KLT-USB-0404 V2
3.1MP 0404 OnSemi AR0331 M12 Fixed Focus USB 2.0 Camera Module

KLT-USB-0404 V2 is a 3.1MP Fixed Focus USB camera module based on 1/3" AR0331 image sensor. It delivers high-speed, 3K resolution ultra sharp image. The S-mount (M12) 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

   3K resolution (2048 x 1536) OnSemi AR0331 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
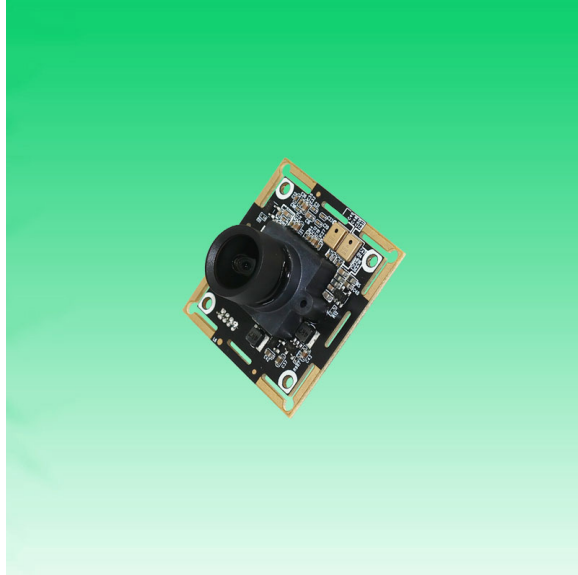
KLT-USB-0404 V2

3.1MP 0404 OnSemi AR0331 M12 Fixed Focus USB 2.0 Camera Module

Camera Module No.	KLT-USB-0404 V2
Resolution	3.1MP
Image Sensor	AR0331
Sensor Type	1/3"
Pixel Size	2.2 um x 2.2 um
EFL	2.88 mm
F.NO	2.20
Pixel	2048 x 1536
View Angle	92.0°(DFOV) 84.0°(HFOV) 54.0°(VFOV)
Lens Dimensions	17.10 x 17.10 x 17.25 mm
Module Type	Fixed Focus
Interface	USB 2.0
Output Format	MJPG / YUV2
Auto Control	Saturation, Contrast, Acutance White Balance, Exposure
Audio	None
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	USB Cable

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

CERTIFIED HI-SPEED USB 2.0   Windows   ANDROID   Mac OS   Linux   Raspberry Pi

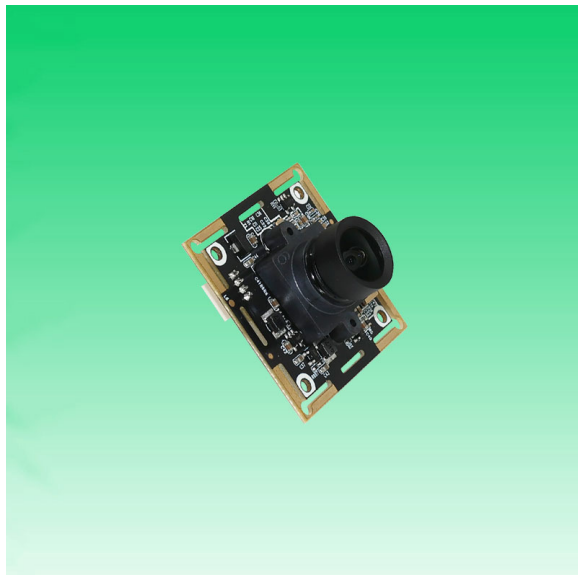**www.KaiLapTech.com   sales@KaiLapTech.com   Tel: (852) 6908 1256   Fax: (852) 3017 6778**

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3.1MP 0404 OnSemi AR0331 M12 Fixed Focus USB 2.0 Camera Module

