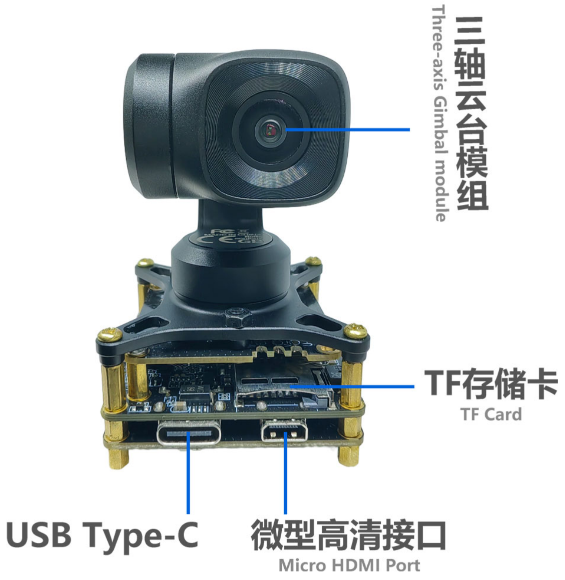
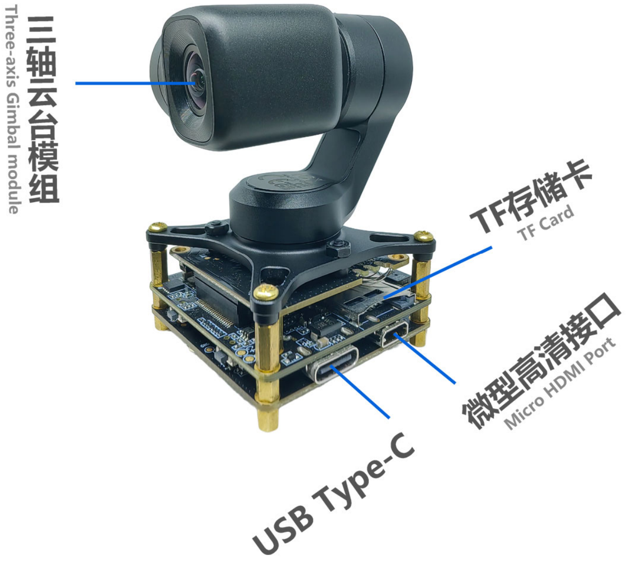
YDS-G1M9WF3+YDS-CMAG-OS12D40 V1.0

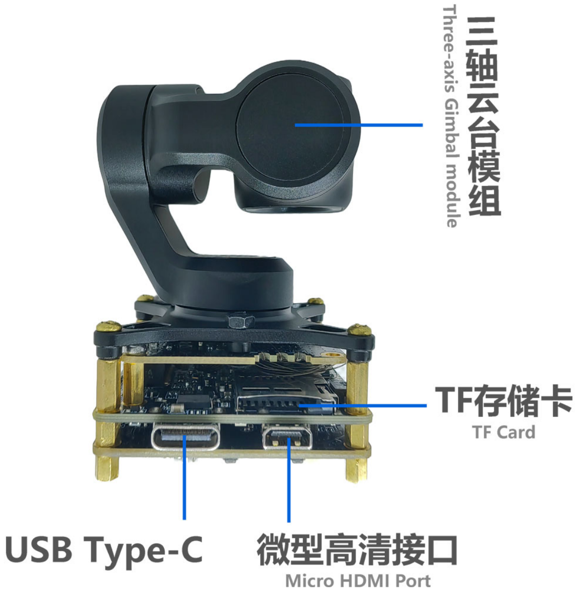
Ai Master Board + WiFi Board + 11.3MP OmniVision OS12D40 Three-Axis Anti-Shake Gimbal Camera Module Development Kit

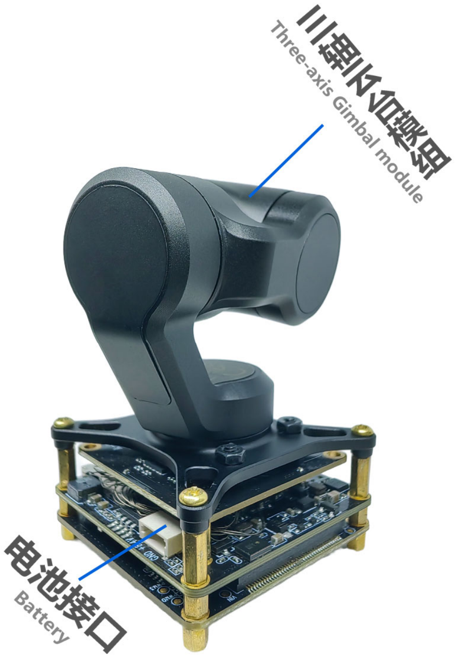

三轴云台模组
Three-axis Gimbal module
TF存储卡
TF Card
USB Type-C
微型高清接口
Micro HDMI Port


三轴云台模组
Three-axis Gimbal module
TF存储卡
TF Card
微型高清接口
Micro HDMI Port
USB Type-C

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

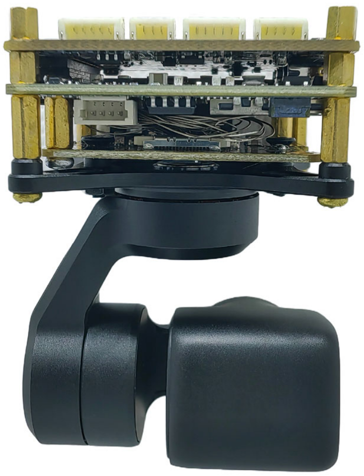
Ai Master Board + WiFi Board + 11.3MP OmniVision OS12D40 Three-Axis Anti-Shake Gimbal Camera Module Development Kit

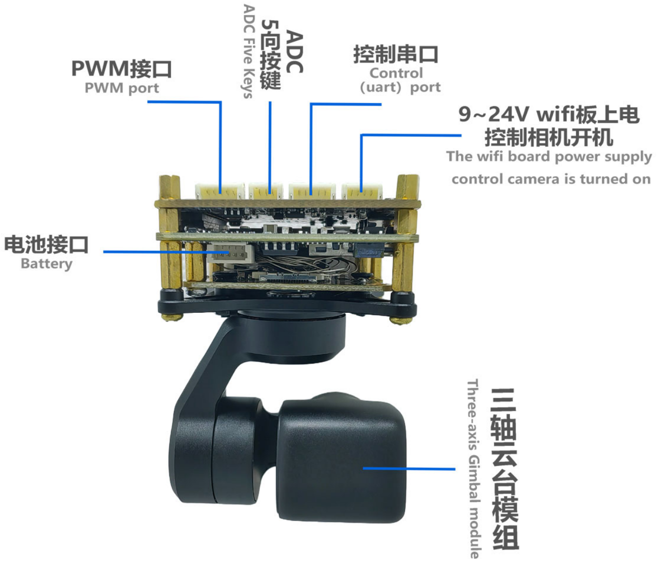

三轴云台模组
Three-axis Gimbal module
TF存储卡
TF Card
USB Type-C
微型高清接口
Micro HDMI Port


三轴云台模组
Three-axis Gimbal module
电池接口
Battery

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

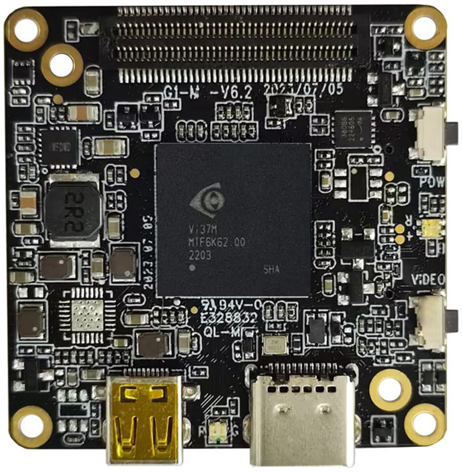
Ai Master Board + WiFi Board + 11.3MP OmniVision OS12D40 Three-Axis Anti-Shake Gimbal Camera Module Development Kit

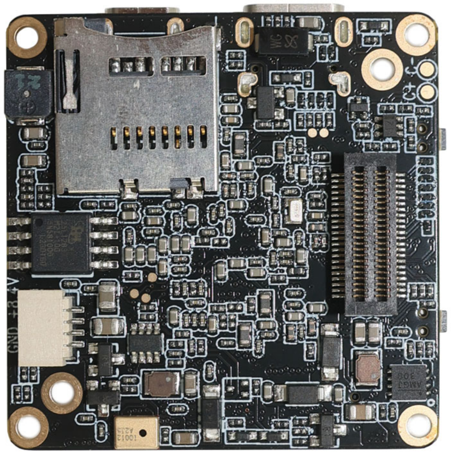



PWM接口
PWM port
ADC 5向按键
ADC Five Keys
控制串口
Control (uart) port
9~24V wifi板上电控制相机开机
The wifi board power supply control camera is turned on
电池接口
Battery
三轴云台模组
Three-axis Gimbal module

