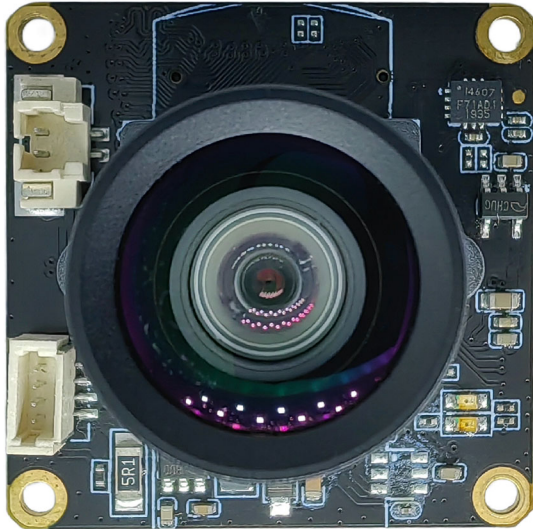
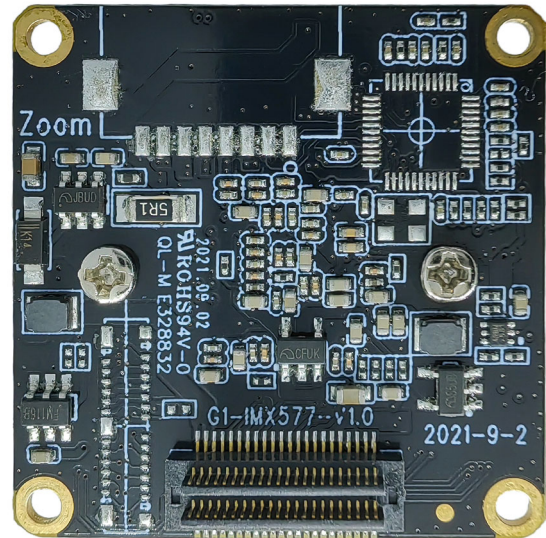


KLT-CMFL1812C6-IMX577 V1.0

12.3MP Sony IMX577 Fixed Focus Camera Module



Front View



Back View

Overview

The KLT-CMFL1812C6-IMX577 V1.0 camera module uses the Sony IMX577 high-quality CMOS image sensor, which has a diagonal of 7.857mm (1/2.3 type) CMOS image sensor, a pixel size of 1.55um, a color square pixel display, an effective pixel of 12 megapixels, and a high-definition image.

When used with the master board, it can support 12MP high-definition photos, and can support up to 4K@60FPS (differential), 4K@30FPS video shooting. Used with the master board, the coaxial cable is used to connect the main board or by directly plug in. The board frame size is 32x32mm, and the size from the top of the module lens to the PCB board surface is 24mm.



KLT-CMFL1812C6-IMX577 V1.0

12.3MP Sony IMX577 Fixed Focus Camera Module

Specifications

| | |
|---|--|
| Model No. | KLT-CMFL1812C6-IMX577 V1.0 |
| Image Sensor | IMX577 |
| Image Sensor Type | CMOS |
| Effective Pixels | 12.3 Megapixels |
| Sensor Size | 1/2.3" |
| Pixel Size | 1.55 um x 1.55 um |
| Video Frame Rate | 4K@24/25/30/FPS, 4K@48/50/60FPS (Differential) 2.7K@24/25/30/48/50/60FPS 1080P@24/25/30/48/50/60/120FPS 720P@24/25/30/48/50/60/120/240FPS |
| Video Slow Motion | OFF, 4K2X, 1080P4X, 720P8X |
| Photo Resolution (with Master Board) | 20MP (5200x3900) (Differential) 13MP (4160x3120) (Differential) 12MP (4000x3000) 10MP (3648x2736) 8MP (3264x2448) 5MP (2592x1944) 3MP (2048x1536) 2MP (1920x1080) |
| Operating Temperature | -10°C to +60°C |
| Storage Temperature | -20°C to +80°C |
| Humidity | 20% to 80% |
| PCB Dimensions | 32 x 32 mm |
| Module Size | 32 x 32 x 24 mm |
| PCB Screw Hole Spacing | 28 x 28 mm |
| PCB Screw Hole Diameter | 2 mm |
| Lens Mount Screw Diameter | 1.6 mm |



