

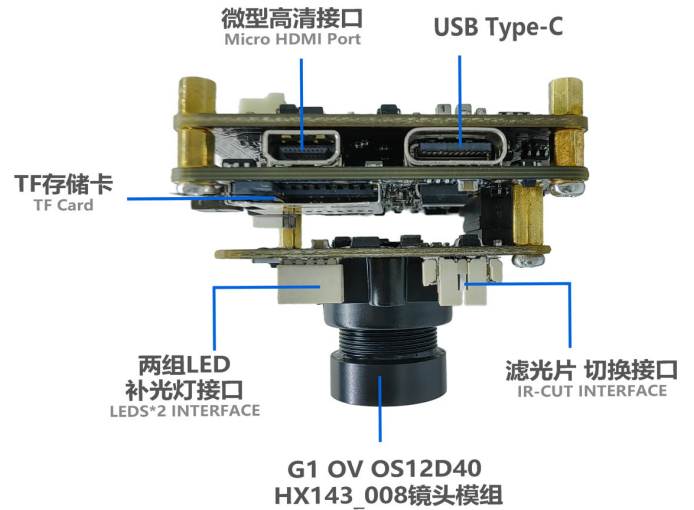
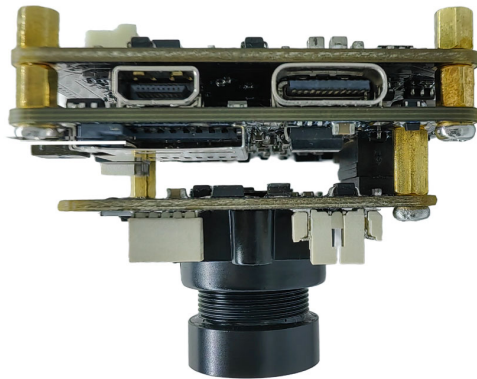
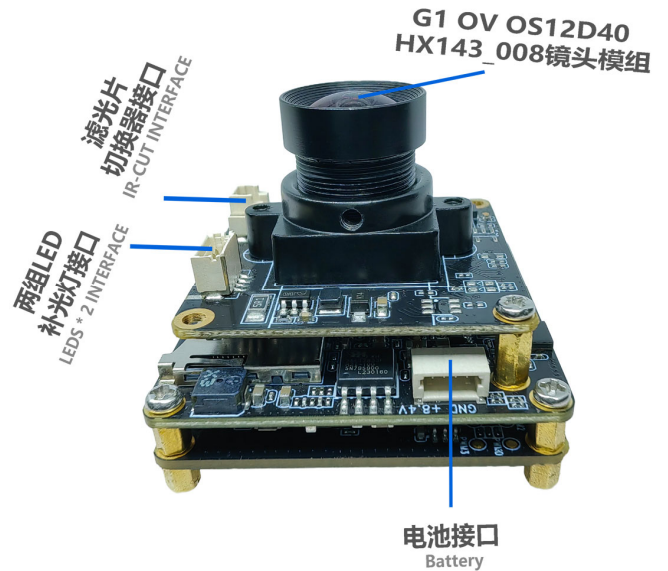


YDS CAMERA MODULE

your best camera partner

YDS-G1M9WF3+YDS-CMFL143008-OS12D40 V1.0

Ai Master Board + WiFi Board + 11.3MP OmniVision OS12D40 Fixed Focus Camera Module Development Kit



www.YDSCAM.com sales@ydscom.com Phone (WeChat, QQ): (+86) 177 2732 6718

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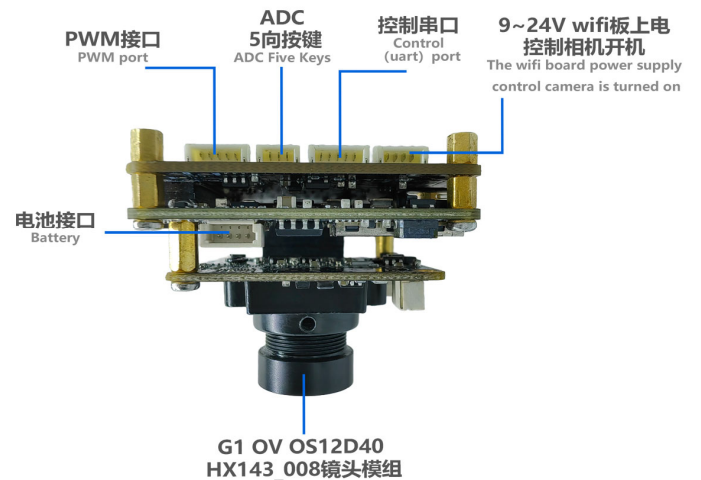
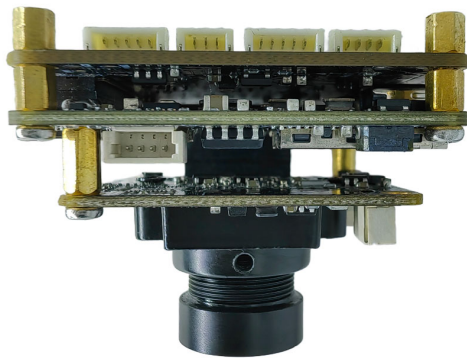
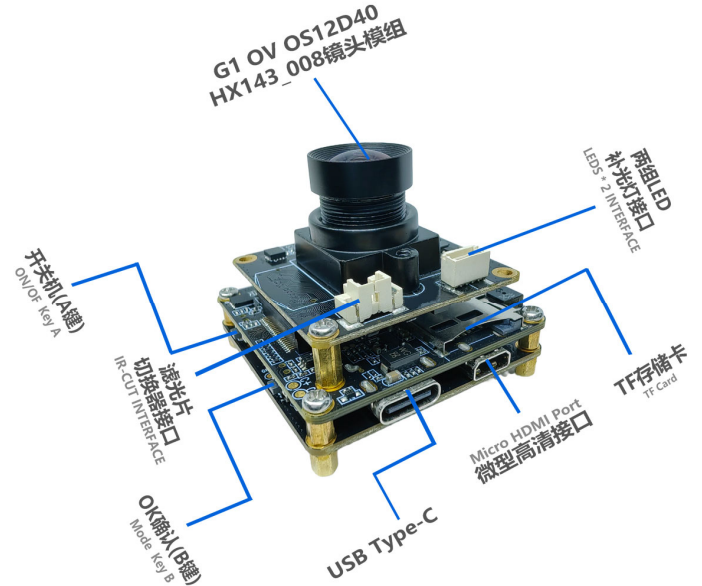


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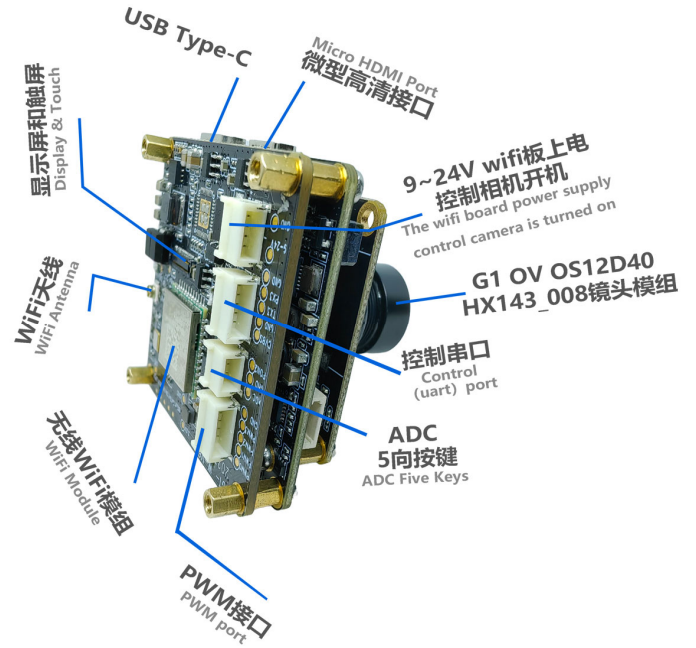
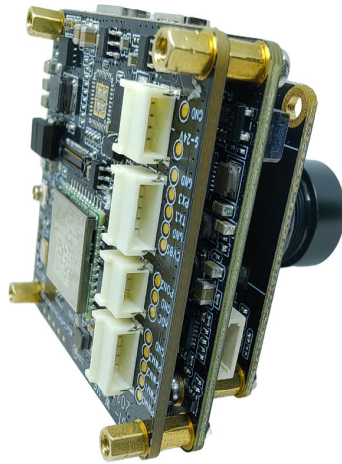


YDS CAMERA MODULE

your best camera partner

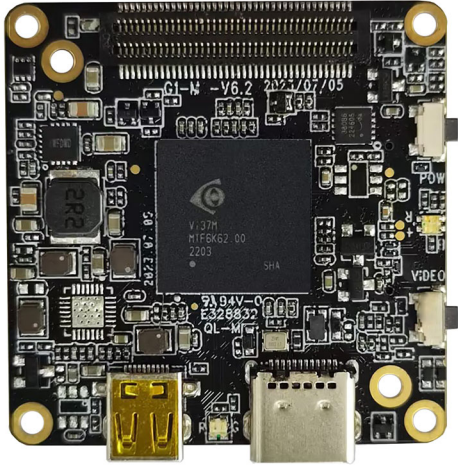
YDS-G1M9WF3+YDS-CMFL143008-OS12D40 V1.0

Ai Master Board + WiFi Board + 11.3MP OmniVision OS12D40 Fixed Focus Camera Module Development Kit

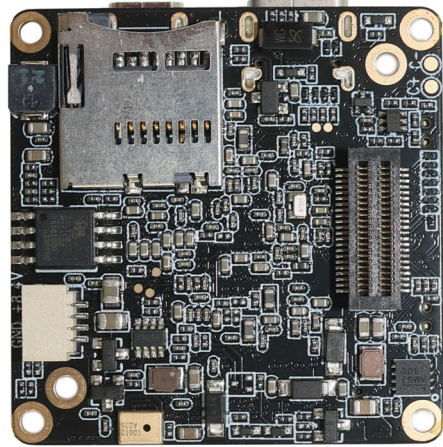


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YDS-G1M9 V6.2**iCatch V39 Ai-Powered Image Processing SoC Master Board**

Front View



Back View

Overview

Equipped with iCatch V39, built-in 2GB DDR3, supports up to 4K@60FPS (differential), 4K@30FPS, 1080P@120FPS H.264 encoded video. Onboard support Type-C, HDMI, TF memory card, recording, 2 control buttons, buzzer, battery power supply, etc.

