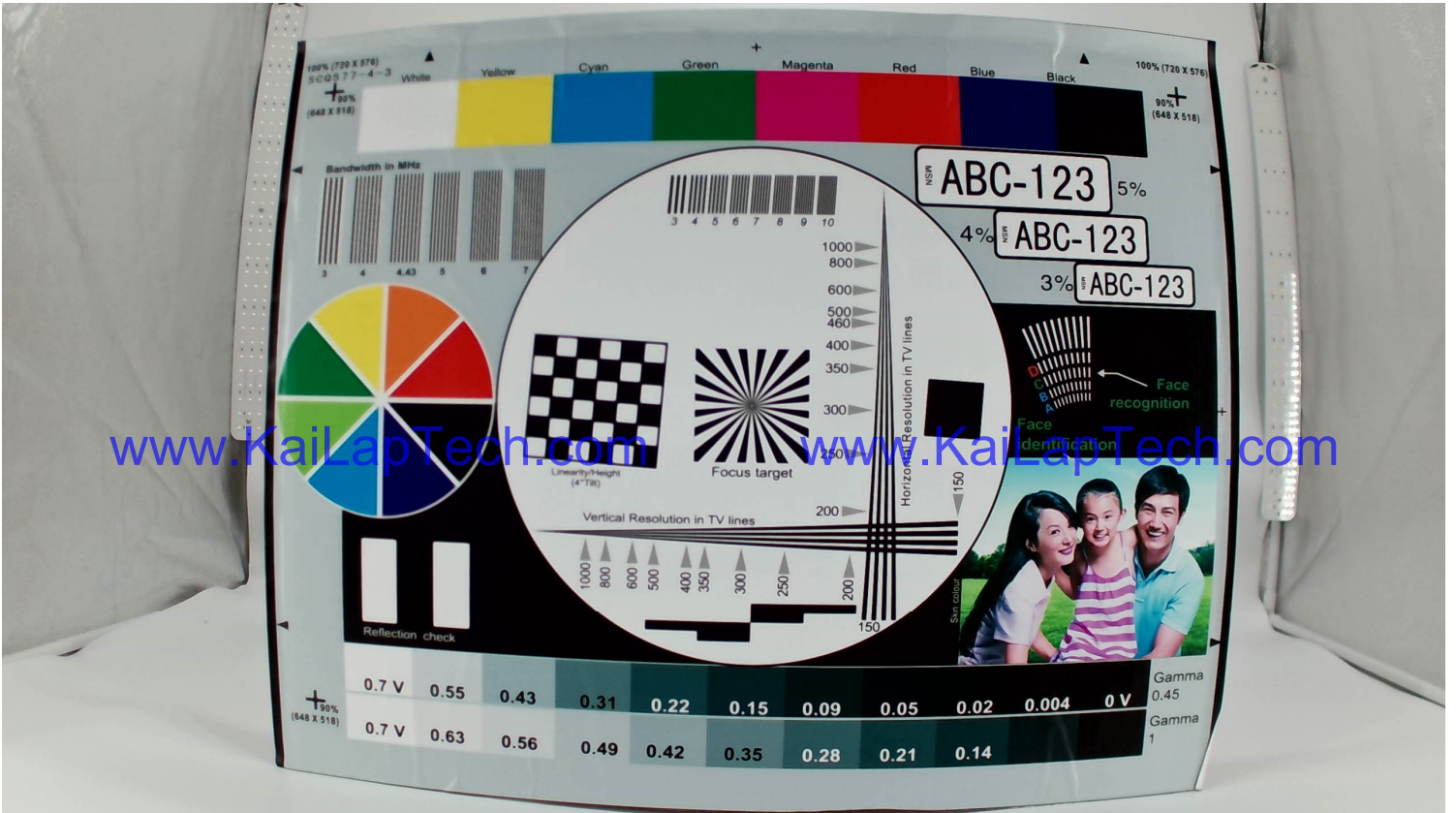
5MP Sony IMX335 M16 Fixed Focus USB 3.0 Camera Module