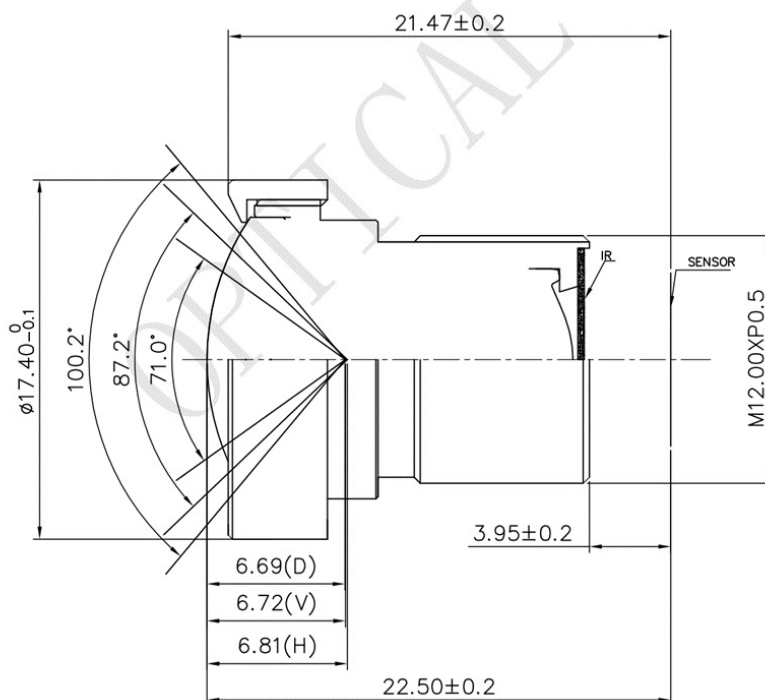
KLT-CMFL1812C6-IMX577 V1.0

12.3MP Sony IMX577 Fixed Focus Camera Module

Lens Specifications

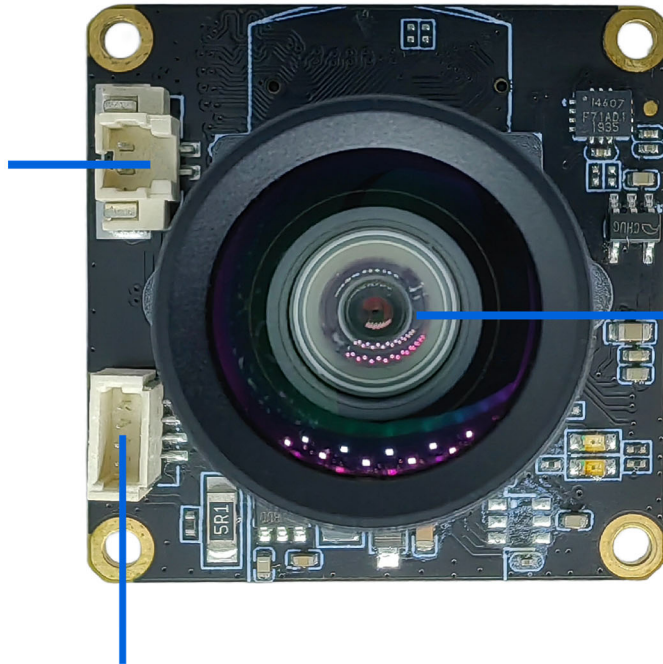
| | |
|------------------------------|----------------------------------|
| Lens Model No. | 1812C6 |
| EFL (Focal Length) | 3.45 mm |
| BFL | 2.95 mm |
| TTL (Total Length) | 22.27 mm |
| F. No. | 2.7 |
| Lens Construction | 4G2P + IR |
| Diagonal View Angle (DFOV) | 100.2° (DFOV) ($y' = 3.928$ mm) |
| Horizontal View Angle (HFOV) | 87.2° (HFOV) ($y' = 3.143$ mm) |
| Vertical View Angle (VFOV) | 71° (VFOV) ($y' = 2.356$ mm) |
| Chief-Ray Angle | <14° |
| Distortion | <0.5% |
| Relative Illumination | >54% |
| Lens Operating Temperature | -30°C to +75°C |
| Lens Storage Temperature | -40°C to +85°C |