This master board extension also supports WiFi, LCD display, CVBS, lens module, UART, I2C, SPI, PWM, MIC and other expansion interfaces. The board size is 38x38mm. Widely used in drones, mini DV, wearable devices, sports cameras, face recognition, USB cameras and other camera products.



YDS-G1M9 V6.2

iCatch V39 Ai-Powered Image Processing SoC Master Board

Hardware Specifications

| | |
|--------------------------------------|---|
| Model No. | YDS-G1M9 V6.2 |
| Main Control Chipset (DSP) | iCatch V39 |
| Image Sensor Interface | MIPI |
| Battery Voltage | 7.4V - 7.7V High Voltage Lithium Battery |
| Storage Type | External TF Card, Supports 8GB - 512GB Class 10 and Above, U3 is Recommended |
| Type-C Port | Type-C USB 5V Connection to Computer USB Mode Connection to PCCAM (Camera) Mode |
| LED Indicator Type | Three Color Light (Red, Green, Blue) |
| 2 Control Button Type | Power Button (A), OK Button (B) |
| Power Supply | Supports 3 Power Supply Methods At The Same Time (1) 5V USB to Type-C Port Power Supply (2) 9V-24V WiFi Board or Network Port board Power Supply (3) 6.8V-8.4V Battery Power Supply (The 3-Axis Gimbal Version Does Not Support 5V USB) |
| Operating Temperature | -10°C to +60°C Without Housing |
| Storage Temperature | -20°C to +80°C |
| Humidity | 20% to 80% |
| PCB Dimensions | 38 x 38 mm |
| PCB Screw Hole Spacing | External (34mm x4), Internal (28mm x2) |
| PCB Screw Hole Diameter | 2 mm |
| Optional Camera Configuration | (1) YDS-G1M9 V6.2 + Camera (2) YDS-G1M9 V6.2 + Camera + YDS-G1WF V6.3 WiFi Board (3) YDS-G1M9 V6.2 + Camera + YDS-G1NK V6.3 Ethernet Board |
| Supportive Image Sensors | 13MP: IMX258 12MP: IMX377 OS21D40 IMX577 IMX386 IMX378 8MP: IM317 5MP: IMX335 2MP: IMX290 IMX385 |
| Optional Extension Ports | WiFi, Ethernet Network Port, Display, Audio IC, Lens Module, UART, I2C, SPI, PWM, MIC, etc. |

YDS-G1M9 V6.2

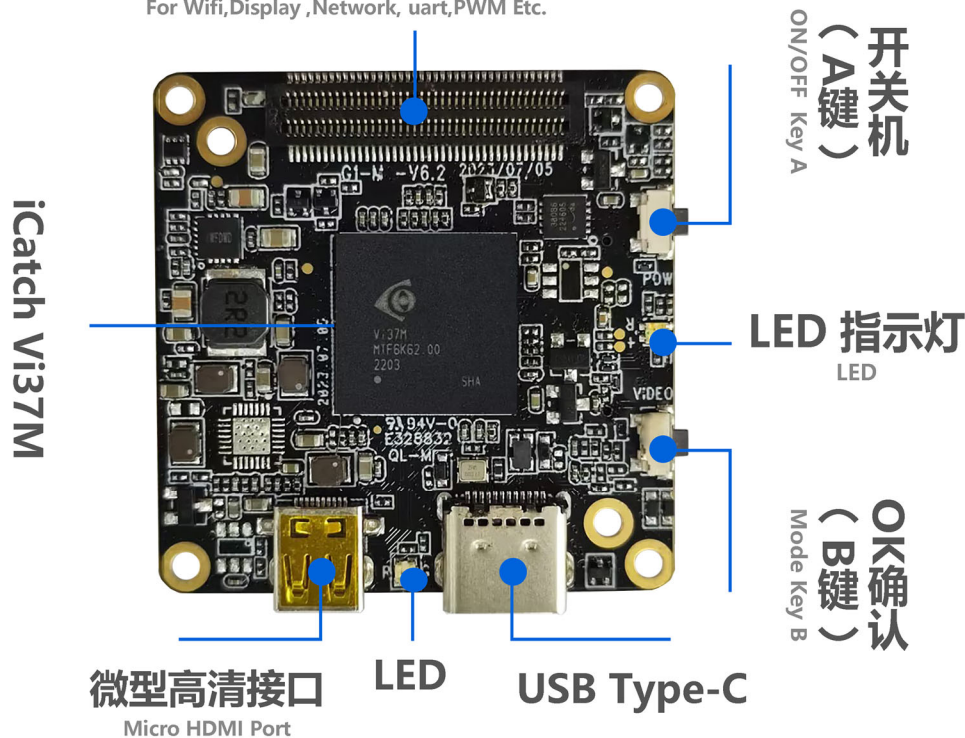
iCatch V39 Ai-Powered Image Processing SoC Master Board

Photo Image Settings

| | |
|----------------------------------|--|
| Resolution | 20MP, 13MP, 12MP, 10MP, 8MP, 5MP, 3MP, 2MP |
| Time Lapse Photography | OFF, 3S, 5S, 7S |
| Continuous shooting | OFF, 3-Shot, 7-Shot, 15-Shot, 30-Shot |
| White Balance | Auto, Sunny, Cloudy, Fluorescent, Incandescent |
| Power Frequency | 50Hz, 60Hz |
| Exposure Compensation | EV 0.0, EV 3.0, EV 7.0, EV 10.0, EV 13.0, EV 17.0, EV 20.0, EV -3.0, EV -7.0, EV -10.0, EV -13.0, EV -17.0, EV -20.0 |
| Time Lapse Photo Interval | OFF, 1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 10S, 13S, 15S, 20S, 25S, 30S, 40S, 1min |
| Time Lapse Duration | No Limit, 1min, 3min, 5min, 10min, 20min, 30min, 1hr, 2hr, 3hr, 5hr |
| Photo Time Watermark | OFF, Date, Date and Time |

Wifi、显示屏、网口、uart、PWM等扩展接口

For Wifi, Display, Network, uart, PWM Etc.





YDS-G1M9 V6.2

iCatch V39 Ai-Powered Image Processing SoC Master Board

Video Settings

| | |
|----------------------------------|---|
| Resolution | 16:9 (4K, 2.7K, 1080P, 720P) 4:3 (1440P) Currently Only IMX377 Sensor Supports 1440P |
| Frame Rate | 24FPS, 25FPS, 30FPS, 48FPS, 50FPS, 60FPS, 120FPS, 240FPS |
| Slow Motion Recording | OFF, 4K2X, 1080P4X, 720P8X |
| Fast Motion Recording | OFF, 2X, 5X, 10X, 15X, 30X |
| Automatic Recording | OFF, ON |
| Time Lapse Video Mode | OFF, 1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 10S, 13S, 15S, 20S, 25S, 30S, 40S, 60S |
| Time Lapse Duration | No Limit, 1min, 3min, 5min, 10min, 20min, 30min, 1hr, 2hr, 3hr, 5hr |
| Pre-recording | OFF, ON (for Option ON, 5 Seconds of Video is Pre-recorded) |
| EIS Anti-Shake | OFF, ON |
| Image Quality Enhancement | Super Good, Very Good, Normal (Referral to Actual Video Effect Quality, Not for Preview) |
| Image Rotation | Normal, Vertical, Horizontal (for Recorded Video) |
| Recording Time | No Limit, 1min, 5min |
| Automatic Screen Off | OFF, 60S, 180S, 300S |
| Light Metering Mode | Center, Multi-point, Single Point |
| Video Recording File Time | No Limit, 1min, 5min |
| Loop Recording | OFF, ON |
| Recording Volume | 0, 1, 2, 3 |
| Video Time Watermark | OFF, Date, Date and Time |



YDS-G1M9 V6.2

iCatch V39 Ai-Powered Image Processing SoC Master Board

System Settings

| | |
|--------------------------------------|--|
| Automatic Shut Down | OFF, 1min, 3min, 5min, 10min, 15min |
| USB Auto Power On | Turn ON, Turn OFF |
| Languages | English, Simplified Chinese, Traditional Chinese (Select Language Through Configuration File in the Card) |
| Button Touch Tone | Turn ON, Turn OFF |
| Automatically Turn On WiFi | Turn ON, Turn OFF |
| WiFi Frequency Bands | 2.4GHz or 5GHz (Dual Band Single Channel) |
| Display Brightness | Low, Medium, High Brightness (for Touch Screen) |
| Display Setting | Conventional Display, Full Screen Display (for Touch Screen) |
| Fill Light A (White Light) | Auto, OFF, ON (for Use with Fill Light Board) |
| Fill Light B (Infrared Light) | Auto, OFF, ON (for Use with Fill Light Board) |
| IR Cut Settings | Auto, OFF, ON (for Use with IR Cut Function Modules) |
| Special Effects | Original Image, Black and White, Natural, Negative, Warm Tones, Contrast (for Touch Screen) |
| White Balance | Auto, Sunny, Cloudy, Fluorescent, Incandescent |
| Date and Time | Year, Month, Day, Hour, Minute |
| Format | No, Yes |
| Reset | No, Yes |
| Card Information | Displays Video Card Capacity and Free Space |
| Device Information | Displays Firmware Version |