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 CAMERA MODULE

your best camera partner

YDS-G1M9 V6.2

iCatch V39 Ai-Powered Image Processing SoC Master Board

Hardware Specifications

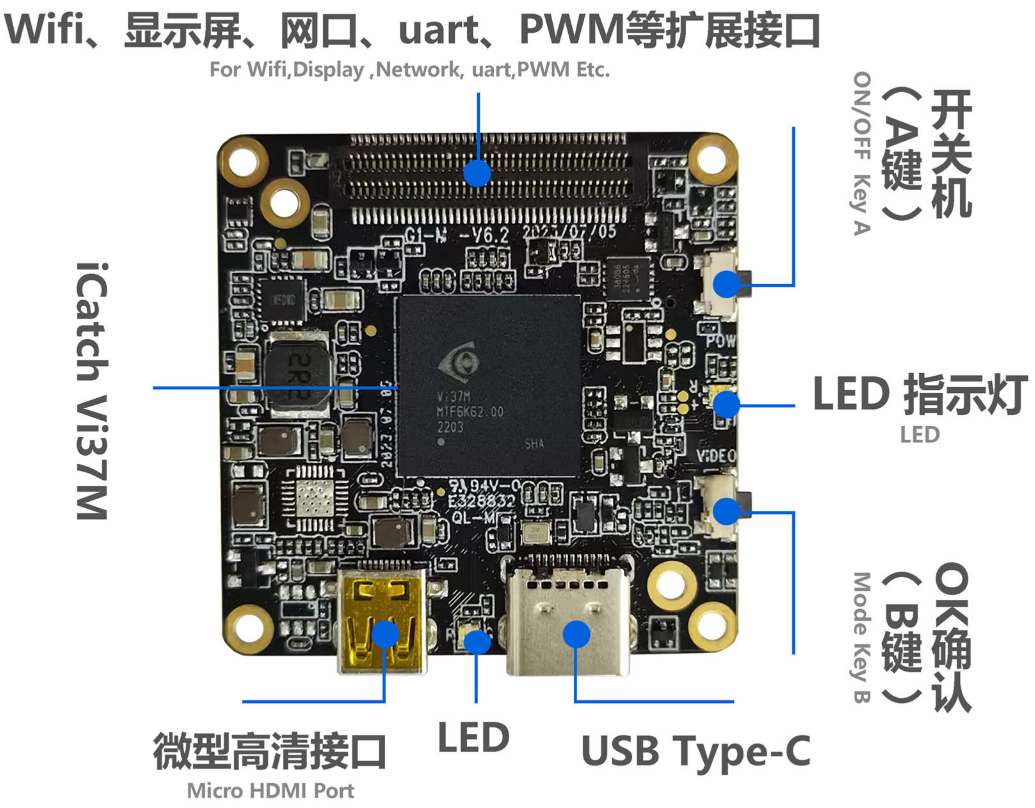
Model No.	**YDS-G1M9 V6.2**
Main Control Chipset (DSP)	iCatch V39
Image Sensor Interface	MIPI
Battery Voltage	7.4V - 7.7V High Voltage Lithium Battery
Storage Type	External TF Card, Supports 8GB - 512GB Class 10 and Above, U3 is Recommended
Type-C Port	Type-C USB 5V Connection to Computer USB Mode Connection 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 17.0, 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.
开关机（A键）
ON/OFF Key A
iCatch Vi37M
LED 指示灯
LED
OK确认（B键）
Mode Key B
微型高清接口
Micro HDMI Port
LED
USB Type-C

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:

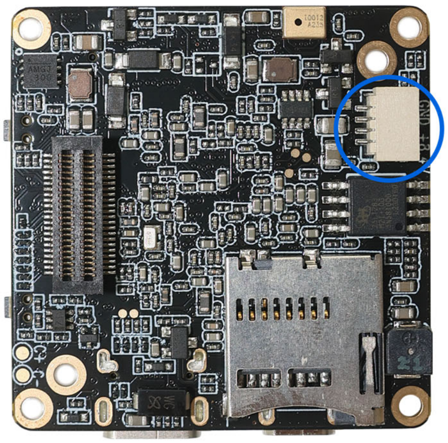
Insert the TF card, connect the other end of the USB to the computer, and automatically enter the USB flash drive mode after booting by default.

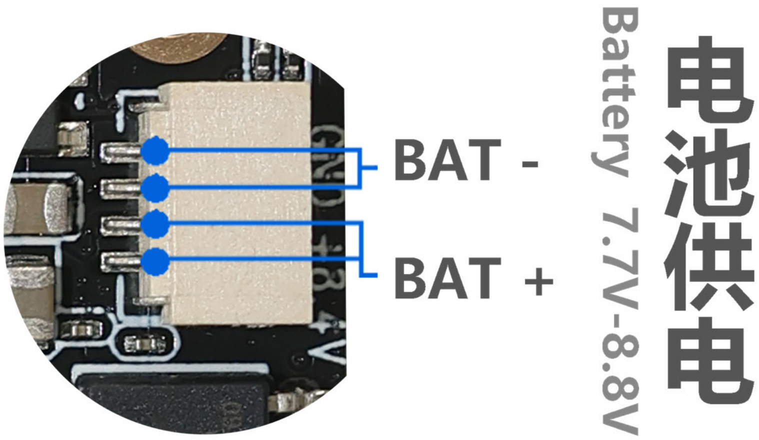
Connecting to the Computer PCCAM Mode:

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.





YDS-G1M9 V6.2

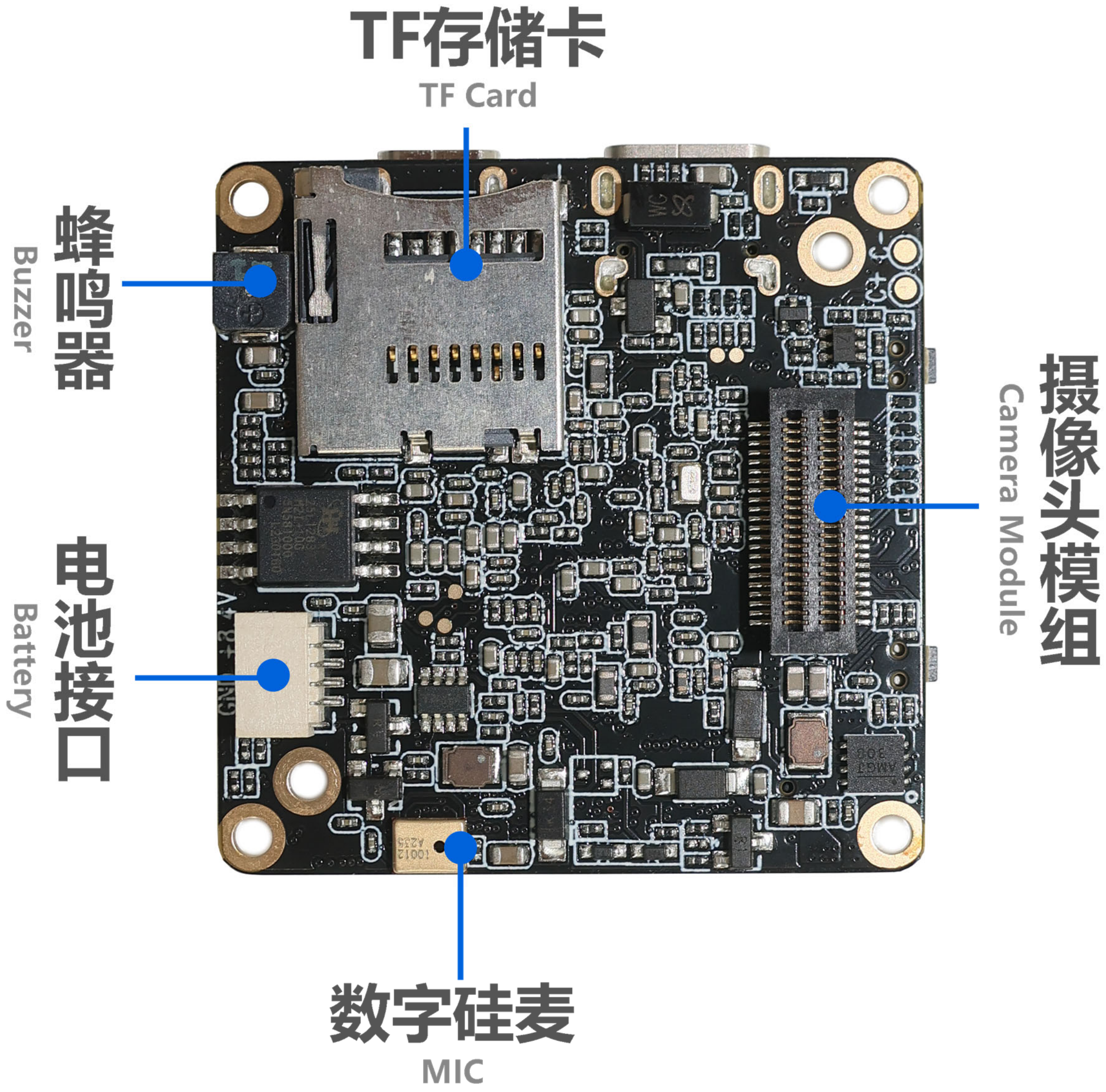
iCatch V39 Ai-Powered Image Processing SoC Master Board

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.


TF存储卡
TF Card
蜂鸣器
Buzzer
电池接口
Battery
摄像头模组
Camera Module
数字硅麦
MIC

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.

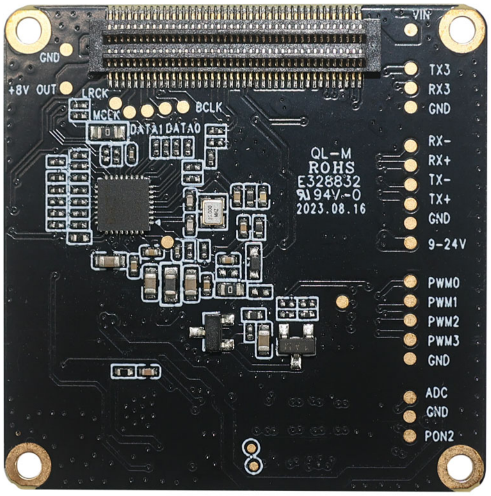
Buzzer Sound Description:

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

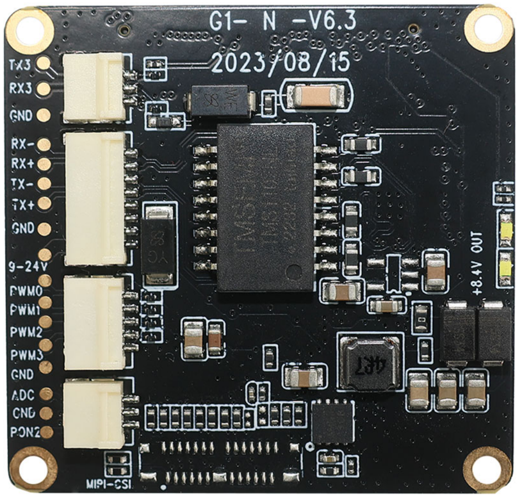
Special Note: When the touch screen is not in use, you can modify the setting parameters through the configuration file. Put the configuration file, such as "CameraConfig_G1A.ini" (the specific configuration file name will vary depending on the lens module) in the root directory of the TF card, and you 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-G1NK V6.3

Network Expansion Board


VIN
GND
+8V OUT
LRCK
MCLK
BCLK
DATA1
DATA0
TX3
RX3
GND
RX-
RX+
TX-
TX+
GND
9-24V
PWM0
PWM1
PWM2
PWM3
GND
ADC
GND
PON2
QL-M
ROHS
E328832
94V-0
2023.08.16

Front View


G1- N -V6.3
2023/08/15
TX3
RX3
GND
RX-
RX+
TX-
TX+
GND
9-24V
PWM0
PWM1
PWM2
PWM3
GND
ADC
CND
PON2
+8.4V OUT
MIPI-CSI
4R7

Back View

Overview

This Ethernet network expansion board is equipped with IP101GR fast Ethernet transceiver, supporting extended network port, PWM, serial port, automatic power-on power supply interface, and MIPI interface.