Lens Drawing



KLT-CMFL1812C6-IMX577 V1.0
12.3MP Sony IMX577 Fixed Focus Camera Module

濾光片切换器接口
IR-CUT INTERFACE

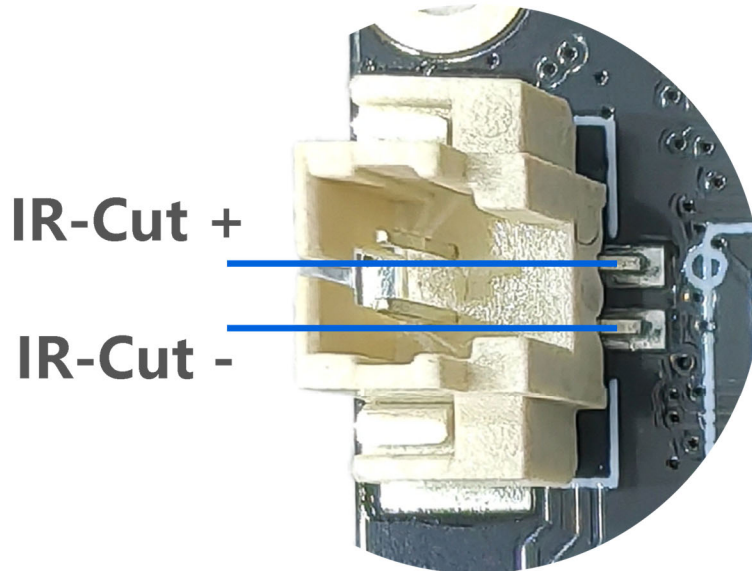


G1-IMX577 L1812C6
V1.0 镜头模组

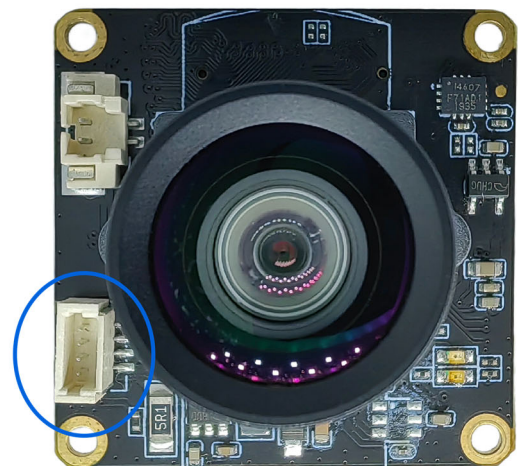
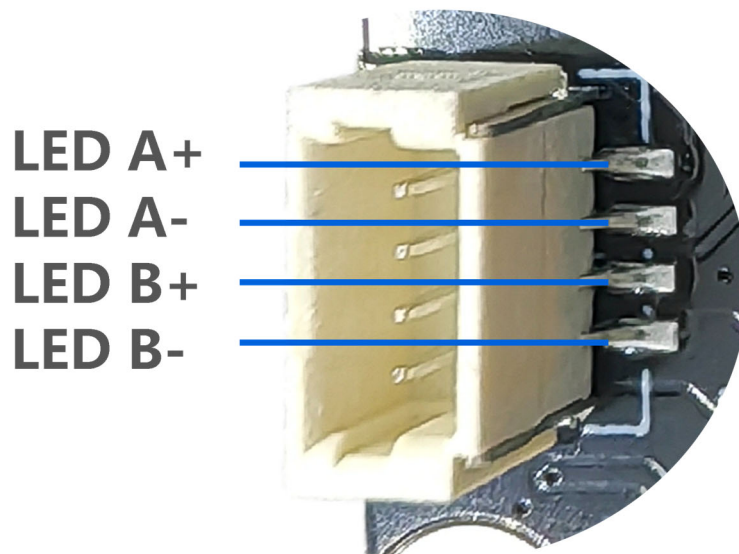
两组LED补光灯接口

LEDS * 2 INTERFACE

Note: You can choose between TBT board-to-board socket or connecting to the master board via coaxial cable. Users can use them flexibly according to the construction scenarios.