Gimbal Functions and Settings

| | |
|---------------------------|---|
| Gimbal Functions | Centering, Calibration |
| Sensitivity | Follow Softly, Follow Sensitively |
| Follow Mode | Full Follow, Heading Follow, Heading and Pitch Follow |
| Pitch Axis Control | Turn ON, Turn OFF |



YDS-G1M9 V6.2

iCatch V39 Ai-Powered Image Processing SoC Master Board

Camera Features

| | |
|--------------------------------------|---|
| Continuous Shooting | Long Press the OK Button (B) to Shoot Continuously, Release Button to Stop Shooting Continuously |
| Snapshot | During Recording, Long Press the OK Button (B) to Capture the Video. Release Button to Stop Snapshot |
| HDMI Output Resolution | 4K@30FPS 1080P@60FPS/30FPS 720P@60FPS |
| Video Start and Stop Function | Short Press the Power Button (A) to Pause or Continue Video Recording |
| USB Camera Resolution | H.264: 4K@30FPS, 1080P@120FPS, 720P@60FPS (Dependency on Sensor Type and UVC Protocol) MJPG: 5760x3240@10FPS, 4000x3000@10FPS 4K@30FPS, 1080P@30FPS, 720P@30FPS YUY2: 480P@30FPS (Supports Modification of UVC Output on Configurations) |
| USB Flash Drive | USB Mode when Connected to Computer |
| Inverted Mode | By Placing a Configuration File in the Card, You Can Modify the Displayed or Captured file and Flip it 180 degrees |
| WiFi Mode | AP Mode, STA Mode Set WiFi Mode by Putting Configuration Files in the Card or Enter the Menu to Set This Item Through the Touch Screen |
| Configuration IP Address | By Placing a Configuration File in the Card, You Can Modify the IP and Gateway Address of the Camera. Default is Static IP. Optional on Dynamic IP. |
| RTSP Video Stream Address | By Placing a Configuration File in the Card, You Can Modify the RTSP video stream address. If There is No Configuration File in the Card, the Default Port is 554. |

YDS-G1M9 V6.2

iCatch V39 Ai-Powered Image Processing SoC Master Board

USB Type-C Interface:

This interface supports USB standard 5V power input, which can power the master board and charge the battery (recommended 7.4V-7.7V battery). Connecting to a computer can directly read files in the TF card and use it as a USB flash drive. It can also be used as a PCCAM USB camera.

The USB interface retains one camera control serial port UART3 and one camera debugging serial port UART1 (the serial port function can be used with the G1-USB serial port debugging board).

Connecting to the Computer USB Flash Drive Mode:

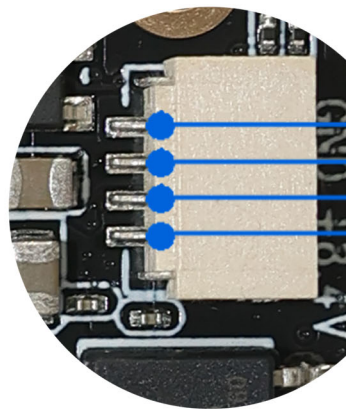
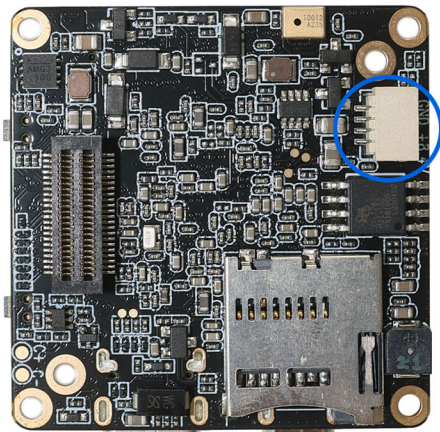
Insert the TF card, connect the other end of the USB to the computer, and automatically enter the USB flash drive mode after booting by default.

Connecting to the Computer PCCAM Mode:

Insert the TF card, connect the other end of the USB to the computer, and automatically enter the USB flash drive mode after booting. Short press the OK button (A) to switch to PCCAM camera mode. (Right-click the computer "Computer", click the left button in the pop-up prompt box to enter "Management", "Device Manager", and you can see the name of the camera identified in "Image Device" camera. Open the camera tool "amcap.exe" to see the current device preview screen).

Battery Power Supply:

6.6V (low power shutdown) to 8.8V, 7.4-7.7V high-voltage and high-density batteries are recommended
Special note: the battery power supply can support up to 12V; but this does not include the gimbal version, the stable power supply voltage of the gimbal version is 8V.



BAT -
BAT +

Battery 7.7V-8.8V
电池供电

YDS-G1M9 V6.2

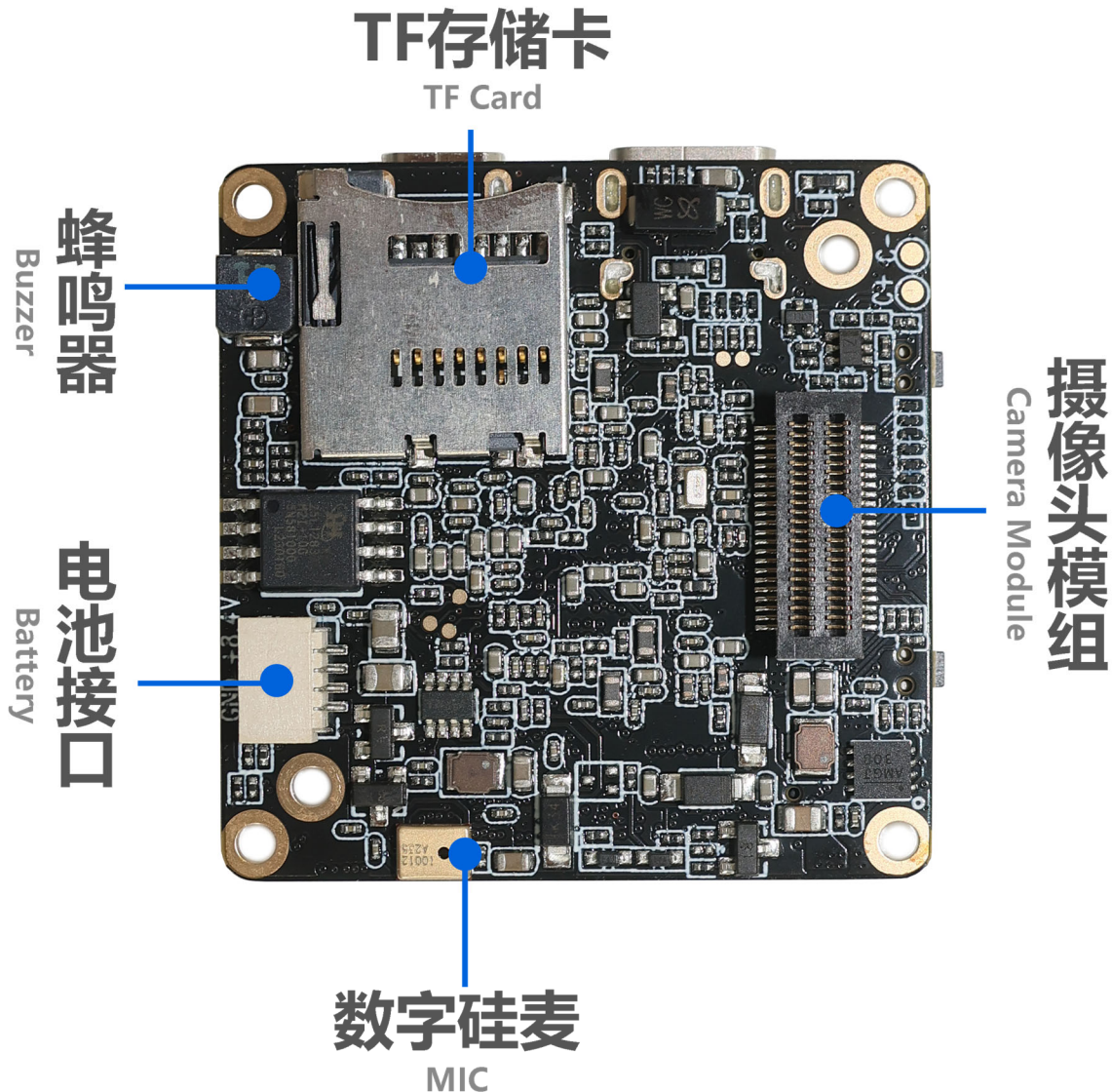
iCatch V39 Ai-Powered Image Processing SoC Master Board

Charge the Battery:

Use a power adapter (5V2A recommended) to charge the battery of the machine. The red light will be on during charging and the green light will be on when fully charged.

Camera Module:

This interface can be used to expand multiple MIPI sensors, IR-CUT function, LED fill light, serial port UART2, battery power output, micro three-axis gimbal and other functions.