The board PCB size is 38x38mm, and this Ethernet board must be used with the our company’s designated master board. This board can not work independently.

YDS-G1NK V6.3

Network Expansion Board

Specifications

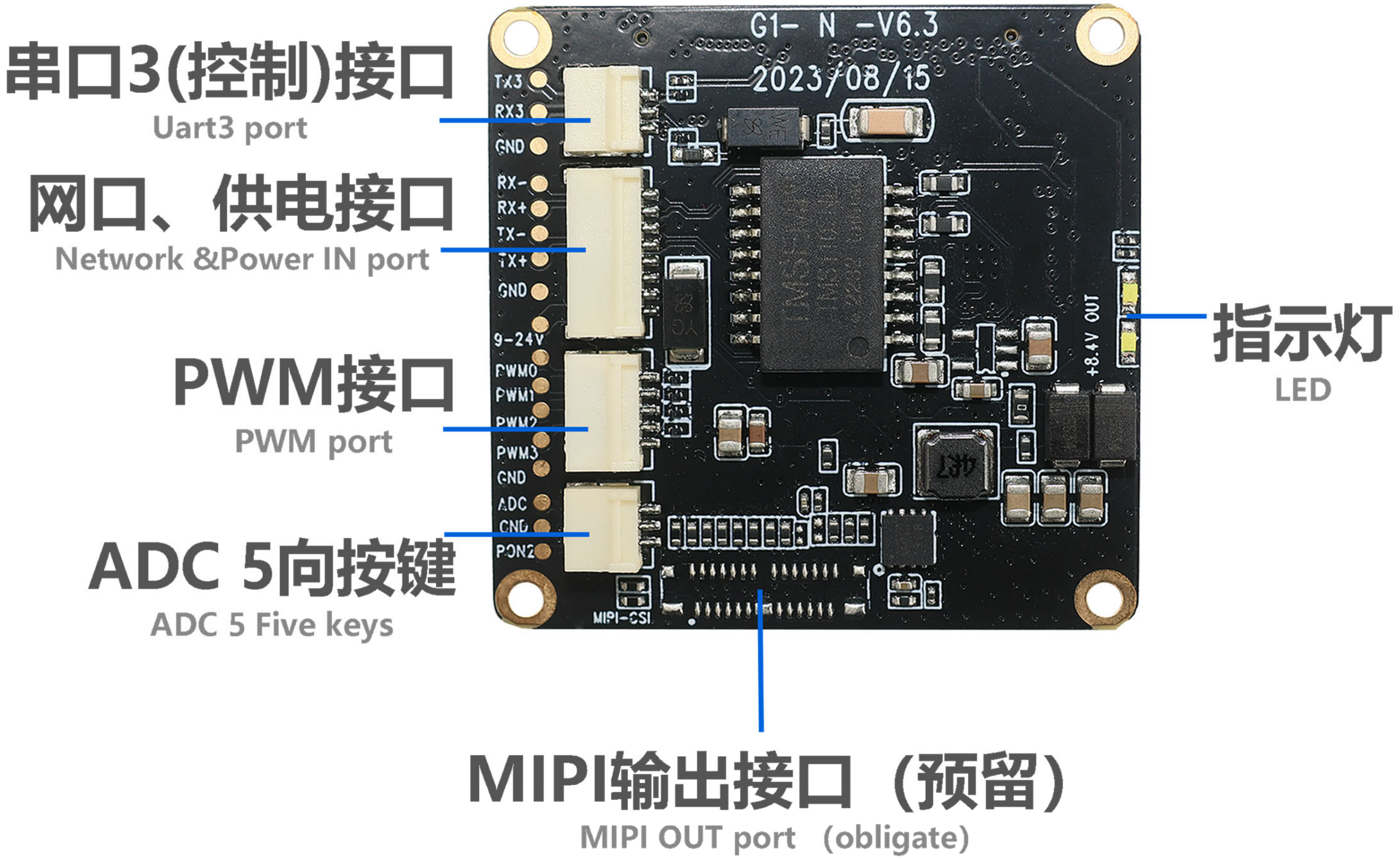
Model No.	**YDS-G1NK V6.3**
Ethernet Transceiver	IP101GR
Power Supply	Supports 3 Power Supply Methods At The Same Time (1) 5V USB to Type-C Port Power Supply (2) 9V-24V WiFi Board Power Supply (3) 6.8V-8.4V Battery Power Supply (The 3-Axis Gimbal Version Does Not Support 5V USB)
Transmission Rate	100 Mbps
Serial Port / UART	RX3, TX3, GND
LED Indicator	White Light Indicator at Network Working Status
PWM	PWM0，PWM1/UART3_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	PWM0，PWM1/UART3_GND

YDS-G1NK V6.3

Network Expansion Board

Hardware Interface Function Description

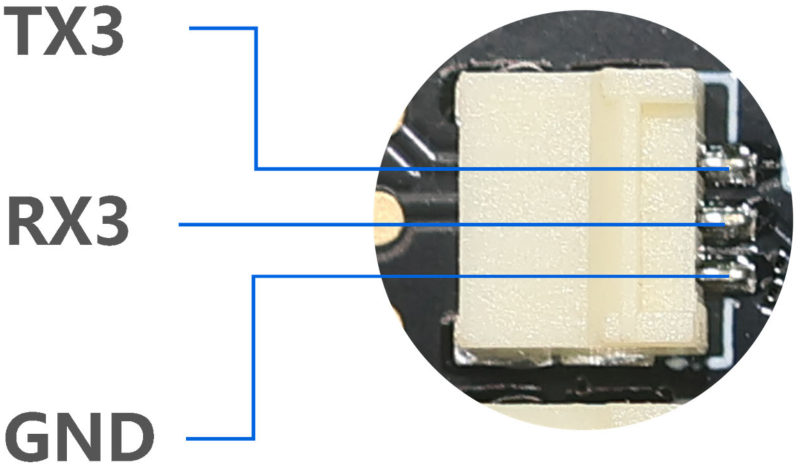
IP101GR is an IEEE 802.3/802.3u compliant single-port Fast Ethernet Transceiver for both 100Mbps and 10Mbps operations. It supports Auto MDI/MDIX function to simplify the network installation and reduce the system maintenance cost. To improve the system performance, IP101GR provides a hardware interrupt pin to indicate the link, speed and duplex status change. IP101GR provides Media Independent Interface (MII) or Reduced Media Independent Interface (RMII) to connect with different types of 10/100Mbps Media Access Controller (MAC). IP101GR is designed to use category 5 unshielded twisted-pair cable or Fiber-Optic cables connecting to other LAN devices.

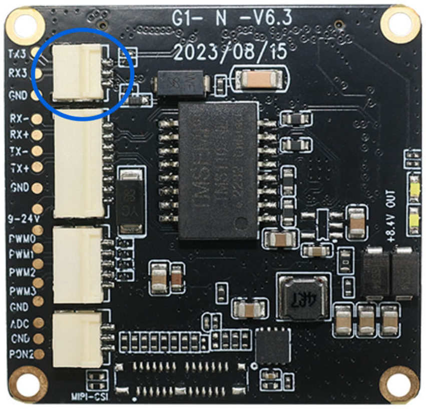

串口3(控制)接口
Uart3 port
网口、供电接口
Network &Power IN port
PWM接口
PWM port
ADC 5向按键
ADC 5 Five keys
指示灯
LED
MIPI输出接口（预留）
MIPI OUT port （obligate)
G1- N -V6.3
2023/08/15
TX3
RX3
GND
RX-
RX+
TX-
TX+
GND
9-24V
PWM0
PWM1
PWM2
PWM3
GND
ADC
GND
PON2
MIPI-CSI
+8.4V OUT

YDS-G1NK V6.3

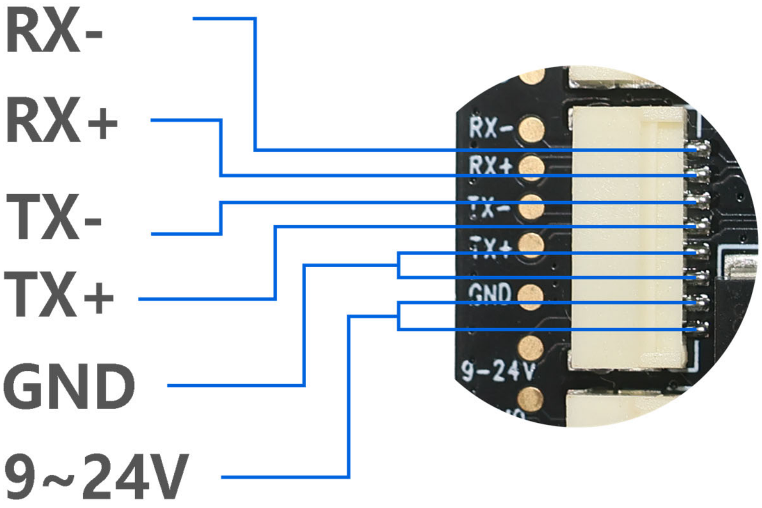
Network Expansion Board

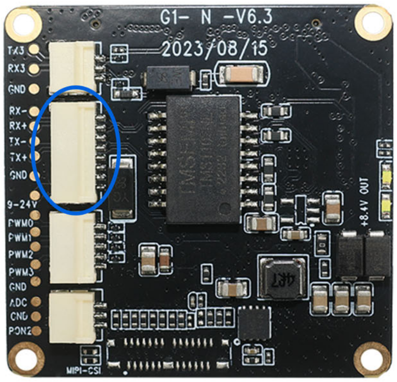
Commands can be input through this serial port (UART3) to set and control the camera.