Top View

Side View

Bottom View

USB Cable

KLT-USB-0404 V2
3.1MP 0404 OnSemi AR0331 M12 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
YUV2	640 x 480 (VGA)	25 FPS
	1280 x 720 (720P)	10 FPS
	1920 x 1080 (1080P)	5 FPS
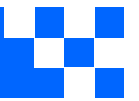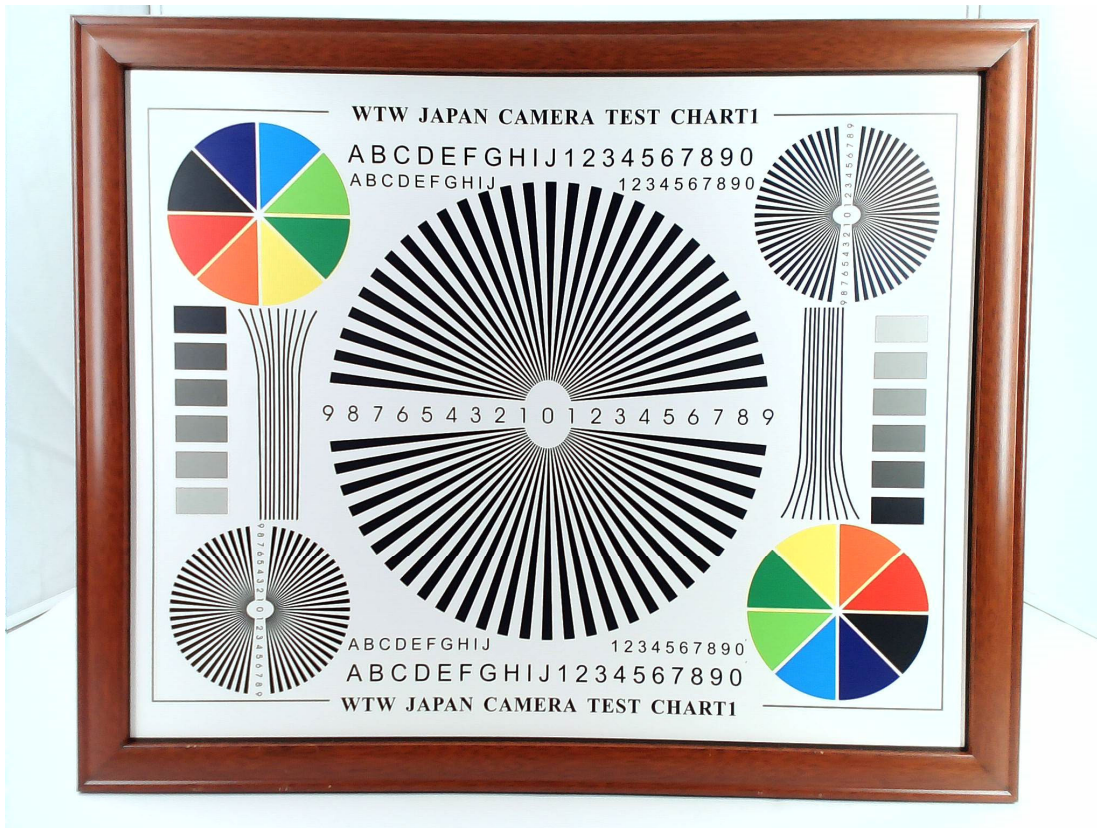
PIN NO	SIGNAL
PIN1	USB 5V
02	D-
03	D+
04	DGND

Version	Information	Date
V1.0	First Version	3-14-2023
V2.0	Change lens and holder	3-23-2023

2048
1536

38.00±0.20
32
2x17.10±0.20
38.00±0.20
32
MICx2

TOP VIEW

17.25±0.30
4.70
9.20
1.20±0.20
PCB (Black oil)

SIDE VIEW

USB 4PIN Interface
34.00
28.00
20.00
8*Ø2.50
34.00
28.00
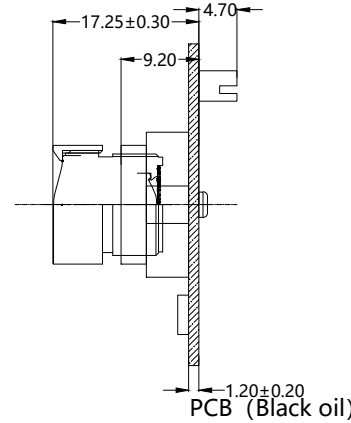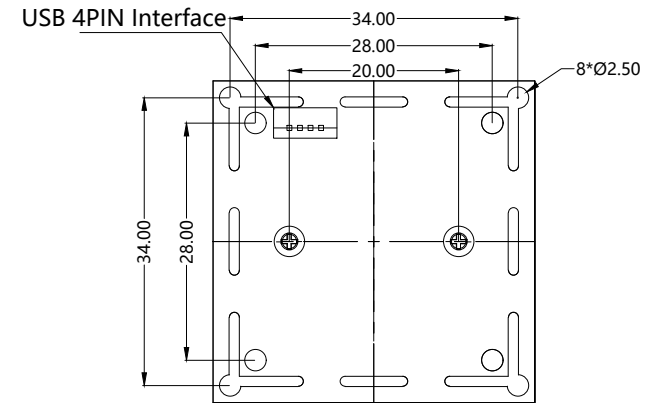
BOTTOM VIEW