YDS-G1M9 V6.2

iCatch V39 Ai-Powered Image Processing SoC Master Board

Button Instructions:

| Button | Mode or Status | Functional Operation |
|--|--------------------------------------|--|
| Button A Power Mode | Power ON / OFF | Long Press 1 Second Power ON / OFF |
| | Standby | Short Press on Switch Mode Video Recording, Snapshot, Playback, Settings |
| | Setting Mode (with Touch Screen) | Short Press to Scroll Down Menu (After Pressing Button B to Enter Setting) |
| | Video Recording | Short Press to Pause or Continue Recording |
| Button B Confirmation OK Video Recording | Standby | In Video Standby Mode, Long Press 3 Seconds to Turn ON / OFF WiFi Mode. Default WiFi is OFF. In Video Recording Mode, Short Press to Start Recording In Snapshot Mode, Short Press to Start Taking Photo Long Press to Start Continue Shooting Release to Stop Continue Shooting |
| | Video Recording | Short Press to Stop Recording and Save the File Long Press 2 Seconds (Less than 4 Seconds) to Take a Single Frame Shot, Release to Stop Taking Frame Shots Long Press 5 Seconds to Take Continues Frame Shots, Release to Stop Taking Frame Shots |
| | Setting Mode (with Touch Screen) | Short Press to Confirm and Enter Setting Mode Long Press 2 Seconds to Return Double-Click to Switch Between Settings: Photo / Video / System / 3-Axis Gimbal |
| | Playback Mode (with Touch Screen) | Short Press to Scroll Up Menu Double-Click to Play / Pause Video or Audio Files Click 3 Times to Mark or Unmark Files. If File is Marked, then the File is Locked and Not Erasable Long Press to Prompt Option to Delete Current File (Long Press to Delete, Short Press to Return) After Entering, Long Press Again to Delete |
| | Shutdown | Press and Hold to Enter the USB Burning Mode |
| Reset Function | Standby or Working | Press Button A and B at the Same Time to Shutdown |



YDS-G1M9 V6.2

iCatch V39 Ai-Powered Image Processing SoC Master Board

LED Indicator Description:

| Functions | Color | Power On | Video Mode | Video Recording | Photo Mode | Photo Snapshot | Playback Mode | Setting Mode |
|---------------|-------|-----------|------------|-----------------|------------|----------------|---------------|--------------|
| LED Indicator | Red | Always On | Always On | Flashing | | | Always On | |
| | Green | | | | Always On | Flash Once | Always On | |
| | Blue | | | | | | Always On | Always On |

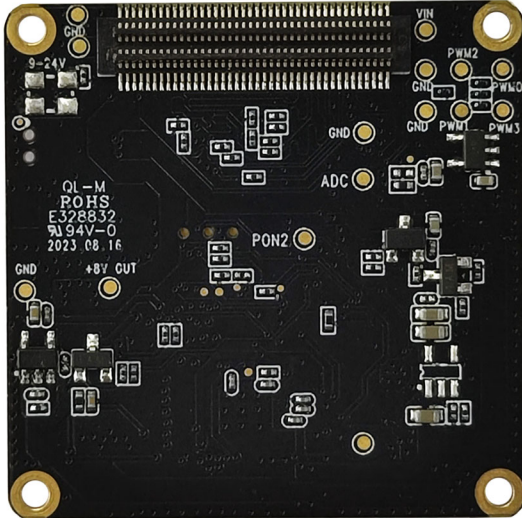
Note: When the device is powered without a TF card inserted, the function indicator light flashes yellow.

Buzzer Sound Description:

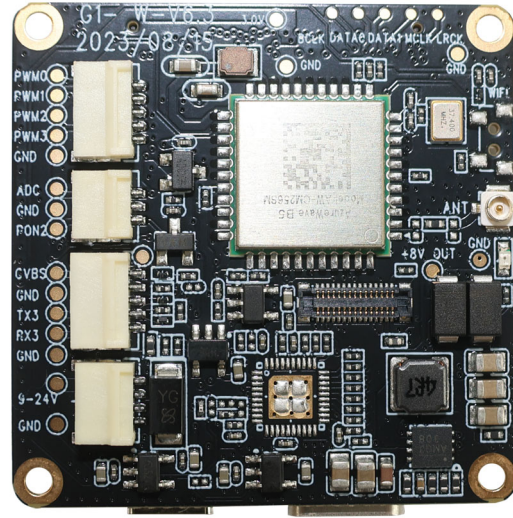
| Operation Mode | Power On | Power Off | Switching Mode | Start Video Recording | Start Stop Recording | Photo Snapshot | Menu Setting | Menu Scroll Down | Exit Menu Setting |
|----------------|----------|-----------|----------------|-----------------------|----------------------|----------------|--------------|------------------|-------------------|
| Buzzer Sound | 3 Beeps | 5 Beeps | 1 Beep | 1 Beep | 2 Beeps | 1 Beep | 1 Beep | 1 Beep | 1 Beep |

Special Note: When the touch screen is not in use, you can modify the setting parameters through the configuration file. Put the configuration file, such as "CameraConfig_G1A.ini" (the specific configuration file name will vary depending on the lens module) in the root directory of the TF card, and you can modify the corresponding function options in the configuration file. After saving the changes, shut down the machine and restart it to take effect.

YDS-G1WF V6.3 WiFi Expansion Board



Front View



Back View

Overview

WiFi expansion board is equipped with the AW CM256SM single-pass dual-band WiFi module, which supports the use of single-band 2.4GHz or 5GHz wireless WiFi functions. The board supports WiFi antenna, reserved WiFi button (Button C), serial port (UART3), etc.

PWM, ADC button, touch screen and other expansion interfaces included. The board PCB size is 38x38mm, and it must be used with our company's designated master board. This WiFi board can not work independently.



YDS-G1WF V6.3 WiFi Expansion Board

Specifications

| | |
|-------------------------------------|---|
| Model No. | YDS-G1WF V6.3 |
| WiFi Module | AW CM256SM |
| Power Supply | Supports 3 Power Supply Methods At The Same Time (1) 5V USB to Type-C Port Power Supply (2) 9V-24V WiFi Board Power Supply (3) 6.8V-8.4V Battery Power Supply (The 3-Axis Gimbal Version Does Not Support 5V USB) |
| WiFi Frequency Bands | 2.4GHz or 5GHz (Dual Band Single Channel) |
| Wireless Network Standards | IEEE 802.11B/G/N/AC, WiFi Compliant |
| 2.4GHz Frequency Range | 2.400GHz - 2.472GHz (2.4GHz ISM Band) |
| 2.4GHz Channels | 2.4GHz: Channel 1 - Channel 13 |
| 2.4GHz Transmission Rate | 2 - 3 Megabytes |
| 2.4GHz Transmission Distance | 50 Meters (No Disruption) |
| 5GHz Frequency Range | 5.150GHz - 5.825GHz (5GHz ISM Band) |
| 5GHz Channels | 5GHz: Channel 1 - Channel 13 |
| 5GHz Transmission Rate | 6 - 8 Megabytes |
| 5GHz Transmission Distance | 30 Meters (No Disruption) |
| CVBS (TV-Out) | 720 x 576 |
| CVBS Standards | NTSC / PAL (TV-Out) |
| Serial Port / UART | RX3, TX3, GND |
| ADC Button | Up, Down, Left, Right, OK 5-Way ADC Buttons Power Button |
| Operating Temperature | -10°C to +60°C Without Housing |
| Storage Temperature | -20°C to +80°C |
| Humidity | 20% to 80% |
| PCB Dimensions | 38 x 38 mm |
| PCB Screw Hole Spacing | 34 mm |
| PCB Screw Hole Diameter | 2 mm |
| Extendable Functions | PWM, ADC Buttons, WiFi Board Power Supply UART3 Serial Port, Touch Screen, Other Interfaces |

YDS-G1WF V6.3 WiFi Expansion Board

Hardware Interface Function Description

AW CM256SM single-pass dual-band WiFi module supports single-band 2.4GHz or 5GHz wireless WiFi function, and adopts the first generation IPEX universal copper standard antenna.

In the video mode standby state, long press the master board Button B, that is, long press the motherboard shooting button for 3S to turn on WiFi. The red light flashes when WiFi is turned on, and the red light is always on after the connection is successful.