G1- N -V6.3
2023/08/15
TX3
RX3
GND
RX-
RX+
TX-
TX+
GND
9-24V
PWM0
PWM1
PWM2
PWM3
GND
ADC
GND
PON2
MIPI-CSI
+8.4V OUT

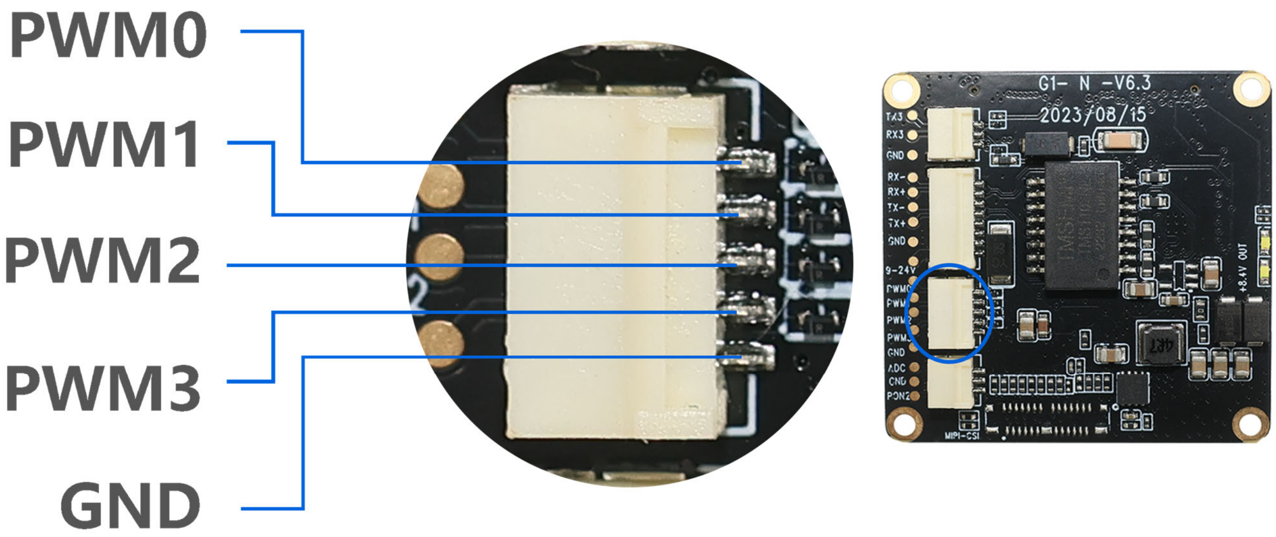
When used with the master board, this power supply interface supports the use of a DC power supply between 9V and 24V, or a lithium battery type 8V to 16.8V to power the camera automatically.


RX-
RX+
TX-
TX+
GND
9~24V
RX-
RX+
TX-
TX+
GND
9-24V

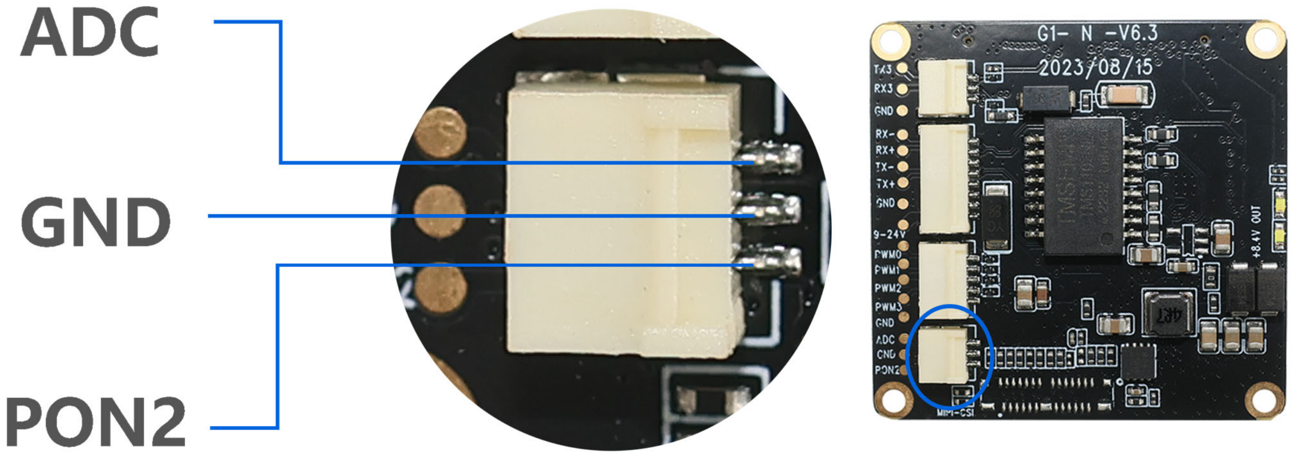

G1- N -V6.3
2023/08/15
TX3
RX3
GND
RX-
RX+
TX-
TX+
GND
9-24V
PWM0
PWM1
PWM2
PWM3
GND
ADC
GND
PON2
MIPI-CSI
+8.4V OUT

YDS-G1NK V6.3
Network Expansion Board

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


PWM0
PWM1
PWM2
PWM3
GND
G1- N -V6.3
2023/08/15

Supports one ADC button interface, which can be connected to five buttons: up, down, left, right, and OK confirm. It supports external buttons to control the camera power on and off.


ADC
GND
PON2
G1- N -V6.3
2023/08/15

YDS-G1NK V6.3

Network Expansion Board

Requirements for using the Ethernet Port of the camera

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

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.

2. The Ethernet function and the Type-C USB connection to the computer can be used at the same time. When using the USB flash drive or PCCAM mode, you need to connect the Type-C to the computer when the camera is turned off, and the camera will automatically turn on and enter the USB flash drive or PCCAM mode

3. The Ethernet Port of the camera will automatically turn on the Ethernet when it is turned on. It does not support local switching mode. If you need to control the camera to take pictures or set parameters, you can connect the Ethernet port to the network and control the camera in the APP; or input commands through the serial port (UART3) to control the camera.

Solution 1:

Connect the router through the network cable by the network plug and power supply interface. After turning on the device, the network indicator on the Ethernet board is always on, indicating that the device has been connected to the router network. (Network communication is successful, RTSP output is successful, one of the network port indicator lights is always on, and one of the white lights flashes quickly). Connect the mobile phone to the same network as the camera, enter the APP to control the device to record, take pictures, playback, set parameters, etc.

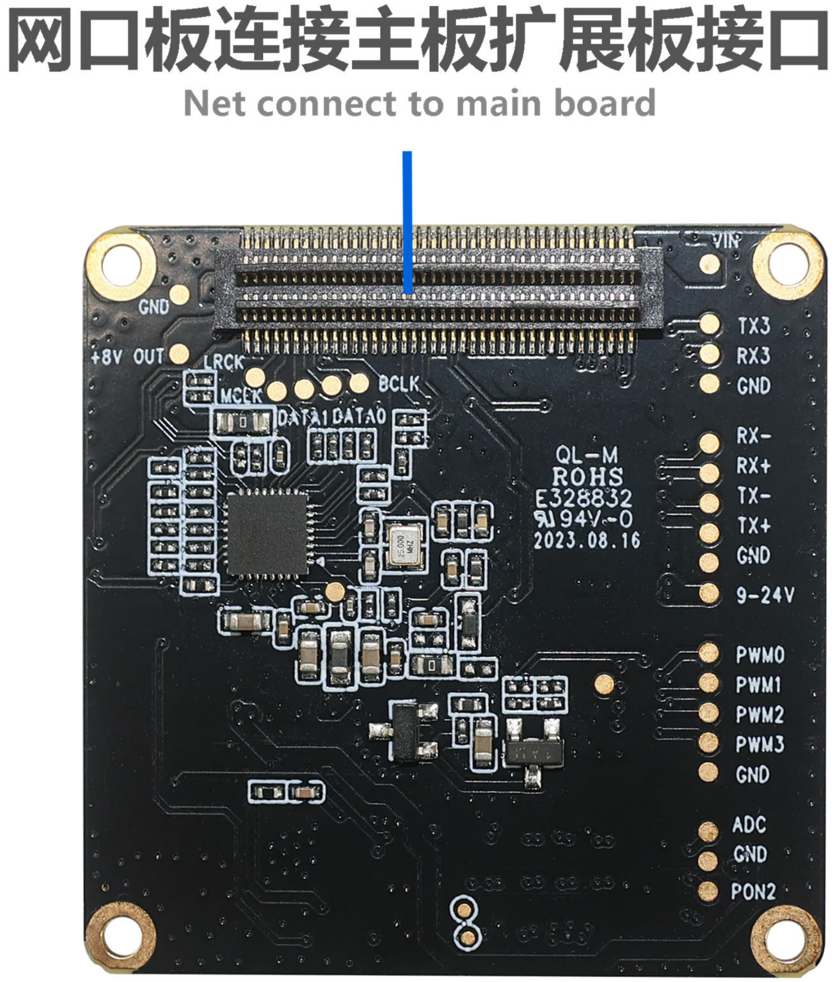
Connect the computer to the router network, open the PotPlayer player installed on the computer, click the upper left corner of the mouse to open the main menu drop down list, move the mouse to open and then move to the list on the right, left-click "Open Link", enter the address rtsp://192.168.1.64:554/H264?W=1280&H=720&BR=2000000&FPS=30, and select OK to display the current camera screen.

YDS-G1NK V6.3
Network Expansion Board

Solution 2:

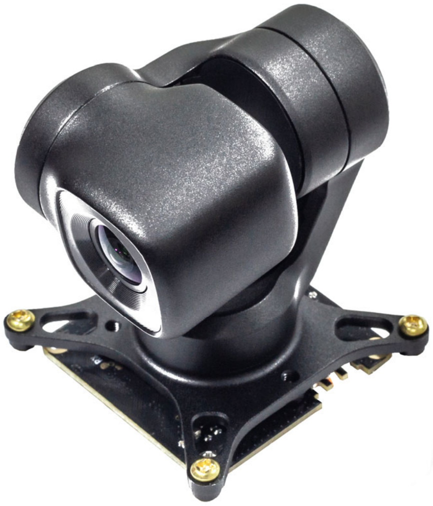
Use the network cable defined by the network port and power supply interface, connect one end of the RJ45 plug directly to the computer, and set the local IP address; Note: You need to set a network IP other than 192.168.1.64, that is, the last digit is not 64. After the setting is successful, call cmd and enter the command ping 192.168.1.64 to check whether it is communicating.

