KLT-USB-0446-0447 V1

3.1MP 0446 OnSemi AR0331 1.2MP 0447 AR0130 M12 Fixed Focus LED Dual Lens Stereo USB 2.0 Camera Module

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KLT-USB-0446-0447 V1 is a 3.1MP/1.2MP Dual Lens Fixed Focus Stereo USB camera module based on 3.1MP 1/3" AR0331 (color) and 1.2MP 1/3" AR0130 (monochrome) image sensors. It delivers high-speed, 1080P resolution ultra-sharp image. There are two DSP chipset controls each sensor, so the two cameras are working separately. This 3D stereo camera module is widely used for 3D depth mapping, virtual reality (VR), augmented reality (AR), mixed reality (MR), extended reality (XR), face detection, automotive, robotics, machine vision, and biometric intelligence.

Key Features

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Stereo Dual Lens Camera Module

- 2K resolution (1920 x 1080) AR0331 Color Sensor
- 720P resolution (1280 x 720) AR0130 Black and White Sensor
- High speed USB 2.0 Plug and Play
- MJPG/YUV2 dual output format
- Low power consumption
- Dual Lens compact size 80 x 16mm
- UVC compliant to Windows, Linux, OS with UVC driver
- USB OTG (On-The-Go) Support

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KLT-USB-0446-0447 V1

3.1/1.2MP AR0331 AR0130 Fixed Focus Dual Lens Stereo USB 2.0 Camera Module

Camera Module No.	KLT-USB-0446-0447 V1
Resolution	3.1MP / 1.2MP
Image Sensor	AR0331 (Color) + AR0130 (B/W)
Sensor Type	1/3" / 1/3"
Pixel Size	2.2 um x 2.2 um / 3.75 um x 3.75 um
EFL	3.00 mm
F.NO	2.50
Pixel	2480 x 1536 / 1280 x 960
View Angle	89°(DFOV) 76°(HFOV) 60°(VFOV)
Lens Dimensions	M12 / M12
Module Type	Fixed Focus
Lens Model	KLT-LENS-0446-0447 V1
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	38.00 x 28.00 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 / 850nm IR Pass
Operating Temperature	-30°C to +85°C / -30°C to +70°C
USB Cable	KLT-Cable-U018

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

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Top View

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Side View

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Bottom View

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Mating Connector

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KLT-USB-0446-0447 V1

3.1MP 0446 OnSemi AR0331 1.2MP 0447 AR0130 M12 Fixed Focus LED Dual Lens Stereo USB 2.0 Camera Module

FORMAT	RESOLUTION	FRAME RATE	FRAME RATE
		USB 2.0	USB 2.0
		AR0331 (Color)	AR0130 (B/W)
MJPG	640 x 480 (VGA)	25 FPS	15 FPS
	1280 x 720 (720P)	25 FPS	15 FPS
	1920 x 1080 (1080P)	25 FPS	
YUY2	640 x 480 (VGA)	15 FPS	15 FPS
	1280 x 720 (720P)	10 FPS	15 FPS
	1920 x 1080 (1080P)	5 FPS	

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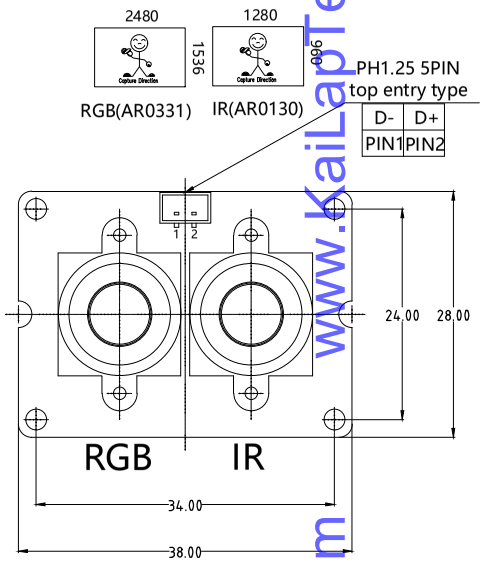
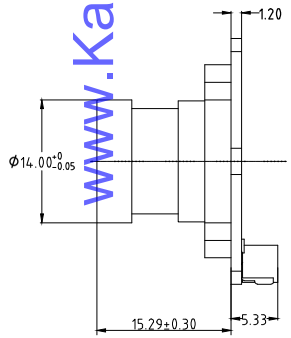
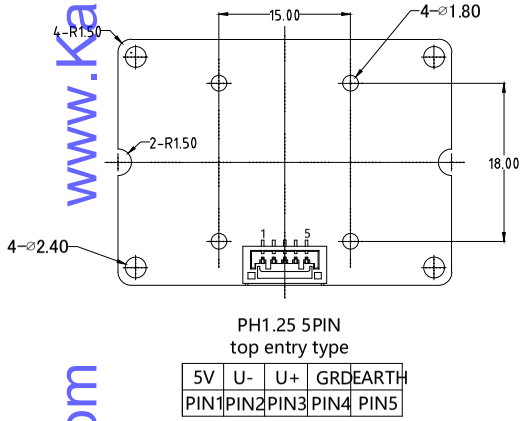
Version	Information	Date
V1.0	First Version	8-16-2022