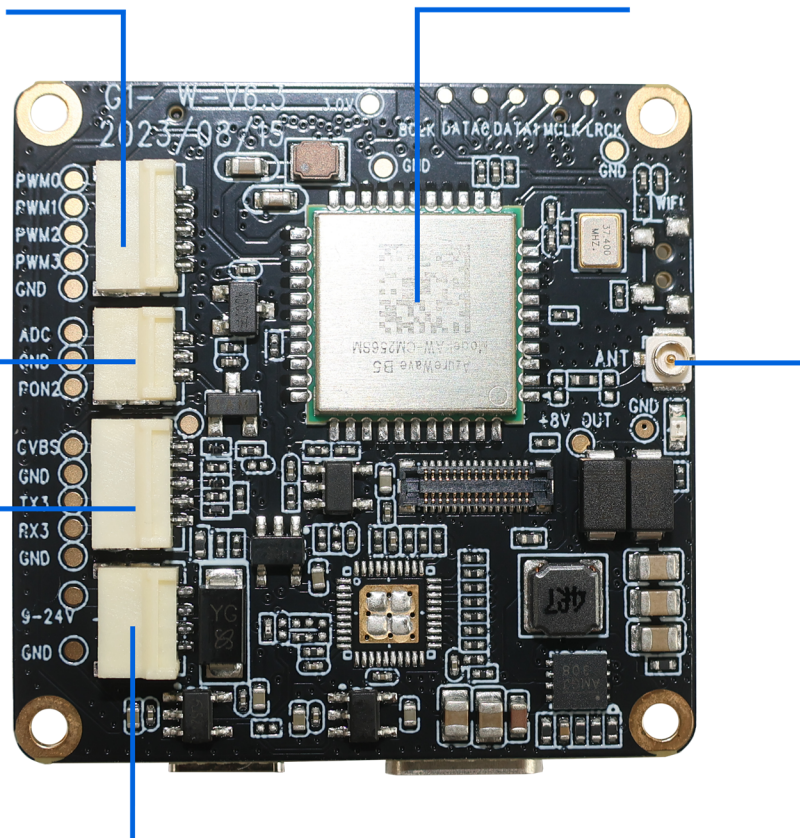
PWM接口
PWM port

无线WiFi模组
WiFi Module

**ADC
5向按键**
ADC Five Keys

控制串口
Control
(uart) port

WiFi天线
WiFi Antenna

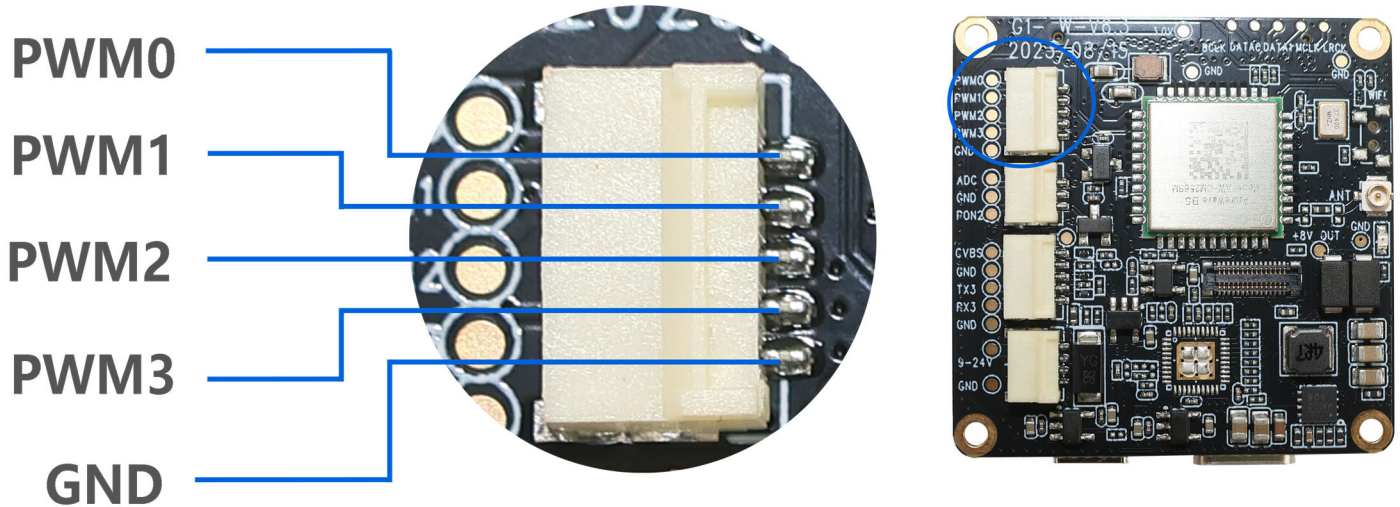


9~24Vwifi板上电控制相机开机

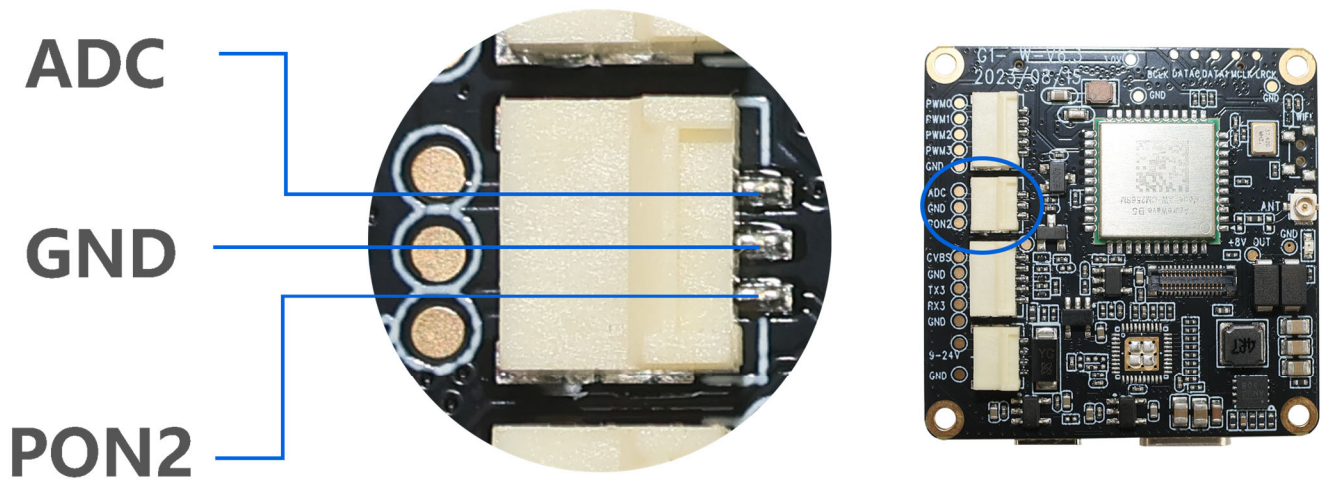
The wifi board power supply control camera is turned on

YDS-G1WF V6.3 WiFi Expansion Board

The PWM function interface, which can be used to control camera mode switching, photo taking, video recording and other functions.

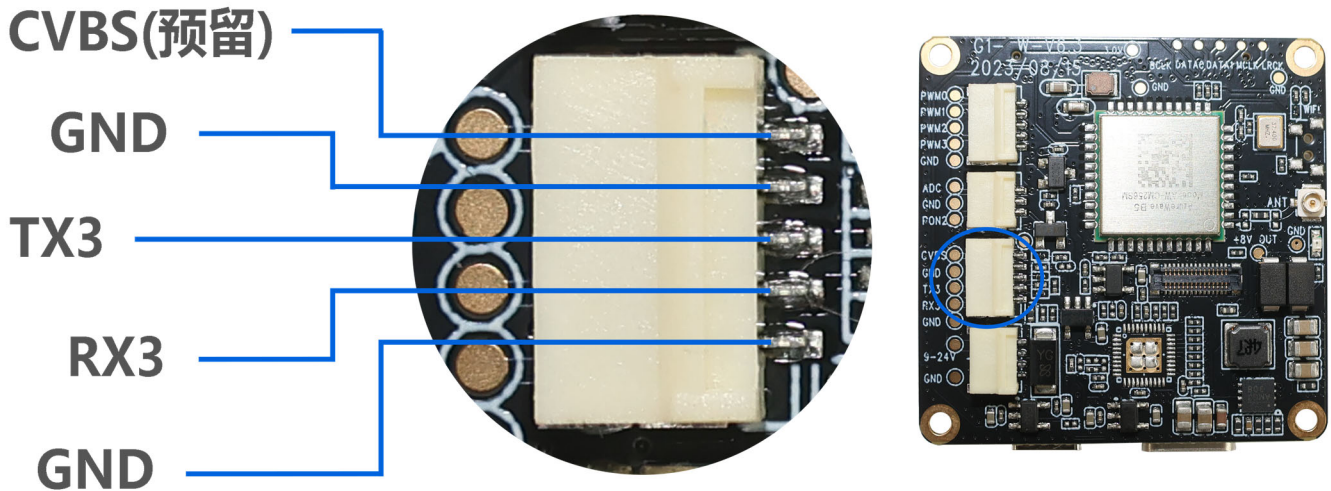


Supports one ADC button interface, which can be connected to five buttons: up, down, left, right, and OK, to control the camera's recording, taking pictures, turning on WiFi, etc. Supports external buttons to control the camera's power on and off.

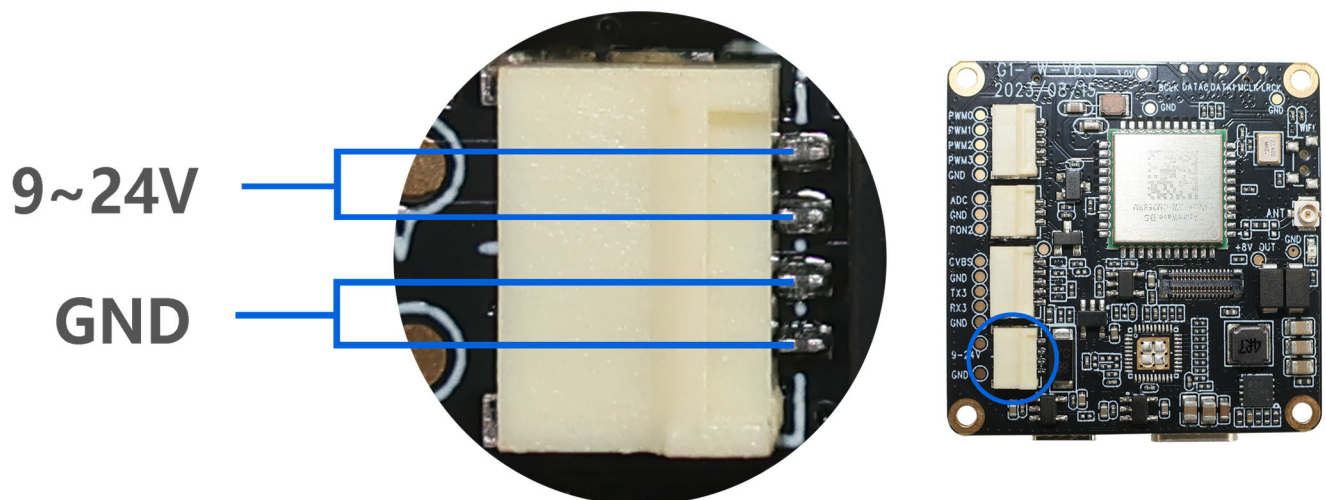


YDS-G1WF V6.3 WiFi Expansion Board

Supports one analog video CVBS (TV-OUT) signal output, with RX3 and TX3 reserved ports, and the camera can be set and controlled through this serial port.



The camera can be powered on automatically using 9V-24V power supply; the master board supports three-way simultaneous use, namely WiFi board power supply, motherboard battery power supply, and Type-C USB power supply. It can also be used with a single power supply.