Tip: After using the operation process of Solution 1, if you still cannot connect to the network, it may be that the gateway of the router is not 192.168.1.xx; at this time, you need to enter the router and change the gateway IP address to 192.168.1.xx (xx represents a number).

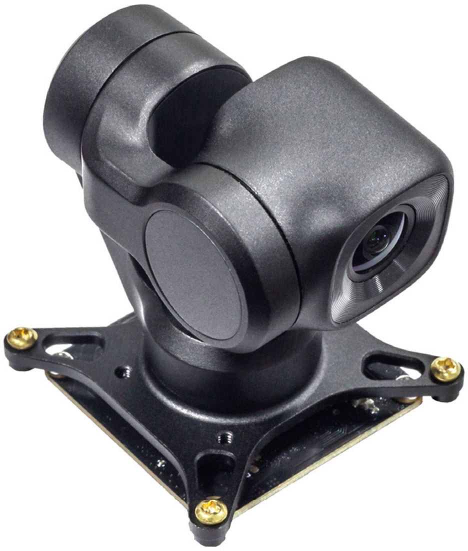

网口板连接主板扩展板接口
Net connect to main board
VIN
GND
+8V OUT
LRCK
MCLK
BCLK
DATA1
DATA0
TX3
RX3
GND
QL-M
ROHS
E328832
94V-0
2023.08.16
RX-
RX+
TX-
TX+
GND
9-24V
PWM0
PWM1
PWM2
PWM3
GND
ADC
GND
PON2

YDS-CMAG-OS12D40 V1.0

11.3MP OmniVision OS12D40 Three-Axis Anti-Shake Gimbal Camera Module



Front View



Back View

Overview

The OmniVision OS12D40 color image sensor used in the three-axis anti-shake gimbal 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. The pixel size is 1.404μm x 1.404μm.

When used with the master board, it can support taking 11M pixel high-definition images and up to 4K@60fps and 4K@30fps video recording.

YDS-CMAG-OS12D40 V1.0

11.3MP OmniVision OS12D40 Three-Axis Anti-Shake Gimbal Camera Module

Specifications

Model No.	**YDS-CMAG-OS12D40 V1.0**
Gimbal Image Stabilization	Three-Axis Mechanical Image Stabilizer
Gimbal Dimensions	40.6 x 28.7 x 41.9 mm
Gimbal PCB Dimensions	32 x 32 mm
Image Sensor	OS12D40
Image Sensor Type	CMOS
Effective Pixels	11.3 Megapixels
Sensor Size	1/2.49"
Pixel Size	1.4 um x 1.4 um
Video Format	H.264
Video Frame Rate	4K@24/25/30FPS 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 Format	JPG
Photo Resolution (with Master Board)	20MP (5200x3900) (differential) 13MP (4160x3120) (differential) 11MP (4512x2512) 8MP (3840x2160) 8MP (3264x2448) 5MP (2592x1944) 3MP (2048x1536) 2MP (1920x1080)

YDS-CMAG-OS12D40 V1.0

11.3MP OmniVision OS12D40 Three-Axis Anti-Shake Gimbal Camera Module

3-Axis Gimbal Specifications

Number of Axes	Three-Axis Mechanical Structure
Controllable Angle	Pitch: +/- 140° Roll: +/- 90° Yaw: +60° to -254°
Maximum Control Speed	180°/S
Angle Micro Jitter	+/- 0.05°
Back to Center	Camera Returns to Center
Flip	Lens Flips 180°
Calibration	Lens Calibration
Sensitivity	Follow Softly, Follow Sensitively
Follow Mode	Full Follow, Heading Follow, Heading and Pitch Follow
Pitch Axis Control	Turn ON, Turn OFF

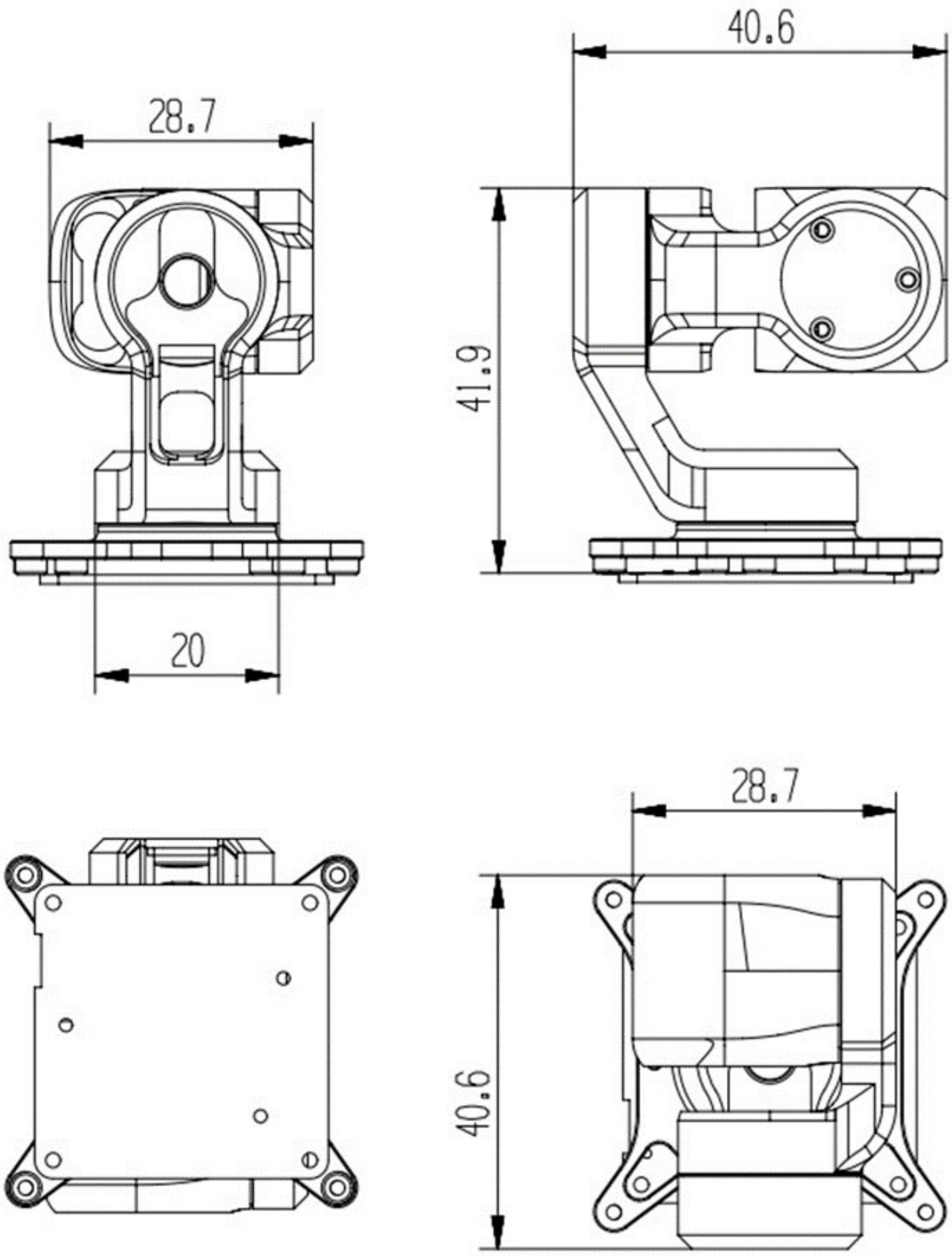
Lens Specifications

Focal Length	2.95 mm
TTL (Total Length)	15.89 mm
BFL	3.79 mm
FBL	2.88 mm
Max Image	Ø8.2
F. No.	2.0
IR Coating	T=50%@430nm +/- 10nm and T=50%@650nm +/- 8nm
Diagonal View Angle (DFOV)	143° (DFOV) (y' = 3.625 mm)
Horizonal View Angle (HFOV)	125° (HFOV) (y' = 3.167 mm)
Vertical View Angle (VFOV)	69° (VFOV) (y' = 1.763 mm)
Lens Barrel Thread	M9 x P0.35
Lens Construction	4G3P + IR
Chief-Ray Angle	<19.2°
Distortion	<-33%
Relative Illumination	>66%
Operating Temperature	-20°C to +60°C
Storage Temperature	-20°C to +70°C