**KLT-CMFL1812C6-IMX577 V1.0****12.3MP Sony IMX577 Fixed Focus Camera Module**

The IR-Cut filter switch interface is used by lenses with filters. Users need to match the lens that supports the IR-Cut switch structure in order to support this function. This module does not support the IR-Cut function.

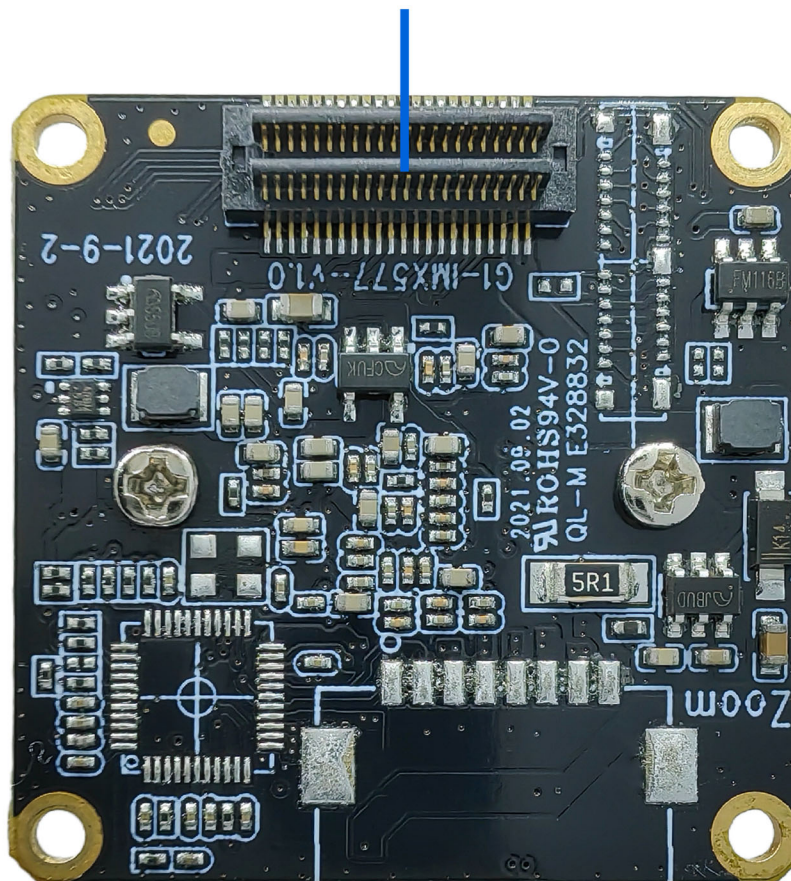


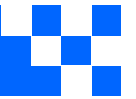
The two sets of fill light interfaces support the expansion of infrared light and white light boards to provide fill light for the device. If you need the fill light function, you need to add the KLT-LEDP V2.0 White and Infrared Light LED Plate.

**KLT-CMFL1812C6-IMX577 V1.0****12.3MP Sony IMX577 Fixed Focus Camera Module**

通过板对板连接器连接G1主板 支持Sensor、IR-CUT、LED等

Connect Sensor, IR-CUT, LED etc.





KLT-CMFL1812C6-IMX577 V1.0
12.3MP Sony IMX577 Fixed Focus Camera Module



[Product Information]

IMX577-AACK

Ver.1.0

Diagonal 7.857 mm (Type 1/2.3) 12.3 Mega-Pixel CMOS Image Sensor with Square Pixel for Color Cameras

Description

The IMX577-AACK is a diagonal 7.857 mm (Type 1/2.3) 12.3 Mega-pixel CMOS active pixel type stacked image sensor with a square pixel array. It adopts Sony's Stacked CMOS Image Sensor 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. It equips an electronic shutter with variable integration time. It operates with three power supply voltages: analog 2.8 V, digital 1.05 V and 1.8 V for input/output interface and achieves low power consumption.

In addition, this product is designed for use in consumer use camcorder. When using this for another application, Sony Semiconductor Solutions Corporation does not guarantee the quality and reliability of product. Therefore, don't use this for applications other than consumer use camcorder.

In addition, individual specification change cannot be supported because this is a standard product.