FORMAT	RESOLUTION	FRAME RATE
		USB 3.0
MJPG	640 x 480 (VGA)	55 FPS
	800 x 600	55 FPS
	1024 x 768	55 FPS
	1280 x 720 (720P)	55 FPS
	1280 x 1024	55 FPS
	1600 x 1200	25 FPS
	1920 x 1080 (1080P)	55 FPS
	2048 x 1536	25 FPS
	2560 x 1440	25 FPS
	2592 x 1944 (5MP)	25 FPS
YUY2	640 x 480 (VGA)	55 FPS
	800 x 600	55 FPS
	1024 x 768	55 FPS
	1280 x 720 (720P)	55 FPS
	1280 x 1024	55 FPS
	1600 x 1200	25 FPS
	1920 x 1080 (1080P)	55 FPS
	2048 x 1536	25 FPS
	2560 x 1440	25 FPS
	2592 x 1944 (5MP)	25 FPS



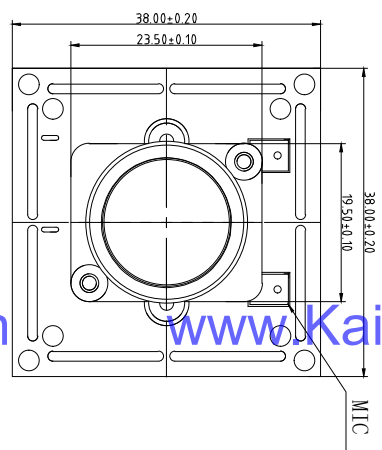
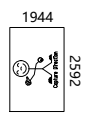
your BEST camera module partner



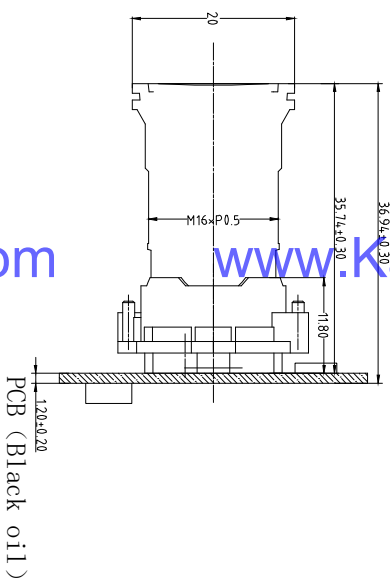




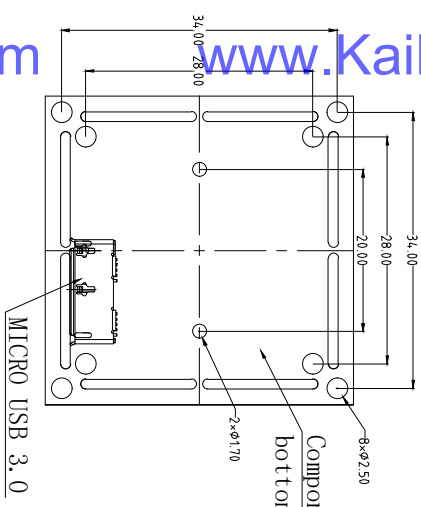
Version	Information	Date
V1.0	First Version	11-4-2020



TOP VIEW



SIDE VIEW



BOTTOM VIEW

Parameter:

1、Sensor specification:

Image Sensor: IMX335
 Pixel: 2.0um×2.0um
 Lens Type: 1/2.8
 Important Voltage Description: USB 5V
 (external power supply);

2、Lens specification:

F_{0V}: 106°(D);92.6°(H);48.6°(V)
 F/#D: 1.08
 TVdistortion: <-16.6%
 Focal length: 3.91mm
 Composition: 3G3P+IR FILTER
 IR Cut Coating: 650nm±10nm@50%

Kai Lap Technologies Group Ltd

Designed By Kevin

Model Name: KLT-U3FF-IMX335 V1.0

Checked By Aouly_Yan

Projection Type: Unit: mm
 Scale: 1:1 Sheet: 1 of 1 Version: 1/0



Lens Model: KLT-LENS-PH6005E-H043B

Sensor (mm)	5.76*3.24*0.8
最大直径 (mm)	∅7
焦距 (mm)	3.913±5%
F值	1.08
波长	35.04±0.3 (N AIR)
光源波长	6.63±0.2 (N AIR)
机械公差	6.01±0.2 (N AIR)
TV畸变	-16.6%
相对亮度	4.7% (H:∅6.6)
支持最小像元尺寸(μm)	3.0
工作温度 (°C)	-40°C~70°C
最近距离 (mm)	0.2
红外	否
晶片材质	3G+3P+1IR Filter
IR filter 厚度	0.3mm±0.03