YDS-CMAG-OS12D40 V1.0

11.3MP OmniVision OS12D40 Three-Axis Anti-Shake Gimbal Camera Module

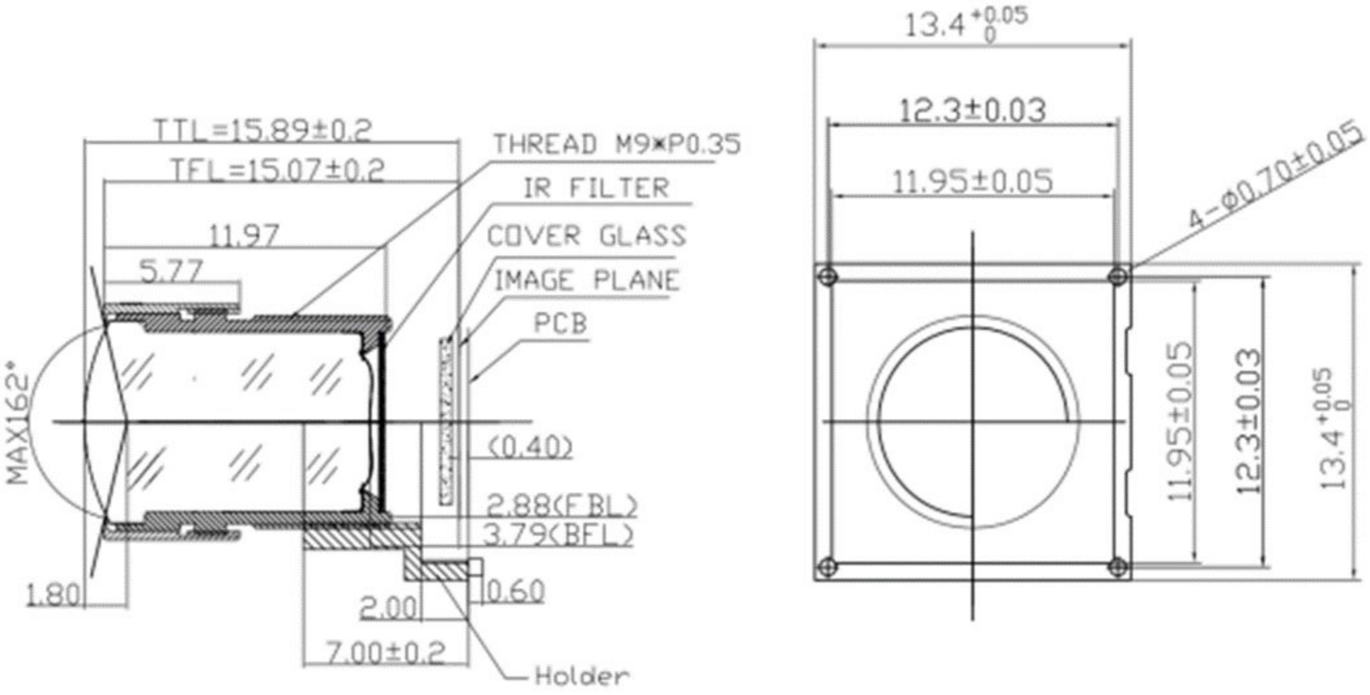
3-Axis Gimbal Drawing



YDS-CMAG-OS12D40 V1.0

11.3MP OmniVision OS12D40 Three-Axis Anti-Shake Gimbal Camera Module

Lens Drawing


TTL=15.89±0.2
TFL=15.07±0.2
11.97
5.77
THREAD M9×P0.35
IR FILTER
COVER GLASS
IMAGE PLANE
PCB
MAX162°
(0.40)
2.88(FBL)
3.79(BFL)
0.60
1.80
2.00
7.00±0.2
Holder
13.4 +0.05 0
12.3±0.03
11.95±0.05
4-Φ0.70±0.05
11.95±0.05
12.3±0.03
13.4 +0.05 0

YDS-CMAG-OS12D40 V1.0

11.3MP OmniVision OS12D40 Three-Axis Anti-Shake Gimbal Camera Module

Consumer Camera Product

FeiyuTech
M

FeiyuTech
M

FeiyuTech
M

FeiyuTech
M

YDS-CMAG-OS12D40 V1.0

11.3MP OmniVision OS12D40 Three-Axis Anti-Shake Gimbal Camera Module

Consumer Camera Product

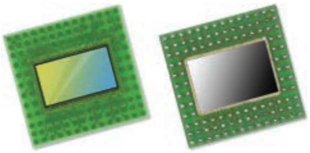
YDS-CMAG-OS12D40 V1.0

11.3MP OmniVision OS12D40 Three-Axis Anti-Shake Gimbal Camera Module

Consumer Camera Product

HUMAN MADE
Since M 2015

HUMAN MADE
Since M 2015



OS12D40 11.3-megapixel product brief

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

lead free

available in
a lead-free
package

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.

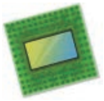
The OS12D40's fast mode switch allows security operators or AI-enabled surveillance systems to seamlessly switch to 4K2K mode when a specific threat is identified for closer inspection, such as a potential intruder or unauthorized vehicle. This sensor's best in class 11.3MP resolution provides the extra 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®

OS12D40



Applications

- Security Cameras
- Machine Vision
- PC Multimedia

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 Gsps/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

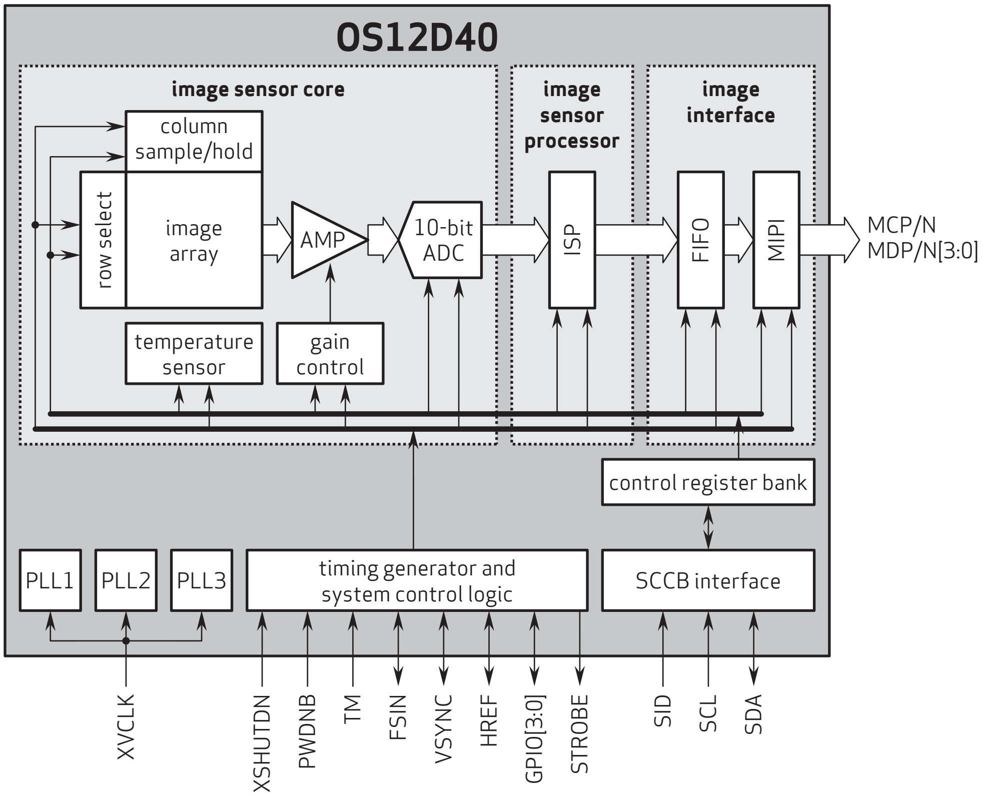
Ordering Information

- **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


OS12D40
image sensor core
column sample/hold
row select
image array
AMP
10-bit ADC
temperature sensor
gain control
image sensor processor
ISP
image interface
FIFO
MIPI
MCP/N
MDP/N[3:0]
control register bank
PLL1
PLL2
PLL3
timing generator and system control logic
SCCB interface
XVCLK
XSHUTDN
PWDNB
TM
FSIN
VSYNC
HREF
GPIO[3:0]
STROBE
SID
SCL
SDA

4275 Burton Drive
Santa Clara, CA 95054
USA

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Fax: + 1 408 567 3001
www.ovt.com

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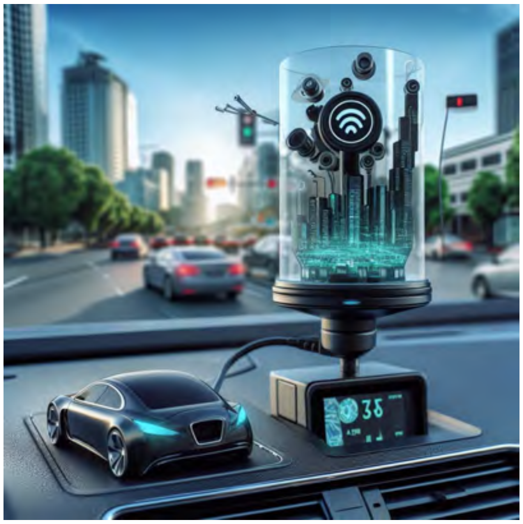
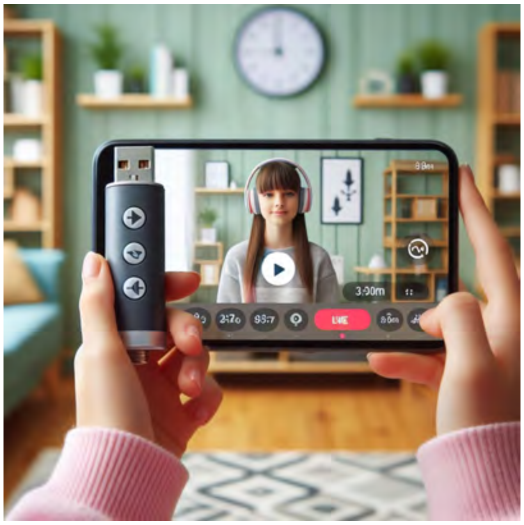
Version 1.1, August 2020