Parameter:
1、Sensor specification:
Image Sensor: AR0331
Pixel: 3.0um*3.0um
Lens Type: 1/3
Important Voltage Description:
USB 5V (external power supply);

2、Lens specification:
FOV: 92°(D);84°(H);54°(V)
F/NO.: 2.2
TV distortion: <0.4%
Focal length: 2.88mm
Composition: 1G4P+IR FILTER
IR Cut Coating: 650nm±10nm@50%

Kai Lap Technologies Group Ltd

Designed By	Kevin	Model Name:	KLT-USB-0404 V2

Checked By	Aouly_Yan	Projection Type: Third Angle	Unit: mm	Material: --------------
			Scale: 1:1	Sheet: 1 of 1	Version: 1/0

Product Overview

AR0331: 3 MP 1/3" CMOS Image Sensor

For complete documentation, see the data sheet.

The 3.1-megapixel sensor was created to meet the needs of the growing full HD video-centric surveillance market with the exceptional performance of the new 2.2-micron pixel sensor featuring ON Semiconductor™ A-Pix™ technology. The AR0331 targets the mainstream 1/3-inch optical format surveillance camera market with excellent image quality. The sensor provides surveillance camera manufacturers with a performance upgrade to current 3-megapixel sensor designs with a best-in-class feature set to combining full HD video with wide dynamic range (WDR) capability and built-in adaptive local tone mapping. The new sensor provides HD video of up to 1080p at 60 fps employing advanced binning techniques to enable the sensors' sub 1-lux low light performance. The second HD image sensor in ON Semiconductor's surveillance portfolio, like the MT9M033 (720p/60fps), the AR0331 image sensor's low light and dynamic range capabilities enable a surveillance camera to capture HD video in the most challenging environments.

Features

- High Dynamic Range

Applications

- Security

Part Electrical Specifications

Product	Compliance	Status	Type	Megapixels	Frame Rate (fps)	Optical Format	Shutter Type	Pixel Size (µm)	Output Interface	Color	Package Type
AR0331SRSC00SHCA0-DRBR	Pb-free / Halide free	Active	CMOS	3.1	60	1/3 inch	Electronic Rolling	2.2 x 2.2	HiSPi™	Bayer Color	ILCC-48
AR0331SRSC00SHCA0-DRBR1	Pb-free / Halide free	Active	CMOS	3.1	60	1/3 inch	Electronic Rolling	2.2 x 2.2	HiSPi™	Bayer Color	ILCC-48
AR0331SRSC00SUCA0-DPBR	Pb-free / Halide free	Active	CMOS	3.1	60	1/3 inch	Electronic Rolling	2.2 x 2.2	Multi	Bayer Color	ILCC-48
AR0331SRSC00SUCA0-DPBR1	Pb-free / Halide free	Active	CMOS	3.1	60	1/3 inch	Electronic Rolling	2.2 x 2.2	Multi	Bayer Color	ILCC-48
AR0331SRSC00SUCA0-DRBR	Pb-free / Halide free	Active	CMOS	3.1	60	1/3 inch	Electronic Rolling	2.2 x 2.2	Multi	Bayer Color	ILCC-48
AR0331SRSC00SUCA0-DRBR1	Pb-free / Halide free	Active	CMOS	3.1	60	1/3 inch	Electronic Rolling	2.2 x 2.2	Multi	Bayer Color	ILCC-48
AR0331SRSC00XUEE0-DPBR	Pb-free / Halide free	Active	CMOS	3.1	60	1/3 inch	Electronic Rolling	2.2 x 2.2	Multi	Bayer Color	IBGA-63
AR0331SRSC00XUEE0-DRBR	Pb-free / Halide free	Active	CMOS	3.1	60	1/3 inch	Electronic Rolling	2.2 x 2.2	Multi	Bayer Color	IBGA-63
AR0331SRSC00XUEE0-DRBR1	Pb-free / Halide free	Active	CMOS	3.1	60	1/3 inch	Electronic Rolling	2.2 x 2.2	Multi	Bayer Color	IBGA-63

For more information please contact your local sales support at www.onsemi.com.