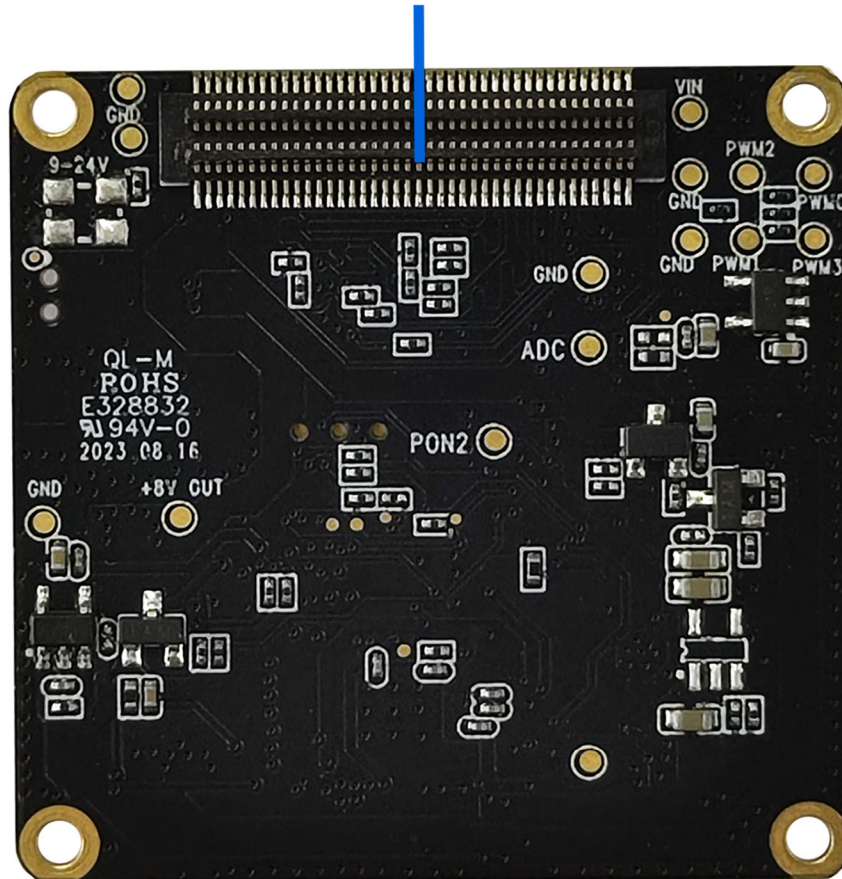
YDS-G1WF V6.3 WiFi Expansion Board

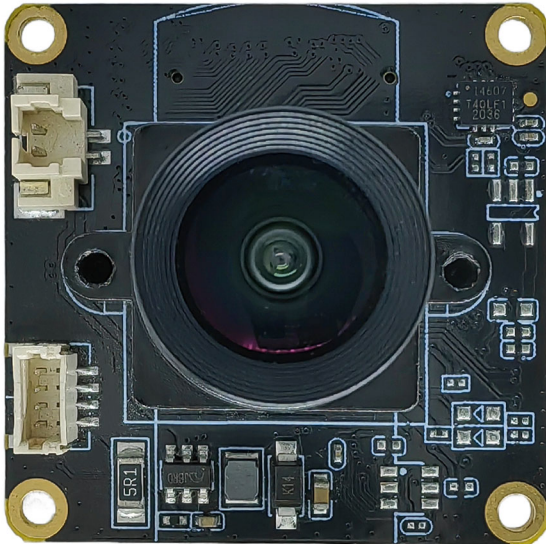
Special note:

The three-axis gimbal does not support 5V USB power supply alone. The battery power supply can support up to 12V; but this does not include the gimbal version, the stable power supply voltage of the battery for gimbal version is 8V.

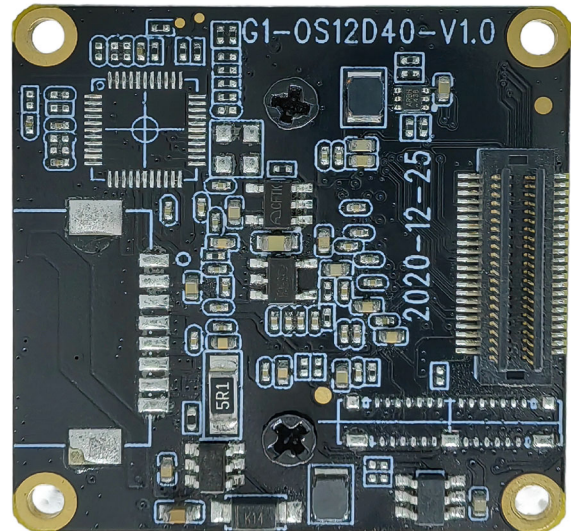
wifi板连接主板扩展板接口

wifi board connect to main board



YDS-CMFL143008-OS12D40 V1.0**11.3MP OmniVision OS12D40 Fixed Focus Camera Module**

Front View



Back View

Overview

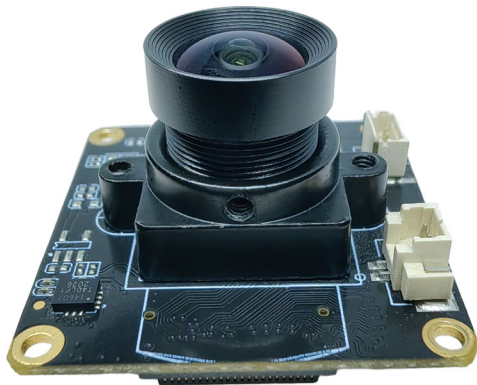
The OmniVision OS12D40 color image sensor used in the YDS-CMFL143008-OS12D40 V1.0 camera module is a high-performance CMOS 1/2.49" image sensor that can provide 11.3 megapixels (4512x2512) image signals at up to 60FPS, with a pixel size of 1.404um x 1.404um.

When used with the master board, it can support shooting 11MP high-definition images, up to 4K@60FPS (differential), and 4K@30FPS video shooting.

This camera uses board-to-board socket connection. It supports multi-axis EIS anti-shake image stabilization function. The board frame size is 32x32mm, and the size from the top of the module lens to the PCB board surface is 16.5mm.



YDS-CMFL143008-OS12D40 V1.0 11.3MP OmniVision OS12D40 Fixed Focus Camera Module





YDS-CMFL143008-OS12D40 V1.0

11.3MP OmniVision OS12D40 Fixed Focus Camera Module

Specifications

| | |
|---|--|
| Model No. | YDS-CMFL143008-OS12D40 V1.0 |
| Image Sensor | OS12D40 |
| Image Sensor Type | CMOS |
| Effective Pixels | 11.3 Megapixels |
| Sensor Size | 1/2.49" |
| Pixel Size | 1.404 um x 1.404 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 | 33 x 32 x 17.5 mm |
| PCB Screw Hole Spacing | 28 x 28 mm |
| PCB Screw Hole Diameter | 2 mm |
| Lens Mount Screw Diameter | 1.6 mm |

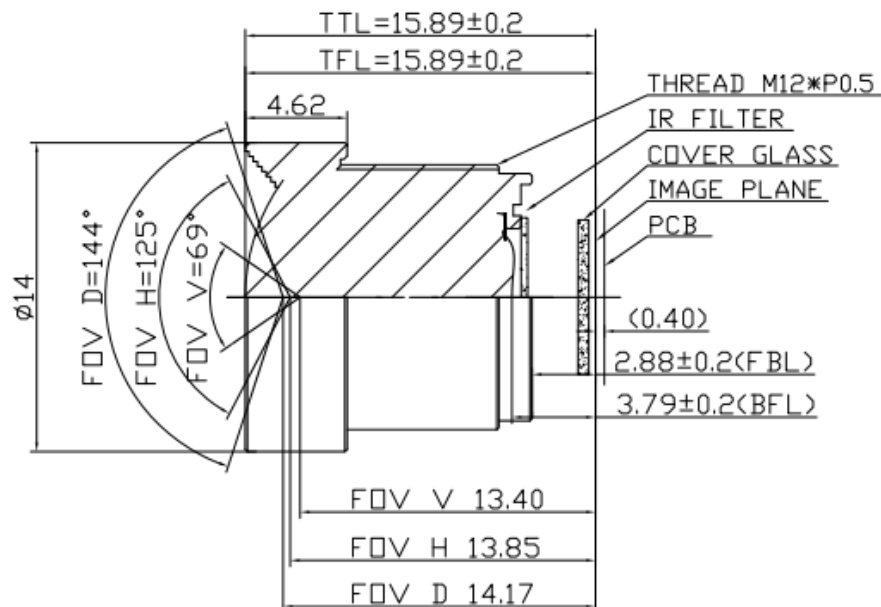
YDS-CMFL143008-OS12D40 V1.0

11.3MP OmniVision OS12D40 Fixed Focus Camera Module

Lens Specifications

| | |
|------------------------------|-----------------------------|
| Lens Model No. | HX143_008 |
| EFL (Focal Length) | 2.95 mm |
| TTL (Total Length) | 15.89 mm |
| F. No. | 2.40 |
| IR Coating | T=50%@650nm +/- 10nm |
| Lens Construction | 4G3P + IR |
| Diagonal View Angle (DFOV) | 144° (DFOV) (y' = 7.25 mm) |
| Horizontal View Angle (HFOV) | 125° (HFOV) (y' = 6.335 mm) |
| Vertical View Angle (VFOV) | 69° (VFOV) (y' = 3.527 mm) |
| Chief-Ray Angle | 19° |
| Distortion | <-33% |
| Relative Illumination | >65% |
| Lens Operating Temperature | -20°C to +80°C |
| Lens Storage Temperature | -40°C to +90°C |