Consult your Sony Semiconductor Solutions Corporation sales representative if you have any questions.

Features

- ◆ Back-illuminated and stacked CMOS image sensor
- ◆ Digital Overlap High Dynamic Range (DOL-HDR) mode with raw data output.
- ◆ High signal to noise ratio (SNR).
- ◆ Full resolution @60 frame/s (Normal), 4K2K @60 frame/s (Normal), 1080p @240 frame/s
Full resolution @40 frame/s (12 bit Normal), Full resolution @30 frame/s (DOL-HDR, 2 frame)
- ◆ Output video format of RAW12/10/8, COMP8.
- ◆ Power Save Mode with MIPI ULPS operation
- ◆ Pixel binning readout and V sub-sampling function.
- ◆ Independent flipping and mirroring.
- ◆ Input clock frequency 6 to 27 MHz
- ◆ CSI-2 serial data output (MIPI 2lane/4lane, Max. 2.1 Gbps/lane, D-PHY spec. ver. 1.2 compliant)
- ◆ 2-wire serial communication.
- ◆ Two PLLs for independent clock generation for pixel control and data output interface.
- ◆ Defect Pixel Correction (DPC)
- ◆ Ambient Light Sensor (ALS)
- ◆ Fast mode transition. (on the fly)
- ◆ Dual sensor synchronization operation (Multi camera compatible)
- ◆ 7 k bit of OTP ROM for users.
- ◆ Built-in temperature sensor
- ◆ 10-bit/12-bit A/D conversion on chip
- ◆ Horizontal Low Power Analog Cropping
- ◆ Window Scanning mode
- ◆ 92-pin high-precision ceramic package

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 Diagonal 7.857 mm (Type 1/2.3)
- ◆ Total number of pixels 4072 (H) × 3176 (V) approx. 12.93 M pixels
- ◆ Number of effective pixels 4072 (H) × 3064 (V) approx. 12.47 M pixels
- ◆ Number of active pixels 4056 (H) × 3040 (V) approx. 12.33 M pixels
- ◆ Chip size 7.564 mm (H) × 5.476 mm (V)
- ◆ Unit cell size 1.55 μm (H) × 1.55 μm (V)
- ◆ Package 92 pin LGA

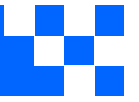
Image Sensor Characteristics

(Tj = 60 °C)

| Item | | Value | Remarks |
|--------------------|------|----------|---------------------|
| Sensitivity (F2.8) | Min. | 250 LSB | 1/120 s integration |
| Saturation signal | Min. | 1023 LSB | |

Basic Drive Mode

| Drive mode | Number of active pixels | Maximum frame rate [frame/s] | Output interface | ADC [bit] |
|---------------------------------------|---|--------------------------------------|------------------|-----------|
| Full (4:3) (Normal) | 4056 (H) × 3040 (V) approx. 12.33 M pixels | 60 | CSI-2 | 10 |
| | | 43 | CSI-2 | 12 |
| Full (4:3) (DOL-HDR) | 4056 (H) × 3040 (V) approx. 12.33 M pixels | DOL 2 frame : 30 DOL 3 frame : 15 | CSI-2 | 10 |
| Full (16:9) 4K2K (Normal) | 4056 (H) × 2288 (V) approx. 9.28 M pixels | 79 | CSI-2 | 10 |
| Full (16:9) 4K2K (DOL-HDR) | 4056 (H) × 2288 (V) approx. 9.28 M pixels | DOL 2 frame : 39 DOL 3 frame : 19 | CSI-2 | 10 |
| Full (4:3) Binning (Normal) | 2028 (H) × 1520 (V) approx. 3.08 M pixels | 178 | CSI-2 | 10 |
| Full (16:9) Binning 1080P (Normal) | 2028 (H) × 1112 (V) approx. 2.26 M pixels | 241 | CSI-2 | 10 |
| Full (16:9) Binning 720P (Normal) | 1352 (H) × 740 (V) approx. 1.00 M pixels | 241 | CSI-2 | 10 |
| Full (16:9) Scaling 1080P (Normal) | 2028 (H) × 1144 (V) approx. 2.32 M pixels | 79 | CSI-2 | 10 |
| Full (16:9) Scaling 720P (Normal) | 1352 (H) × 762 (V) approx. 1.03 M pixels | 79 | CSI-2 | 10 |