Created on: 9/30/2017

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Cameras Applications

Automotive Driver Pilot

Live Streaming

Video Conference
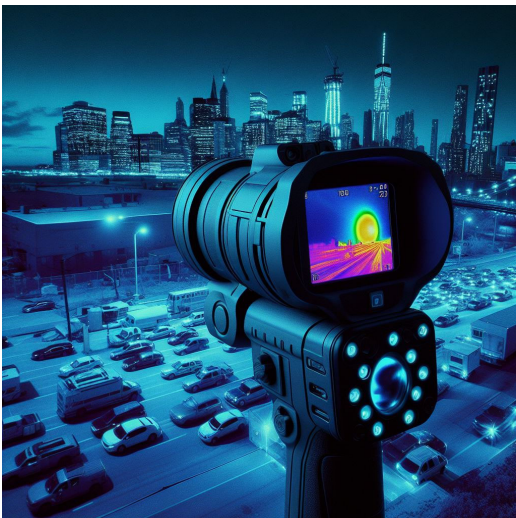

Eye Tracker Biometric Detection

Machine Vision

Agricultural Monitor

Night Vision Security

Drone and Sports Eagle Eyes

Interactive Pet Camera

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Cameras Applications

IMAGING DEVICES

Visible cameras
Blind-spot, side-view (mirrorless cars), accident recorder, rear park assist
Stereo cameras: direction & distance for LDWS & traffic sign recognition

Long-range radar
Adaptive Cruise Control

3D cameras
Gesture recognitions presence detection, driver monitoring

Short-range radar
Front & rear parking

Night vision camera
Pedestrian / animal detection

LIDAR
3D mapping of surroundings

Dead reckoning sensors
Odometry

Ultrasound
Parking, SR pedestrian & obstacle detection

Day
Night

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
FREX	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

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
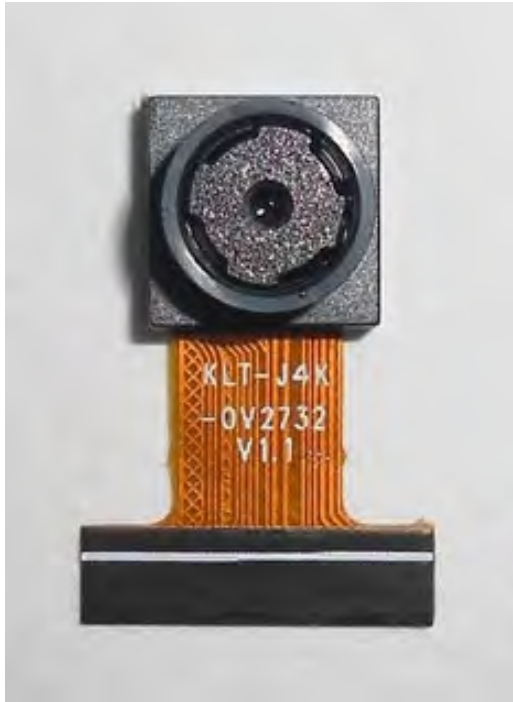
Complete with Lens Protection Film