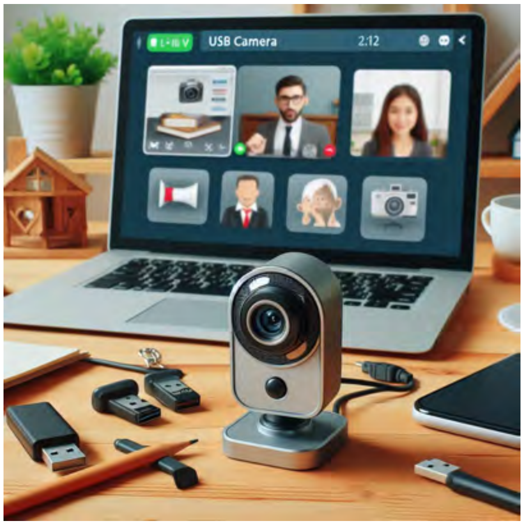
Cameras Applications



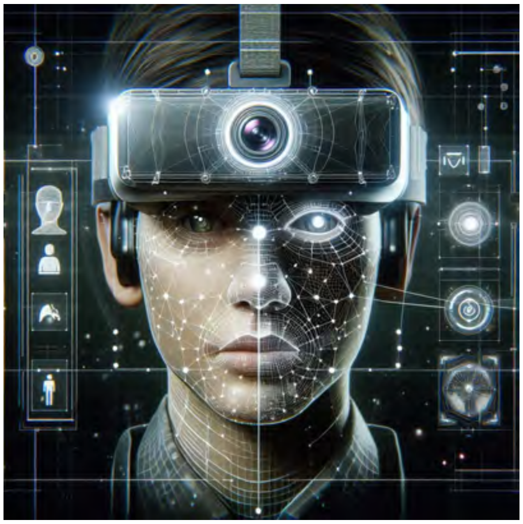
Automotive Driver Pilot



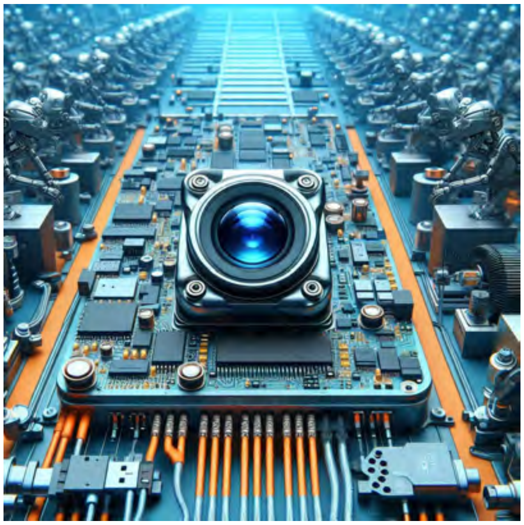
Live Streaming



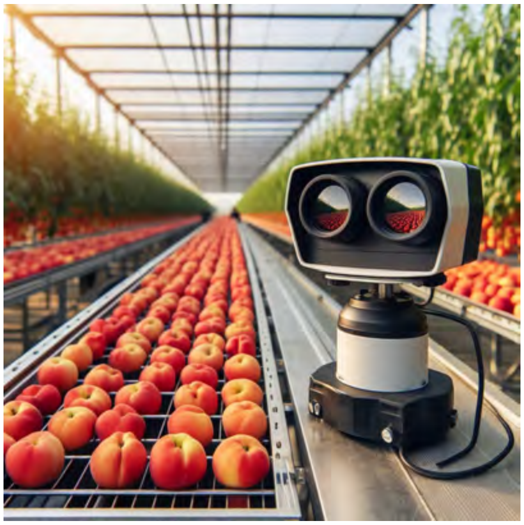
Video Conference



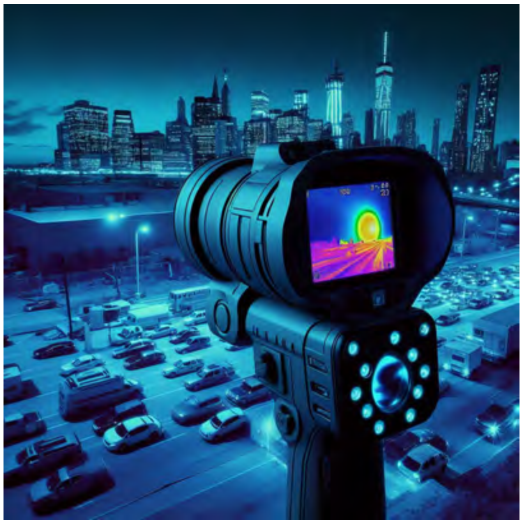
Eye Tracker Biometric Detection



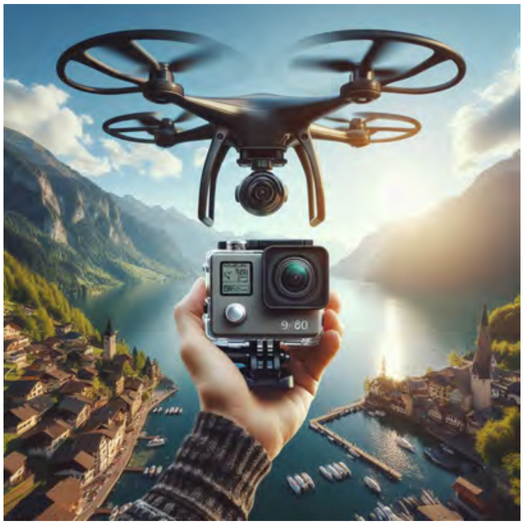
Machine Vision



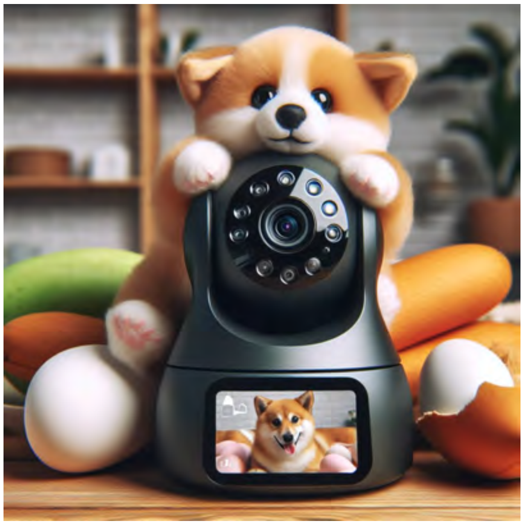
Agricultural Monitor



Night Vision Security



Drone and Sports Eagle Eyes



Interactive Pet Camera

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

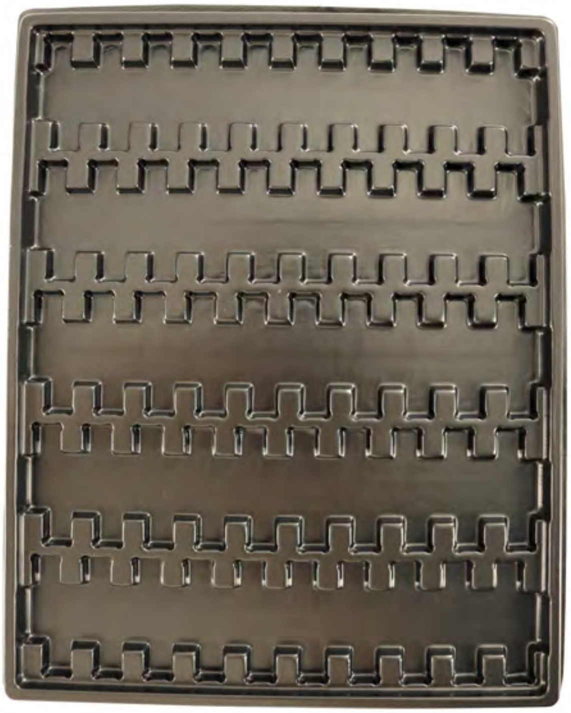
Inspection Item			Inspection Method	Standard of Inspection
Category		Item		
Appearance	FPC/ PCB	Color	The Naked Eye	Major Difference is Not Allowed.
		Be Torn/Chopped	The Naked Eye	Copper Crack Exposure is Not Allowed.
		Marking	The Naked Eye	Clear, Recognizable (Within 30cm Distance)
	Holder	Scratches	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