Cameras Applications



Automotive Driver Pilot



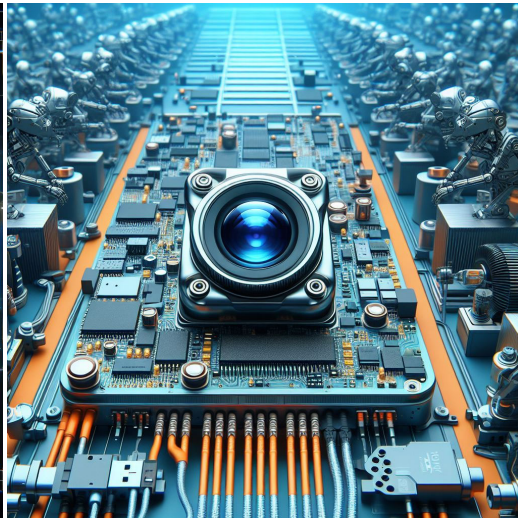
Live Streaming



Video Conference



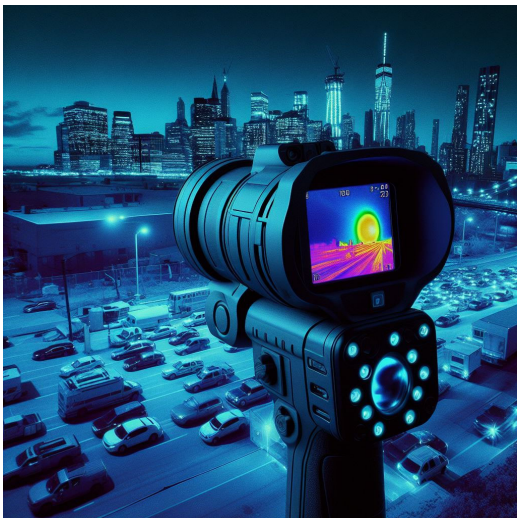
Eye Tracker Biometric Detection



Machine Vision



Agricultural Monitor



Night Vision Security



Drone and Sports Eagle Eyes

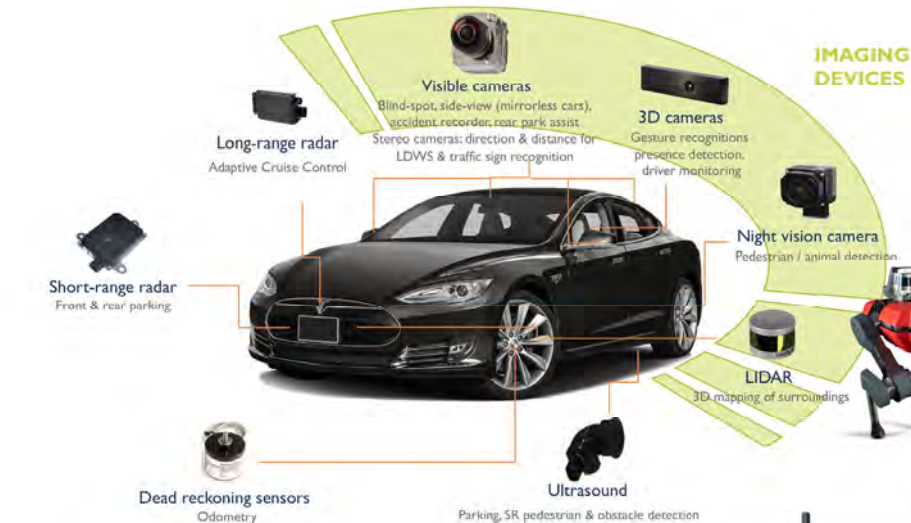


Interactive Pet Camera



your **BEST** camera module partner

Cameras Applications





Camera Module Pinout Definition Reference Chart

| OmniVision | Sony | Samsung | On-Semi | Aptina | Himax | GalaxyCore | PixArt | SmartSens | Sensors |
|-------------------------------|---------|-----------|---------|--------|-------|------------|--------|-----------|---------|
| Pin Signal | | | | | | | | | |
| Description | | | | | | | | | |
| DGND | GND | | | | | | | | |
| AGND | | | | | | | | | |
| PCLK | DCK | | | | | | | | |
| XCLR | PWDN | XSHUTDOWN | STANDBY | | | | | | |
| MCLK | XVCLK | XCLK | INCK | | | | | | |
| RESET | RST | | | | | | | | |
| NC | NULL | | | | | | | | |
| SDA | SIO_D | SIOD | | | | | | | |
| SCL | SIO_C | SIOC | | | | | | | |
| VSYNC | XVS | FSYNC | | | | | | | |
| HREF | XHS | | | | | | | | |
| DOVDD | | | | | | | | | |
| AFVDD | | | | | | | | | |
| AVDD | | | | | | | | | |
| DVDD | | | | | | | | | |
| STROBE | FSTROBE | | | | | | | | |
| FSIN | | | | | | | | | |
| SID | | | | | | | | | |
| ILPWM | | | | | | | | | |
| FREX | | | | | | | | | |
| GPIO | | | | | | | | | |
| SLASEL | | | | | | | | | |
| AFEN | | | | | | | | | |