Tray with Grid and Space

Place Cameras on the Tray
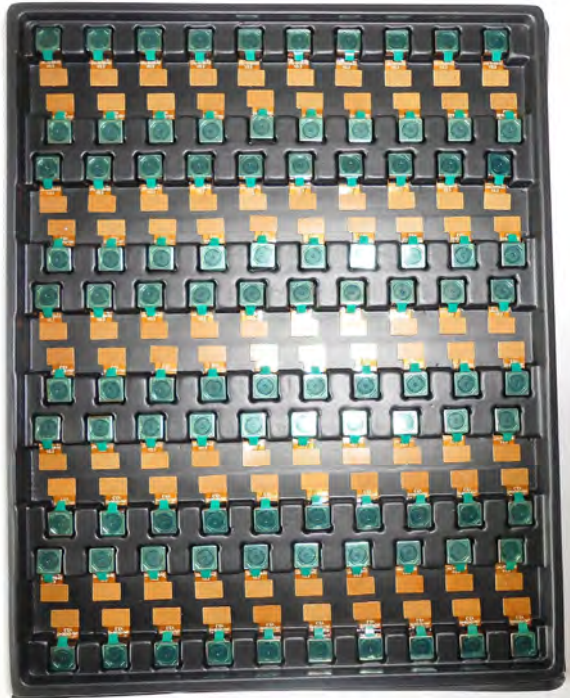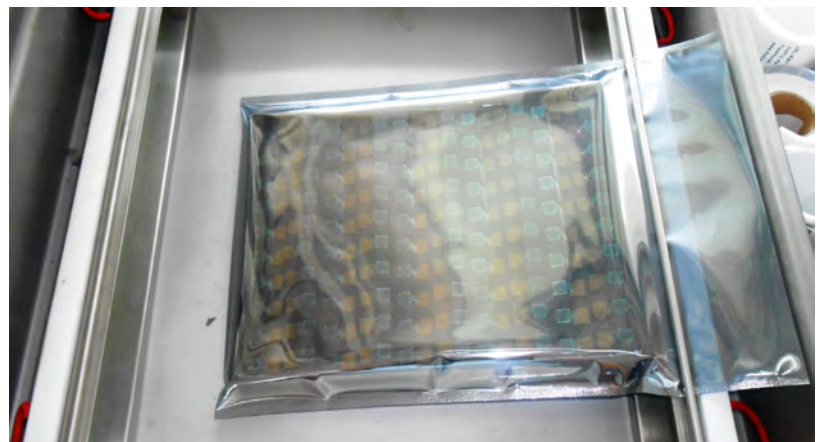
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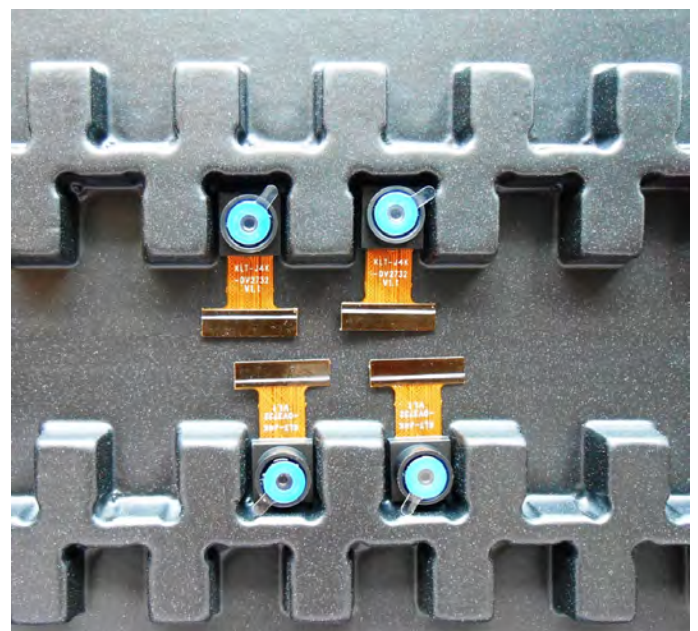
Camera Modules Package Solution

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

KLT-J4K-OV2732 V1.1
OV2732, MIPI & Parallel
Fixed Focus, 67.4 Degree
www.KaiLapTech.com

100
PIECES

Shipping Date
10 August 2017

CAUTION
STATIC SENSITIVE
DEVICES
NOT TO BE HANDLED
BY UNAUTHORISED
PERSONNEL

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

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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

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

KLT-J4K-OV2732 V1.1
OV2732, MIPI & Parallel
Fixed Focus, 67.4 Degree
www.KaiLapTech.com

Shipping Date
10 August 2017

CAUTION
STATIC SENSITIVE
DEVICES
NOT TO BE HANDLED
BY UNAUTHORISED
PERSONNEL

FH12-24S-0.5SH
Mating Connector for
KLT-J4K-OV2732 V1.0
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10
PIECES

CAUTION
STATIC SENSITIVE
DEVICES
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PERSONNEL

CMOS CAMERA MODULES

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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

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.

USB camera module
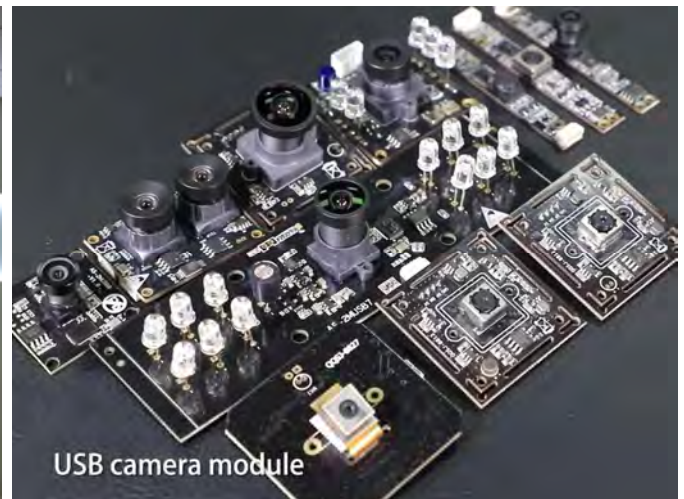
Limited Warranty

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 subsequential events.

KLT Strength

Powerful Factory

Professional Service

Promised Delivery