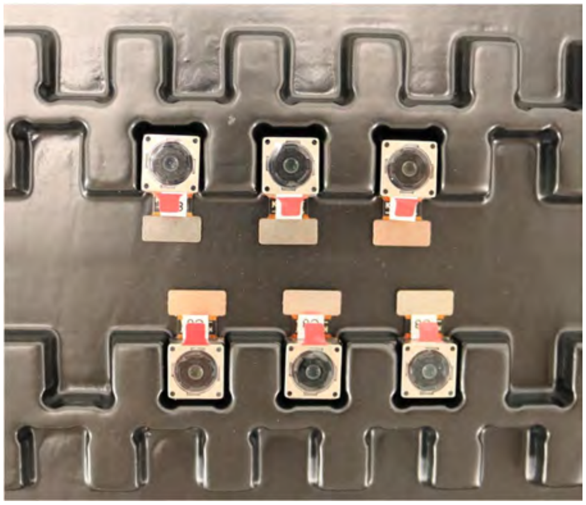
YDS Camera Module

Complete with Lens Protection Film

Tray with Grid and Space

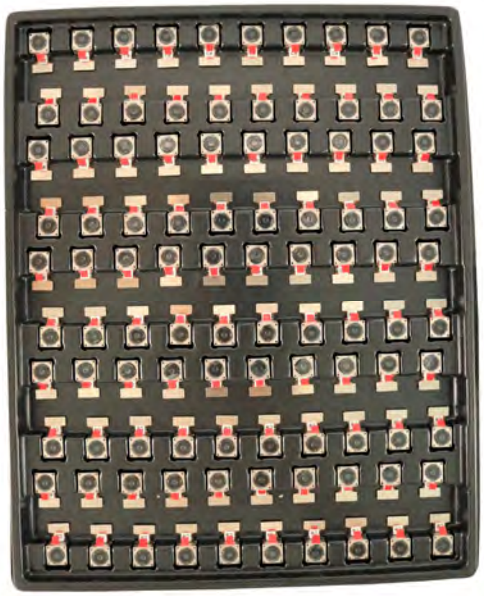


Place Cameras on the Tray

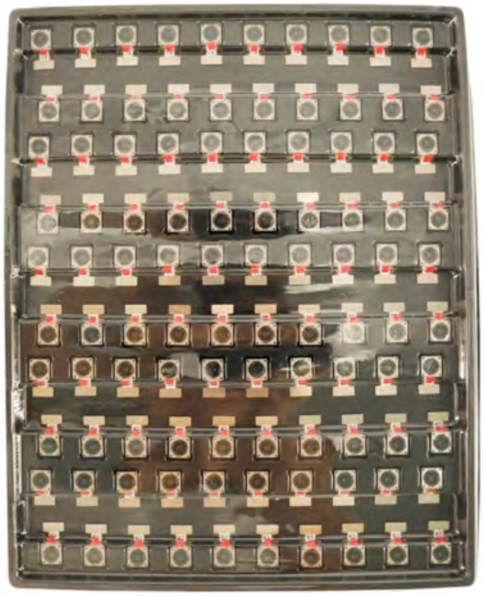


YDSCAM Package Solutions

Full Tray of Cameras



Cover Tray with Lid



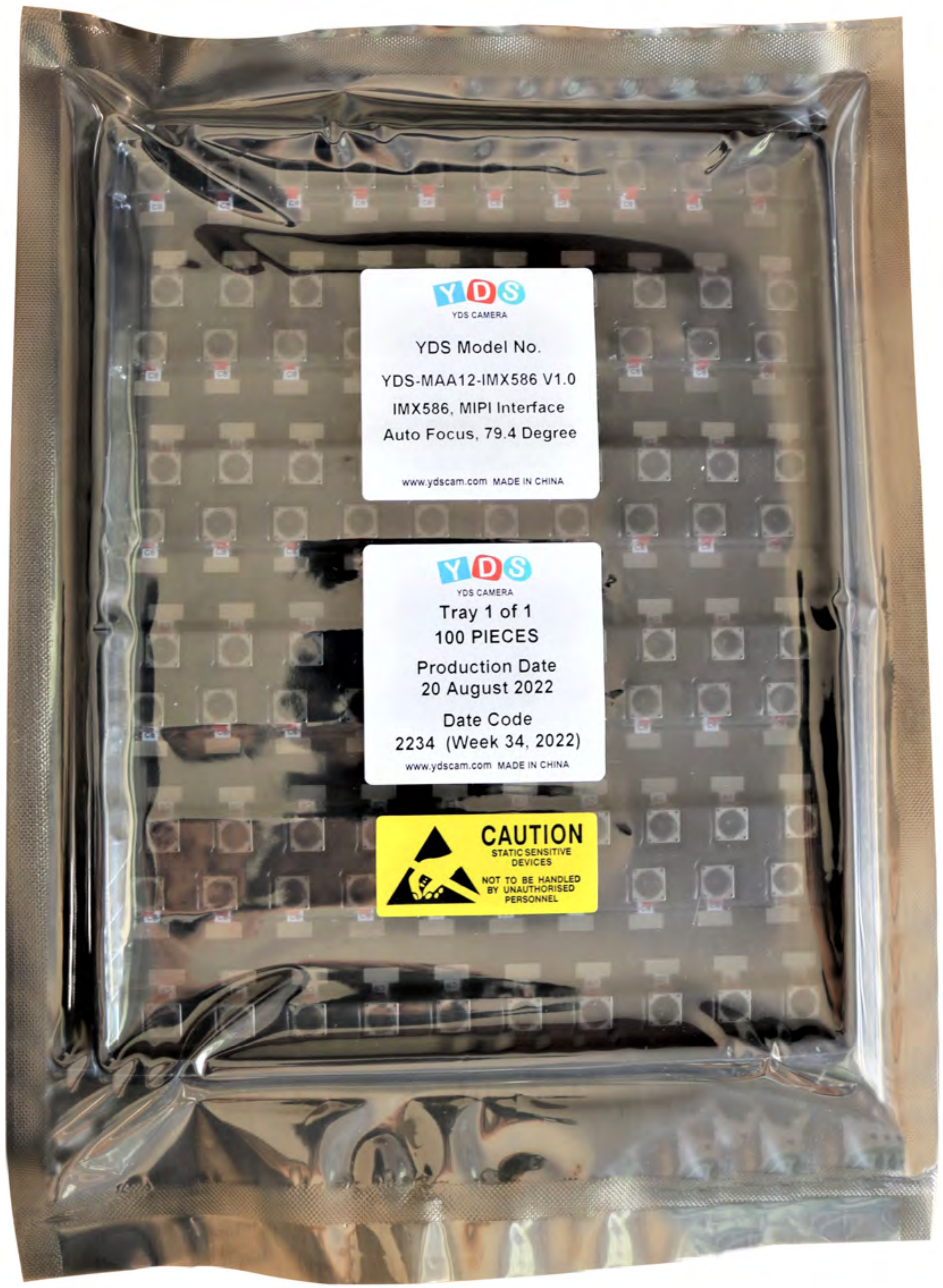
Place Tray into Anti-Static Bag

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


YDS CAMERA
YDS Model No.
YDS-MAA12-IMX586 V1.0
IMX586, MIPI Interface
Auto Focus, 79.4 Degree
www.ydscam.com MADE IN CHINA
YDS CAMERA
Tray 1 of 1
100 PIECES
Production Date
20 August 2022
Date Code
2234 (Week 34, 2022)
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CAUTION
STATIC SENSITIVE DEVICES
NOT TO BE HANDLED BY UNAUTHORISED PERSONNEL

YDSCAM Package Solutions

Place Foam Sheets Between Tray Bags

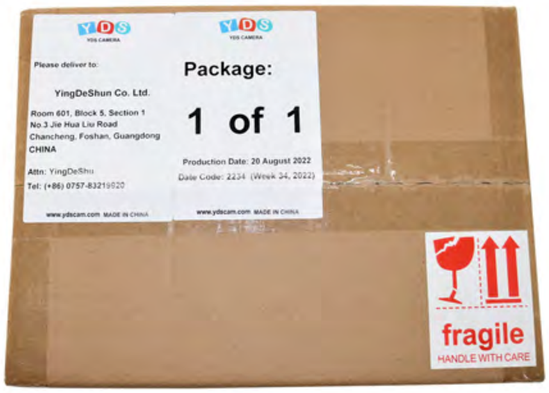
Foam Sheets are Larger Than Trays

Place Foam Sheets and Trays into Box

Foam Sheets are Tightly Fitting in Box

Seal the Carbon Box

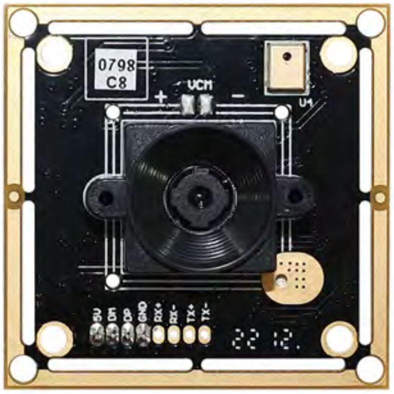
Label the Carbon Shipping Box


YDS
YDS CAMERA
Please deliver to:
YingDeShun Co. Ltd.
Room 601, Block 5, Section 1
No.3 Jie Hua Liu Road
Chancheng, Foshan, Guangdong
CHINA
Attn: YingDeShu
Tel: (+86) 0757-83219920
www.ydscam.com MADE IN CHINA
YDS
YDS CAMERA
Package:
1 of 1
Production Date: 20 August 2022
Date Code: 2234 (Week 34, 2022)
www.ydscam.com MADE IN CHINA
fragile
HANDLE WITH CARE

YDSCAM Package Solutions

USB Camera Module

Complete with Lens Protection Film


0798
C8
VCM
U4
5V
DM
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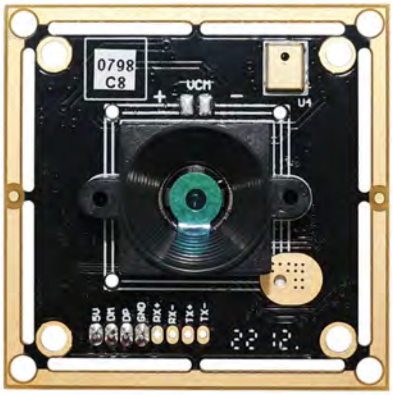
GND
RX+
RX-
TX+
TX-
22 12.


0798
C8
VCM
U4
5V
DM
DP
GND
RX+
RX-
TX+
TX-
22 12.

Place Camera Sample into Anti-Static Bag

Place USB Cameras into Tray

Seal the Tray with Anti-Static Bag

Label the Carbon Shipping Box

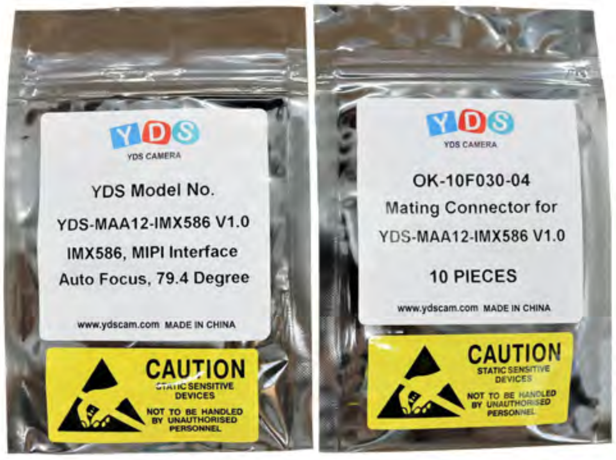
Package:
1 of 1
fragile
HANDLE WITH CARE

YDSCAM Package Solutions

Place Camera Sample into Anti-Static Bag

Place Connectors into Anti-Static Bag

Label the Sample Bags


YDS
YDS CAMERA
YDS Model No.
YDS-MAA12-IMX586 V1.0
IMX586, MIPI Interface
Auto Focus, 79.4 Degree
www.ydscam.com MADE IN CHINA
CAUTION
STATIC SENSITIVE DEVICES
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YDS
YDS CAMERA
OK-10F030-04
Mating Connector for
YDS-MAA12-IMX586 V1.0
10 PIECES
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CAUTION
STATIC SENSITIVE DEVICES
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Place Connectors into Reel

Place Samples into the Carbon Box

Package:
1 of 1
fragile
HANDLE WITH CARE

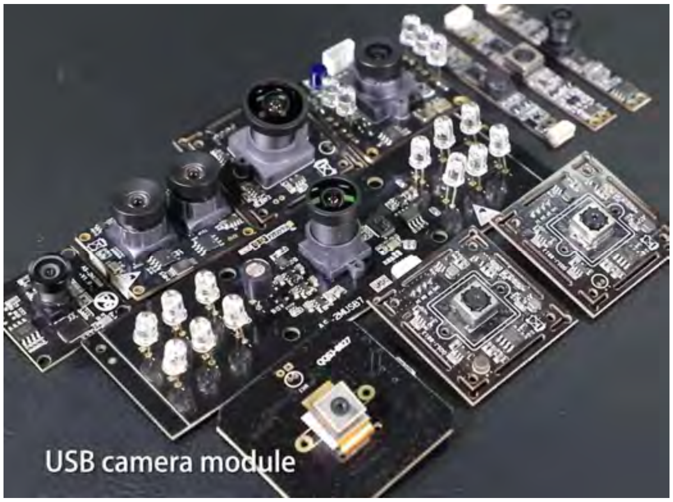
Place Connectors into the Carbon Box

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 subsequential events.

YDS Strength

Powerful Factory

Professional Service

Promised Delivery

DHL EXEL SUPPLY CHAIN

FedEx Express

EMS

UPS

TNT