| MIPI Interface | | | | | | | | | |
| MDN0 | DN0 | MD0N | DATA_N | DMO1N | | | | | |
| MDP0 | DP0 | MD0P | DATA_P | DMO1P | | | | | |
| MDN1 | DN1 | MD1N | DATA2_N | DMO2N | | | | | |
| MDP1 | DP1 | MD1P | DATA2_P | DMO2P | | | | | |
| MDN2 | DN2 | MD2N | DATA3_N | DMO3N | | | | | |
| MDP2 | DP2 | MD2P | DATA3_P | DMO3P | | | | | |
| MDN3 | DN3 | MD3N | DATA4_N | DMO4N | | | | | |
| MDP3 | DP3 | MD3P | DATA4_P | DMO4P | | | | | |
| MCN | CLKN | CLK_N | DCKN | | | | | | |
| MCP | CLKP | MCP | CLK_P | DCKN | | | | | |
| DVP Parallel Interface | | | | | | | | | |
| D0 | DO0 | Y0 | | | | | | | |
| D1 | DO1 | Y1 | | | | | | | |
| D2 | DO2 | Y2 | | | | | | | |
| D3 | DO3 | Y3 | | | | | | | |
| D4 | DO4 | Y4 | | | | | | | |
| D5 | DO5 | Y5 | | | | | | | |
| D6 | DO6 | Y6 | | | | | | | |
| D7 | DO7 | Y7 | | | | | | | |
| D8 | DO8 | Y8 | | | | | | | |
| D9 | DO9 | Y9 | | | | | | | |
| D10 | DO10 | Y10 | | | | | | | |
| D11 | DO11 | Y11 | | | | | | | |



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 |



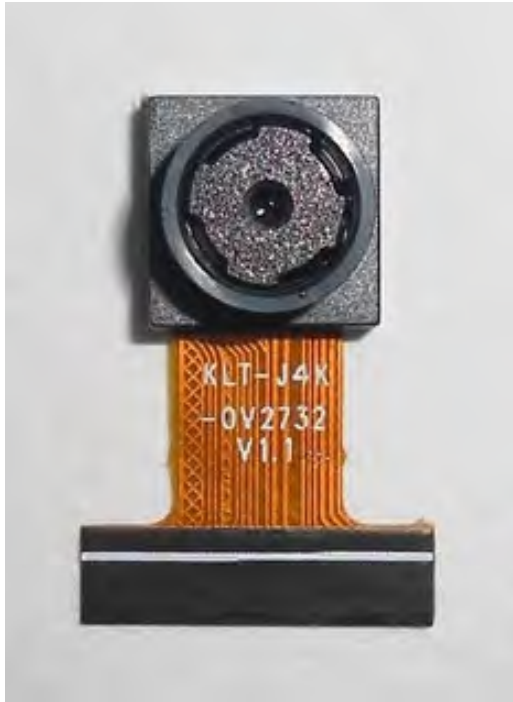


| Inspection Item | | Inspection Method | Standard of Inspection | | |
|------------------|----------|-------------------|-----------------------------|--|---------------------------------|
| Category | Item | | | | |
| Appearance | FPC/ PCB | Color | The Naked Eye | Major Difference is Not Allowed. | |
| | | 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 | 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 | | |