TOP VIEW



SIDE VIEW



BOTTOM VIEW

Parameters:

1、 Sensor specification:

Image Sensor: AR0331+AR0130
Pixel: 2.2um×2.2um;3.75um×3.75um
Lens Type: 1/3
Important Voltage Description: USB 5V (external power supply);

2、 Lens specification:

FOV: 89°(D);76°(H);60°(V);
F/NO.: 2.5
TV distortion: <0.9%
Focal length: 3.0mm
Composition: 2P2G+IR FILTER
IR Cut Coating: 650nm±10nm@50%

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Designed By	Kevin	Model Name:	KLT-USB-0446 V1
Checked By	Jacky	Projection Type: Third Angle	Unit: mm / Material: ---------- / Scale: 1:1 / Sheet: 1 of 1 / Version: 1/0

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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

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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

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

Created on: 9/30/2017

1/3-Inch CMOS Digital Image Sensor

AR0130 Datasheet, Rev. L

For the latest datasheet, please visit www.onsemi.com

Features

- Superior low-light performance both in VGA mode and HD mode
- Excellent Near IR performance
- HD video (720p60)
- On-chip AE and statistics engine
- Auto black level calibration
- Context switching
- Progressive Scan
- Supports 2:1 scaling
- Internal master clock generated by on-chip phase locked loop (PLL) oscillator.
- Parallel output

Applications

- Gaming systems
- Video surveillance
- 720p60 video applications

General Description

ON Semiconductor's AR0130 is a 1/3-inch CMOS digital image sensor with an active-pixel array of 1280H x 960V. It captures images with a rolling-shutter readout. It includes sophisticated camera functions such as auto exposure control, windowing, and both video and single frame modes. It is programmable through a simple two-wire serial interface. The AR0130 produces extraordinarily clear, sharp digital pictures, and its ability to capture both continuous video and single frames makes it the perfect choice for a wide range of applications, including gaming systems, surveillance, and HD video.

Table 1: Key Parameters

Parameter		Typical Value
Optical format		1/3-inch (6 mm)
Active pixels		1280 x 960 = 1.2 Mp
Pixel size		3.75 µm
Color filter array		Monochrome, RGB Bayer
Shutter type		Electronic rolling shutter
Input clock range		6 – 50 MHz
Output clock maximum		74.25 MHz
Output	Parallel	12-bit
Max. Frame rates	1.2 Mp (full FOV)	45 fps
	720pHD (reduced FOV)	60 fps
	VGA (full FOV)	45 fps
	VGA (reduced FOV)	60 fps
	800 x 800 (reduced FOV)	60 fps
Responsivity at 550 nm (Mono)		6.5 V/lux-sec
Responsivity at 550 nm (RGB green)		5.6 V/lux-sec
SNR_{MAX}		44 dB
Dynamic range		82 dB
Supply voltage	I/O	1.8 or 2.8 V
	Digital	1.8 V
	Analog	2.8 V
Power consumption		270 mW (1280x720 60 fps)
Operating temperature		–30°C to + 70°C (ambient) –30°C to + 80°C (junction)
Package option		Bare die, iLCC, PLCC

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Ordering Information

Table 2: Available Part Numbers

Part Number	Base Description	Variant Description
AR0130CSSC00SPBA0-DP	RGB Bayer 48-Pin PLCC	Dry Pack with Protective Film
AR0130CSSC00SPBA0-DR	RGB Bayer 48-Pin PLCC	Dry Pack without Protective Film
AR0130CSSC00SPCA0-DPBR	RGB Bayer 48-Pin iLCC	Dry Pack with Protective Film, Double Side BBAR Glass
AR0130CSSC00SPCA0-DRBR	RGB Bayer 48-Pin iLCC	Dry Pack without Protective Film, Double Side BBAR Glass
AR0130CSSC00SPCAD3-GEVK	RGB Bayer demo kit iLCC	
AR0130CSSC00SPCAD3-S115-GEVK	RGB Bayer demo kit iLCC	
AR0130CSSC00SPCAD3-S213A-GEVK	RGB Bayer demo kit iLCC	
AR0130CSSC00SPCAD-GEVK	RGB Bayer demo kit iLCC	
AR0130CSSC00SPCAD-S115-GEVK	RGB Bayer demo kit iLCC	
AR0130CSSC00SPCAD-S213A-GEVK	RGB Bayer demo kit iLCC	
AR0130CSSC00SPCAH-GEVB	RGB Bayer headboard iLCC	
AR0130CSSC00SPCAH-S115-GEVB	RGB Bayer headboard iLCC	
AR0130CSSC00SPCAH-S213A-GEVB	RGB Bayer headboard iLCC	
AR0130CSSC00SPCAW-GEVB	RGB Bayer headboard iLCC	
AR0130CSSM00SPCA0-DRBR	Monochrome 48-Pin iLCC	Dry Pack without Protective Film, Double Side BBAR Glass
AR0130CSSM00SPCAD-S213A-GEVK	Monochrome demo kit iLCC	
AR0130CSSM00SPCAH-S213A-GEVB	Monochrome headboard iLCC	