版本号	0
修订记录	None
20/02/27	None

No	项目	AOI=0° SPEC	AOI=30° SPEC
1	350-395nm	Tavg≤3%	Tavg≤5%
2	UV-T=50%	415±10nm	400±10nm
3	440-565nm	Trin≥86%	Trin≥80%
		Tavg≥92%	Tavg≥88%
4	IR-T=50%	Cut wavelength shift ≤10nm	
5	IR-T=50% (0° ~ 30°)	≤10nm	
6	IR-T=15% (0° ~ 30°)	≤35nm	
7	IR-T=80%-45%	≤100nm	
8	IR-T=15%-10%	≤10nm	
9	700-725nm	Tavg≤5%	
10	725-1050nm	Tavg≤0.5%	

直径	FOV	焦距位置
∅4.8mm	74.5°	28.18
∅5.8mm	93.3°	29.34
∅6.0mm	97.5°	29.6
∅6.2mm	101.7°	29.85
∅6.4mm	106.2°	30.16
∅6.6mm	111.0°	30.57
∅6.8mm	116.1°	31
∅7.0mm	121.7°	31.4

[Product Information]

Ver.1.0

IMX335LLN

Diagonal 6.52 mm (Type 1 / 2.8) CMOS Solid-state Image Sensor with Square Pixel for Monochrome Cameras

Description

The IMX335LLN is a diagonal 6.52 mm (Type 1 / 2.8) CMOS active pixel type solid-state image sensor with a square pixel array and 5.14 M effective pixels. This chip operates with analog 2.9 V, digital 1.2 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)

Features

- ◆ CMOS active pixel type dots
- ◆ Built-in timing adjustment circuit, H/V driver and serial communication circuit
- ◆ Input frequency: 6 to 27 MHz / 37.125 MHz / 74.25 MHz
- ◆ Number of recommended recording pixels: 2592 (H) × 1944 (V) approx. 5.04 M pixels
- ◆ Readout mode
 - All-pixel scan mode
 - Window cropping mode
 - Vertical / Horizontal direction-normal / inverted readout mode
- ◆ Readout rate
 - Maximum frame rate in All-pixel scan mode 2592(H) × 1944(V) A/D 10-bit : 60 frame/s
- ◆ High dynamic range (HDR) function
 - Multiple exposure HDR
 - Digital overlap HDR
- ◆ Variable-speed shutter function (resolution 1H units)
- ◆ 10-bit / 12-bit A/D converter
- ◆ CDS / PGA function
 - 0 dB to 36 dB : Analog Gain 30 dB (step pitch 0.3 dB)
 - 30.3 dB to 72 dB : Analog Gain 30 dB + Digital Gain 0.3 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 $-\infty$

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 $1 \mu\text{m}^2$ (color product, when imaging with a 706 cd/m² light source, F5.6 in 1 s accumulation equivalent), and realizes high picture quality in the visible-light and near infrared light regions.

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 Type 1/2.8
- ◆ Total number of pixels 2704 (H) × 2104 (V) approx. 5.69 M pixels
- ◆ Number of effective pixels 2616 (H) × 1964 (V) approx. 5.14 M pixels
- ◆ Number of active pixels 2616 (H) × 1960 (V) approx. 5.13 M pixels
- ◆ Number of recommended recording pixels 2592 (H) × 1944 (V) approx. 5.04 M pixels
- ◆ Unit cell size 2.0 μm (H) × 2.0 μm (V)
- ◆ Optical black Horizontal (H) direction: Front 0 pixel, rear 0 pixel
Vertical (V) direction: Front 13 pixels, rear 0 pixel
- ◆ Dummy Horizontal (H) direction: Front 0 pixel, rear 0 pixel
Vertical (V) direction: Front 0 pixel, rear 0 pixel
- ◆ Package 88 pin BGA

Image Sensor Characteristics

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F8)	Typ.	1961 Digit	1/30 s accumulation 12 bit converted value
Saturation signal	Min.	3895 Digit	12 bit converted value

Basic Drive Mode

Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
All pixel	2592 (H) × 1944 (V) approx. 5.04 M pixels	60	CSI-2	10

[Product Information]

IMX335LQN

Ver.1.1

Diagonal 6.52 mm (Type 1/2.8) CMOS Solid-state Image Sensor with Square Pixel for Color Cameras