KLT Package Solutions

KLT Camera Module



Complete with Lens Protection Film



Tray with Grid and Space



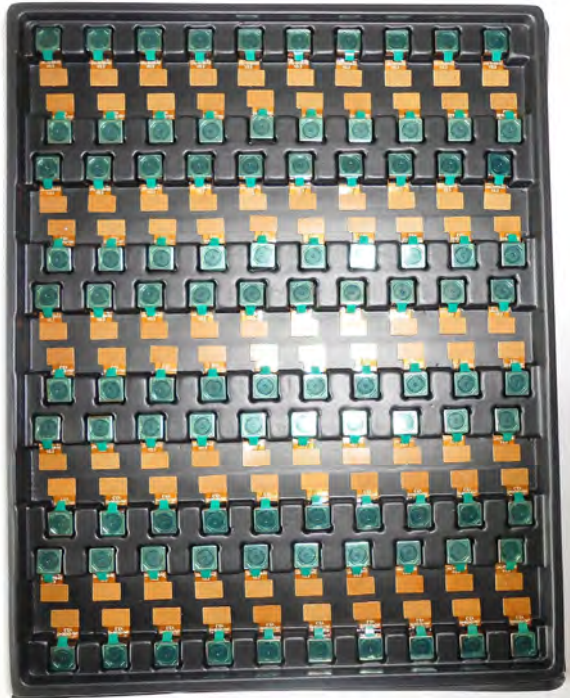
Place Cameras on the Tray





Camera Modules Package Solution

Full Tray of Cameras



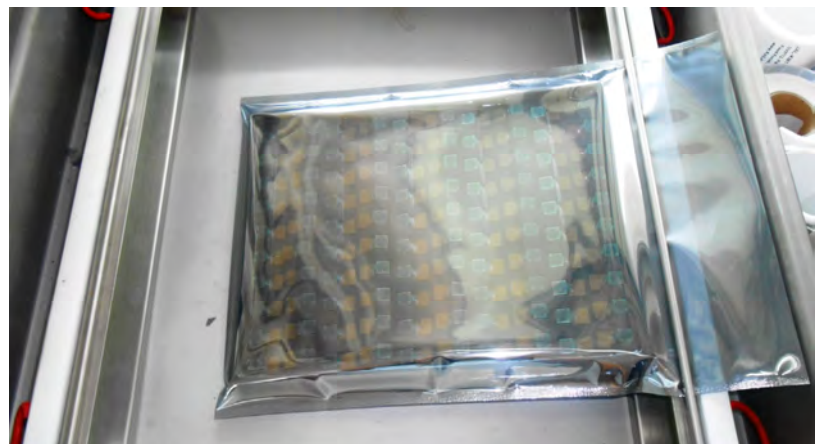
Cover Tray with Lid



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





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





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





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



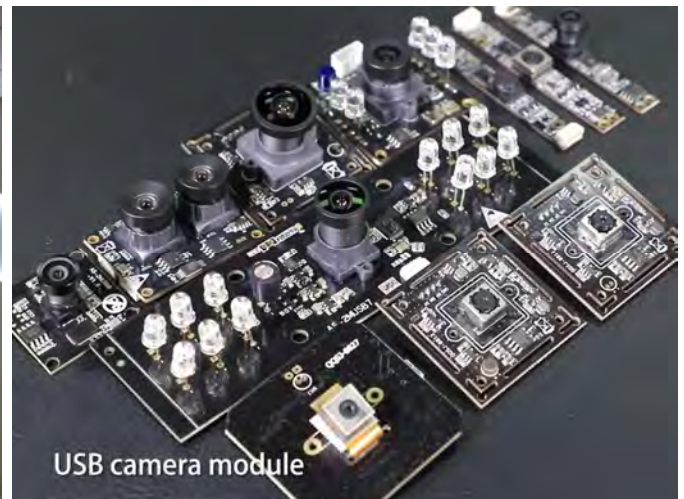


Company Kai Lap Technologies (KLT)

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.



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.





CMOS CAMERA MODULES



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KLT Strength

Powerful Factory



Professional Service



Promised Delivery



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