Lens Drawing



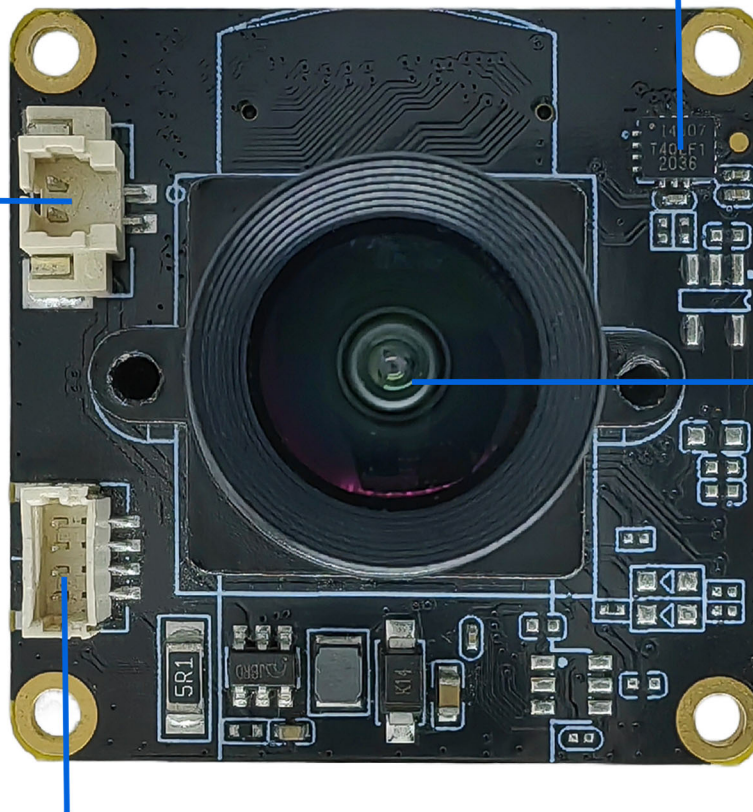
YDS-CMFL143008-OS12D40 V1.0

11.3MP OmniVision OS12D40 Fixed Focus Camera Module

陀螺仪，支持EIS防抖

EIS Stabilization

滤光片切换器接口
IR-CUT INTERFACE



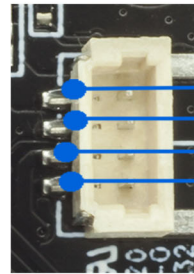
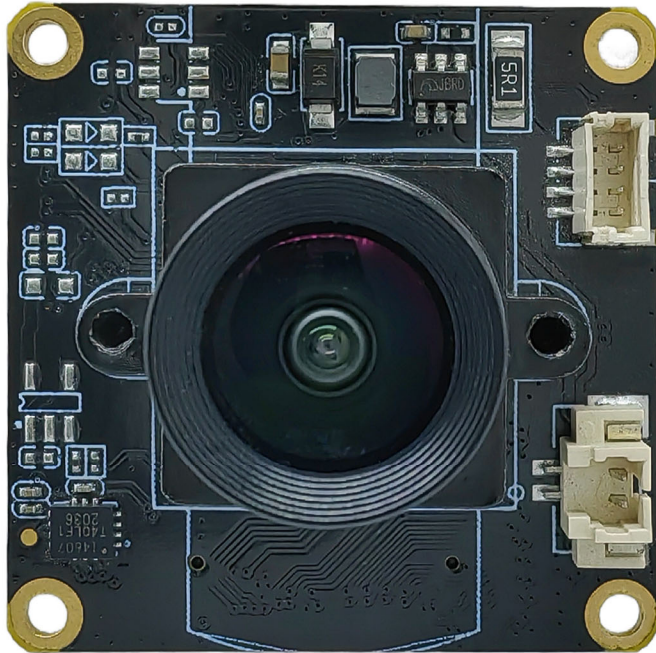
G1-OS12D40 HX143_008
V1.0 镜头模组

两组LED补光灯接口

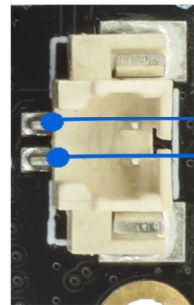
LEDS * 2 INTERFACE

YDS-CMFL143008-OS12D40 V1.0

11.3MP OmniVision OS12D40 Fixed Focus Camera Module



LED B -
LED B +
LED A -
LED A +



IR-CUT -
IR-CUT +

Special Note:

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 YDS-LEDP V2.0 White and Infrared Light LED Plate.

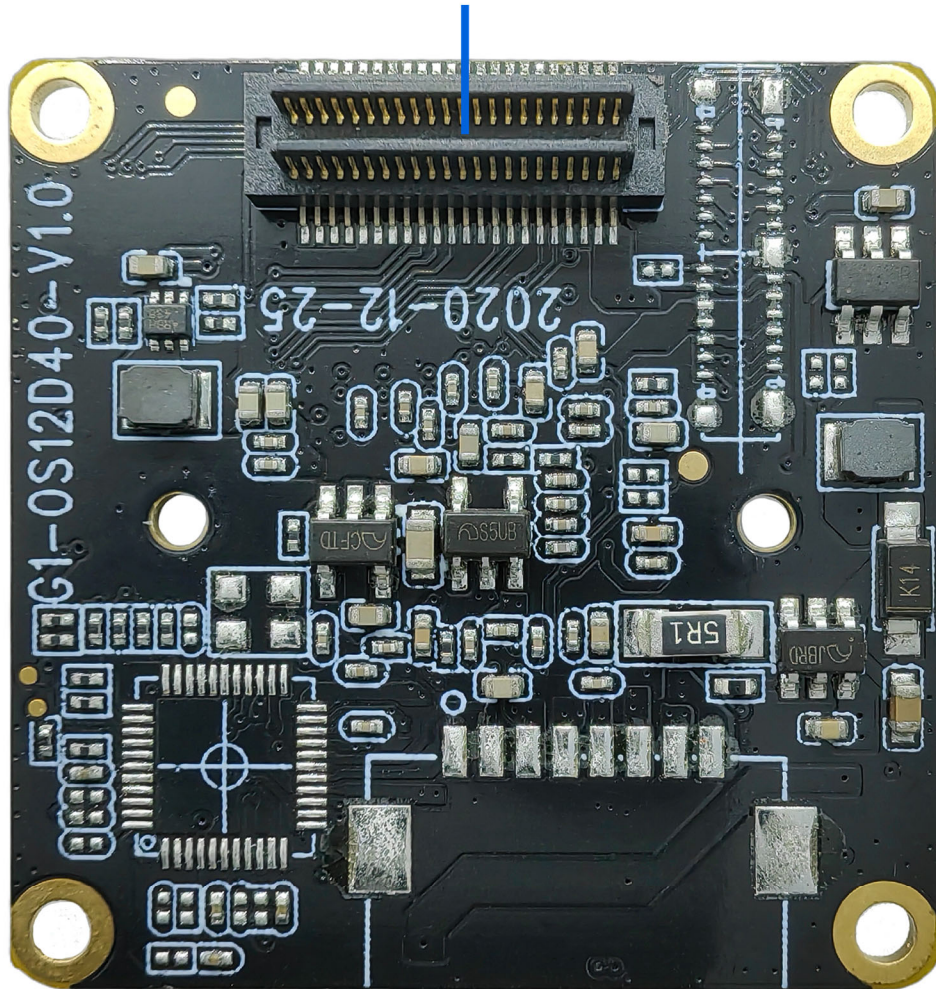
When used with the IR cut filter lens, the infrared light can be switched automatically or manually, making videos and photos clearer at night.

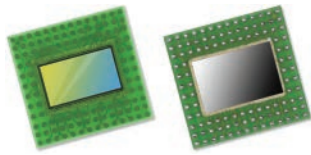


YDS-CMFL143008-OS12D40 V1.0

11.3MP OmniVision OS12D40 Fixed Focus Camera Module

**通过板对板连接器连接G1主板
支持Sensor、EIS、IR-CUT、LED等**
Connect Sensor, EIS, IR-CUT, LED etc.





OS12D40 11.3-megapixel product brief



available in
a lead-free
package

Security Image Sensor Provides Industry-High 11.3MP Resolution for 4K2K With Electronic Image Stabilization and Best in Class HDR for 1080p Video

OmniVision's OS12D40 is a 1.4 micron pixel, 11.3MP image sensor that offers the unprecedented combination of a large 1/2.49" optical format, on-chip remosaic (4-cell to Bayer) color converter and on-chip high dynamic range (HDR) processing. It is the industry's only security sensor with 3-exposure, 4-cell HDR capability to provide larger-pixel low light performance with the best artifact elimination for moving objects. When in full-HD 1080p mode, this sensor's 3-exposure HDR with on-chip combination and tone mapping provides best in class video captures. This is superior to the competing method, known as staggered HDR, which relies on additional passes that introduce motion artifacts, especially in low light.

Integrated selective conversion gain technology allows the pixel conversion gain to be dynamically switched between low and high, depending on the scene being captured. In combination with its other features—including PureCel[®]Plus-S stacked pixel technology for reduced cross talk and maximum quantum efficiency in low light—this image sensor enables mass market security cameras to capture the industry's highest quality video and ultra wide angle photos.

The OS12D40's fast mode switch allows security operators or AI-enabled surveillance systems to seamlessly switch to 4K2K mode when a specific threat is identified for closer inspection, such as a potential intruder or unauthorized vehicle. This sensor's best in class 11.3MP resolution provides the extra pixels needed for 4K2K images with electronic image stabilization (EIS), to ensure that details can be clearly identified.

The OS12D40 is a native 16:9 aspect ratio image sensor that uses a 4-cell color filter pattern. It has an on-chip 4-cell to Bayer remosaic converter, in order to provide 4K video at 60 fps with 20% additional pixels for EIS. In a 4-cell binned mode, it can output an impressive 2.8MP/1080p resolution with 20% additional pixels for EIS video and images at four times the sensitivity. This sensor also supports both CPHY and DPHY interfaces.

Find out more at www.ovt.com.