Description

The IMX335LQN is a diagonal 6.52 mm (Type 1/2.8) CMOS active pixel type solid-state image sensor with a square pixel array and 5.14 M effective pixels. This chip operates with analog 2.9 V, digital 1.2 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)

Features

- ◆ CMOS active pixel type dots
- ◆ Built-in timing adjustment circuit, H/V driver and serial communication circuit
- ◆ Input frequency: 6 to 27 MHz / 37.125 MHz / 74.25 MHz
- ◆ Number of recommended recording pixels: 2592 (H) × 1944 (V) approx. 5.04 M pixels
- ◆ Readout mode
 - All-pixel scan mode
 - Horizontal/Vertical 2/2-line binning mode
 - Window cropping mode
 - Vertical / Horizontal direction-normal / inverted readout mode
- ◆ Readout rate
 - Maximum frame rate in All-pixel scan mode 2592 (H) × 1944 (V) A/D 10-bit : 60 frame/s
- ◆ High dynamic range (HDR) function
 - Multiple exposure HDR
 - Digital overlap HDR
- ◆ Variable-speed shutter function (resolution 1H units)
- ◆ 10-bit / 12-bit A/D converter
- ◆ 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 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 $-\infty$

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 $1 \mu\text{m}^2$ (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 Type 1/2.8
- ◆ Total number of pixels 2704 (H) × 2104 (V) approx. 5.69 M pixels
- ◆ Number of effective pixels 2616 (H) × 1964 (V) approx. 5.14 M pixels
- ◆ Number of active pixels 2616 (H) × 1960 (V) approx. 5.11 M pixels
- ◆ Number of recommended recording pixels 2592 (H) × 1944 (V) approx. 5.04 M pixels
- ◆ Unit cell size 2.0 μm (H) × 2.0 μm (V)
- ◆ Optical black Horizontal (H) direction: Front 0 pixel, rear 0 pixel
Vertical (V) direction: Front 13 pixels, rear 0 pixel
- ◆ Dummy Horizontal (H) direction: Front 0 pixel, rear 0 pixel
Vertical (V) direction: Front 0 pixel, rear 0 pixel
- ◆ Package 88 pin CSP BGA

Image Sensor Characteristics

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F5.6)	Typ.	2200 Digit	1/30 s accumulation 12 bit converted value
Saturation signal	Min.	3895 Digit	12 bit converted value

Basic Drive Mode

Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
All pixel	2592 (H) × 1944 (V) approx. 5.04 M pixels	60	CSI-2	10
Horizontal/Vertical 2/2-line binning	1296 (H) × 972 (V) approx. 1.26 M pixels	60	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





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
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

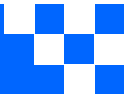


Tray with Grid and Space



Place Cameras on the Tray





Camera Modules Package Solution

Full Tray of Cameras



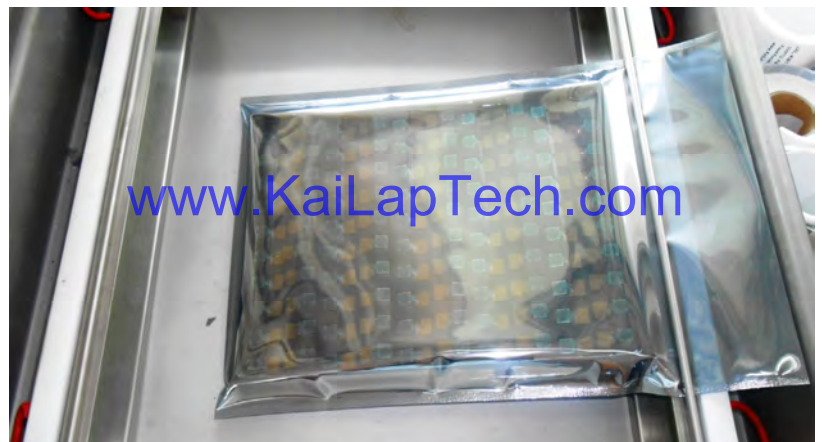
Cover Tray with Lid



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**





CMOS CAMERA MODULES



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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



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Package in Small Box for Shipment

Foam Sheets are Nicely Fitting the Small Box



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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



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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www.KaiLapTech.com



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.





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KLT Strength

Powerful Factory



Professional Service



Promised Delivery



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