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See the ON Semiconductor Device Nomenclature document (TND310/D) for a full description of the naming convention used for image sensors. For reference documentation, including information on evaluation kits, please visit our web site at www.onsemi.com.

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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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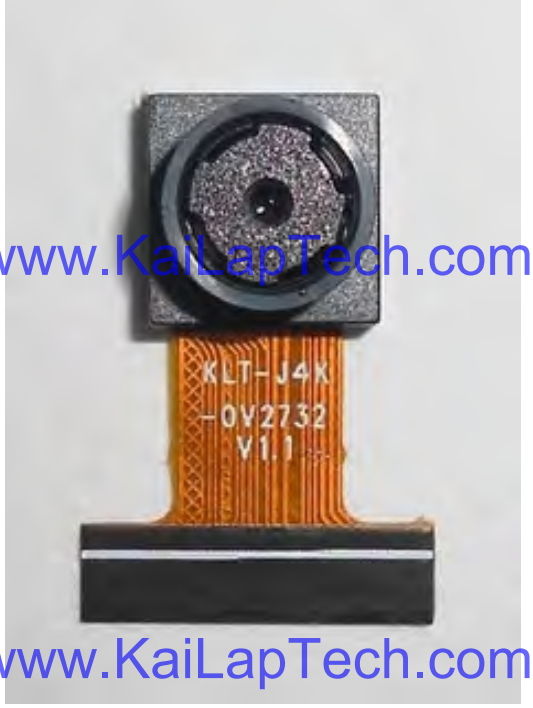
KLT Package Solutions

KLT Camera Module



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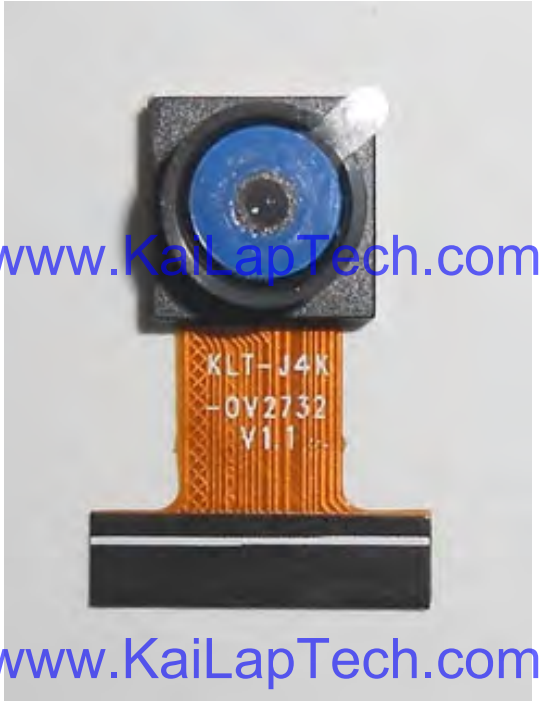
Complete with Lens Protection Film



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Tray with Grid and Space

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Place Cameras on the Tray

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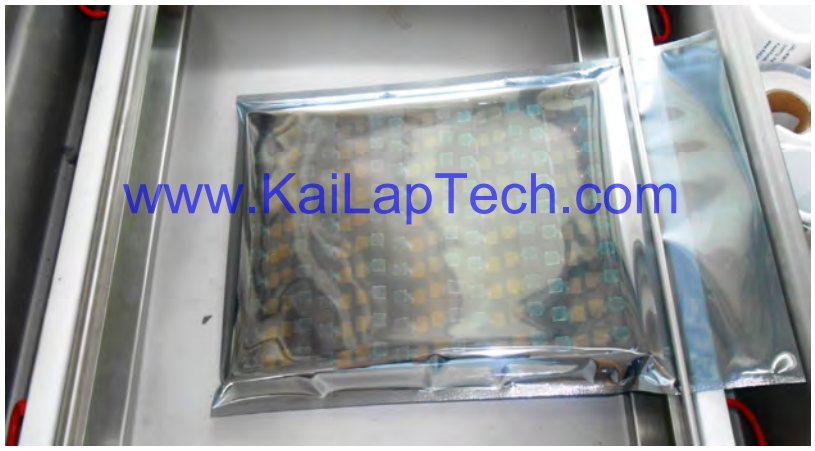
Camera Modules Package Solution

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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