OmniVision

Applications

- Security Cameras
- PC Multimedia
- Machine Vision

Product Features

- automatic black level calibration (ABLC)
- programmable controls for:
 - frame rate
 - mirror and flip
 - binning
 - cropping
 - windowing
- support for dynamic defect pixel cancellation (DPC)
- supports output formats: 10-bit RGB 4-cell pattern Bayer RAW
- supports horizontal and vertical subsampling
- supports typical images sizes:
 - 4512 x 2512
 - 3840 x 2160
 - 2256 x 1256
 - 1920 x 1080
 - 1280 x 720
- standard serial SCCB interface
- up to 4-lane MIPI TX interface with speed up to 2.5 Gbps/lane
- embedded 8k bits of one-time programmable (OTP) memory (4k bits reserved for customer use)
- 2/3 trio C-PHY interface, up to 1.6 Gbps/trio
- 4-cell support:
 - 4-cell binning
 - 4-cell full
- on-chip 4-cell to Bayer converter
- three on-chip phase lock loops (PLLs)
- sequential multi-frame HDR
- 2.8MP 10-bit 3-exposure 4C HDR output after tone mapping
- programmable I/O drive capability
- built-in temperature sensor
- typical module size: 8.5 x 8.5 x -5.1 mm

OS12D40



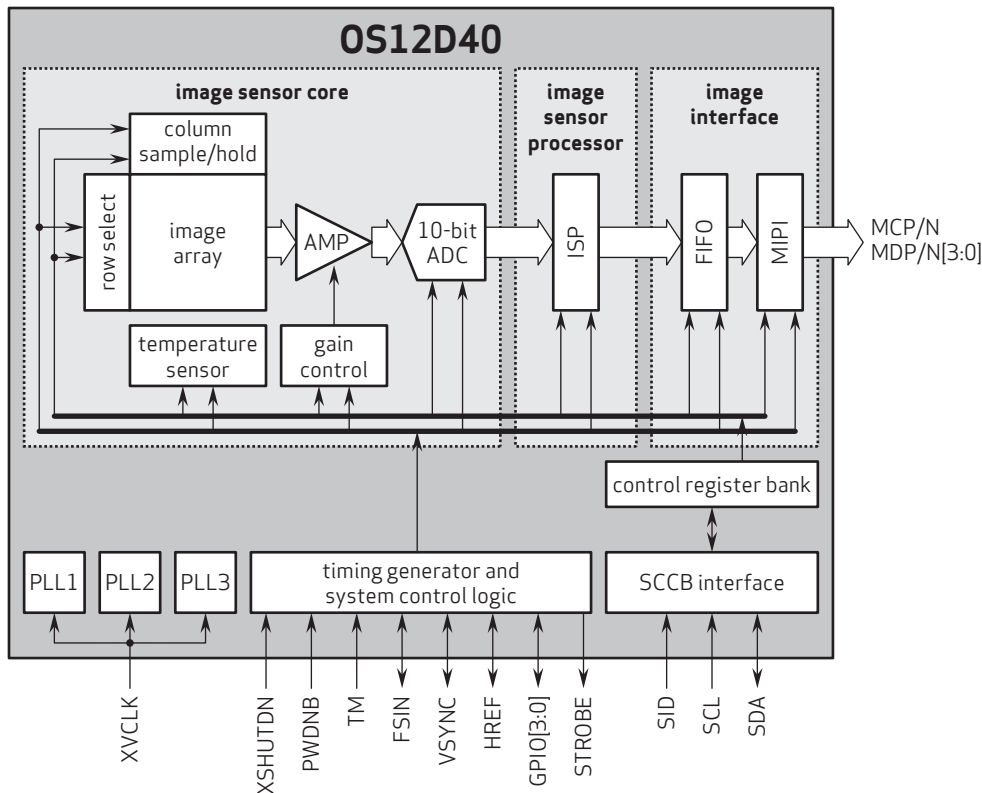
Ordering Information

- OS12D40-J08A-Z (color, lead-free)
108-pin fan-out package

Technical Specifications

- active array size: 4512 x 2512
- maximum image transfer rate:
 - 4512 x 2512: 60 fps
- power supply:
 - core: 1.1V
 - analog: 2.8V
 - I/O: 1.8V
- power requirements:
 - active: 505 mW
 - standby: <10 μW
- temperature range:
 - operating: -30°C to +85°C junction temperature
 - stable: 0°C to +60°C junction temperature
- output formats:
 - 10-bit RGB 4-cell pattern Bayer RAW
- lens size: 1/2.49"
- lens chief ray angle: 8.7° linear
- scan mode: progressive
- pixel size: 1.404 μm x 1.404 μm
- image area: 6365.736 μm x 3554.928 μm

Functional Block Diagram



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OmniVision

Cameras Applications



Automotive Driver Pilot



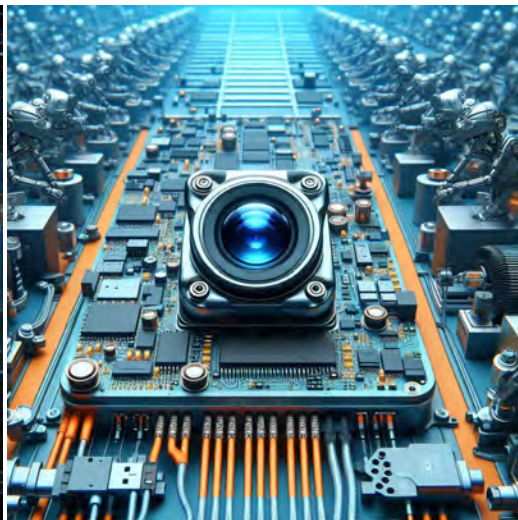
Live Streaming



Video Conference



Eye Tracker Biometric Detection



Machine Vision



Agricultural Monitor



Night Vision Security



Drone and Sports Eagle Eyes



Interactive Pet Camera



YDS CAMERA MODULE

your best camera partner

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 | | | | | | | |
| FREQ | | 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 | | | | | | | |

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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 |



Camera Inspection Standard

| 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 | | |

YDSCAM Package Solutions

YDS Camera Module



Complete with Lens Protection Film



Tray with Grid and Space



Place Cameras on the Tray

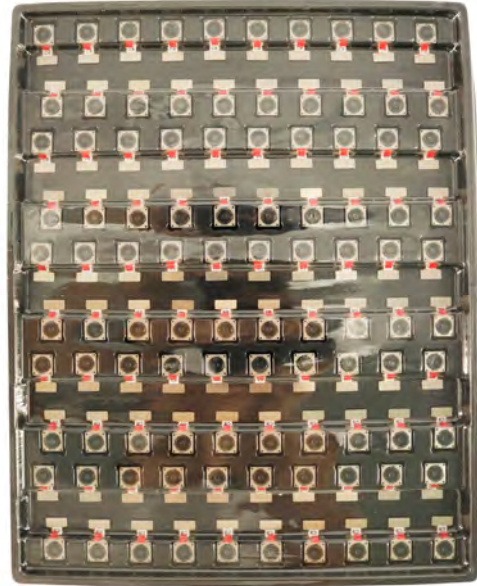


YDSCAM Package Solutions

Full Tray of Cameras



Cover Tray with Lid



Place Tray into Anti-Static Bag



Vacuum the Anti-Static Bag



YDSCAM Package Solutions

Sealed Vacuum Anti-Static Bag with Labels

1. Model and Description 2. Quantity 3. Manufacturing Date Code 4. Caution



YDSCAM Package Solutions

Place Foam Sheets Between Tray Bags



Foam Sheets are Larger Than Trays



Place Foam Sheets and Trays into Box



Foam Sheets are Tightly Fitting in Box



Seal the Carbon Box



Label the Carbon Shipping Box

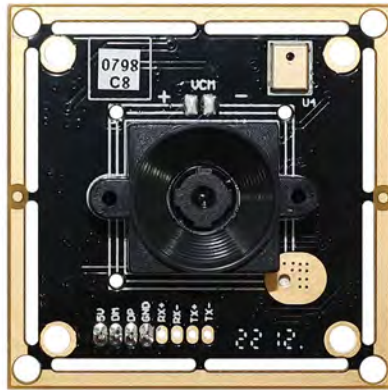




YDSCAM Package Solutions

USB Camera Module

Complete with Lens Protection Film



Place Camera Sample into Anti-Static Bag

Place USB Cameras into Tray



Seal the Tray with Anti-Static Bag

Label the Carbon Shipping Box



YDSCAM Package Solutions

Place Camera Sample into Anti-Static Bag



Place Connectors into Anti-Static Bag



Label the Sample Bags



Place Connectors into Reel



Place Samples into the Carbon Box



Place Connectors into the Carbon Box





YDS CAMERA MODULE

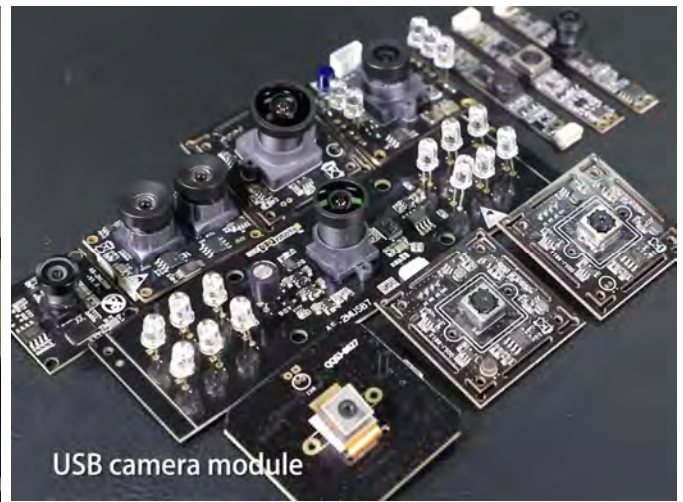
your best camera partner

Company YDSCAM

YingDeShun Co. Ltd. (YDS) was established in 2017, a next-generation technology driven manufacturer specialized in research, design, and produce of audio and video products. YDS is occupying 20,000 square feet automated plants with 100 employees of annual throughput 30,000,000 units cameras.

YDS 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. YDS 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

YDS provides the following limited warranty if you purchased the Product(s) directly from YDS company or from YDS's website www.YDSCAM.com. Product(s) purchased from other sellers or sources are not covered by this Limited Warranty. YDS 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, YDS 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 YDS is solely limited to repair and/or replacement on the terms set forth above. YDS is not reliable or responsible for any subsequent events.



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your best camera partner

YDS Strength

Powerful Factory



Professional Service



Promised Delivery



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