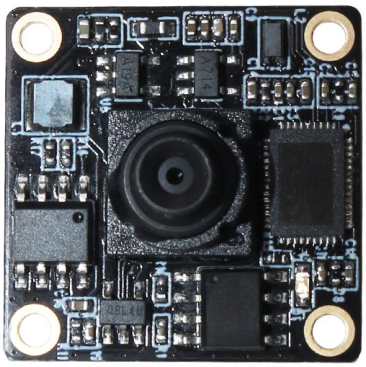
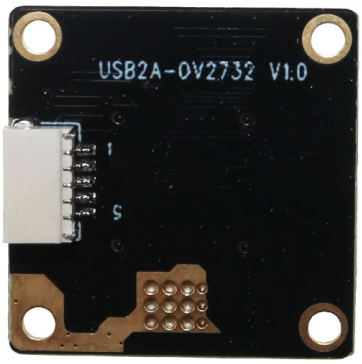
YDS CAMERA MODULE

your best camera partner

YDS-USB2A-OV2732 V1.0

2MP OmniVision OV2732 Fixed Focus USB 2.0 Camera Module





YDS-USB2A-OV2732 V1.0 is a 2MP Fixed Focus USB camera module based on 1/4" OV2732 image sensor. It delivers high-speed, 2K resolution ultra sharp image.

The compact size lens holder enables fitting in small mobile devices. This camera module is ideal solution for face recognition, identity detection, access control.

Key Features

- 2K resolution (1920 x 1080) OmniVision OV2732 sensor
- High speed USB 2.0 Plug and Play
- MJPG and YUV2 output format
- Low power consumption
- Compact size
- UVC compliant to Windows, Linux, OS with UVC driver
- USB OTG (On-The-Go) support

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YDS-USB2A-OV2732 V1.0

2MP OmniVision OV2732 Fixed Focus USB 2.0 Camera Module

Camera Module No.	YDS-USB2A-OV2732 V1.0
Resolution	2MP
Image Sensor	OV2732
Sensor Type	1/4"
Pixel Size	2.0 um x 2.0 um
EFL	3.04 mm
F.NO	2.40
Pixel	1920 x 1080
View Angle	115.0°(DFOV) 85.0°(HFOV) 50.0°(VFOV)
Lens Dimensions	9.00 x 9.00 x 9.45 mm
Module Type	Fixed Focus
Lens Model	YDS-LENS-40106H1
Interface	USB 2.0
Output Format	MJPG / YUV2
Auto Control	Saturation, Contrast, Acutance White Balance, Exposure
Audio (Optional)	None
Input Voltage	DC 5V
Working Current	Max 500mA
PCB Size	22.00 x 22.00 mm
System Compatibility	Windows XP (SP2, SP3), Vista, 7, 8, 10, 11 Android, Mac OS, Linux or OS with UVC Driver Raspberry Pi by USB Port
Software for USB Camera	AMCAP, Webcam Viewer, V4L2 Controls Contacam, VLC Player, MotionEye OS iSpy, ZoneMider, Yawcam
Lens Type	650nm IR Cut
Operating Temperature	-40°C to +85°C
USB Cable	YDS-Cable-U001

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

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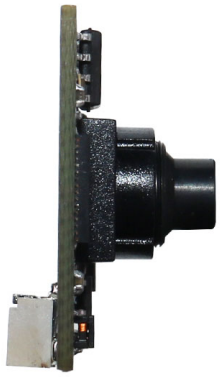
2MP OmniVision OV2732 Fixed Focus USB 2.0 Camera Module

Top View



Side View

Bottom View

Mating Connector

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2MP OmniVision OV2732 Fixed Focus USB 2.0 Camera Module

FORMAT	RESOLUTION	FRAME RATE
		USB 2.0
MJPG	320 x 240	**30 FPS**
	640 x 360	**30 FPS**
	640 x 480 (VGA)	**30 FPS**
	1280 x 720 (720P)	**30 FPS**
	1920 x 1080 (1080P)	**30 FPS**
YUY2	320 x 240	**30 FPS**
	640 x 360	**30 FPS**
	640 x 480 (VGA)	**30 FPS**

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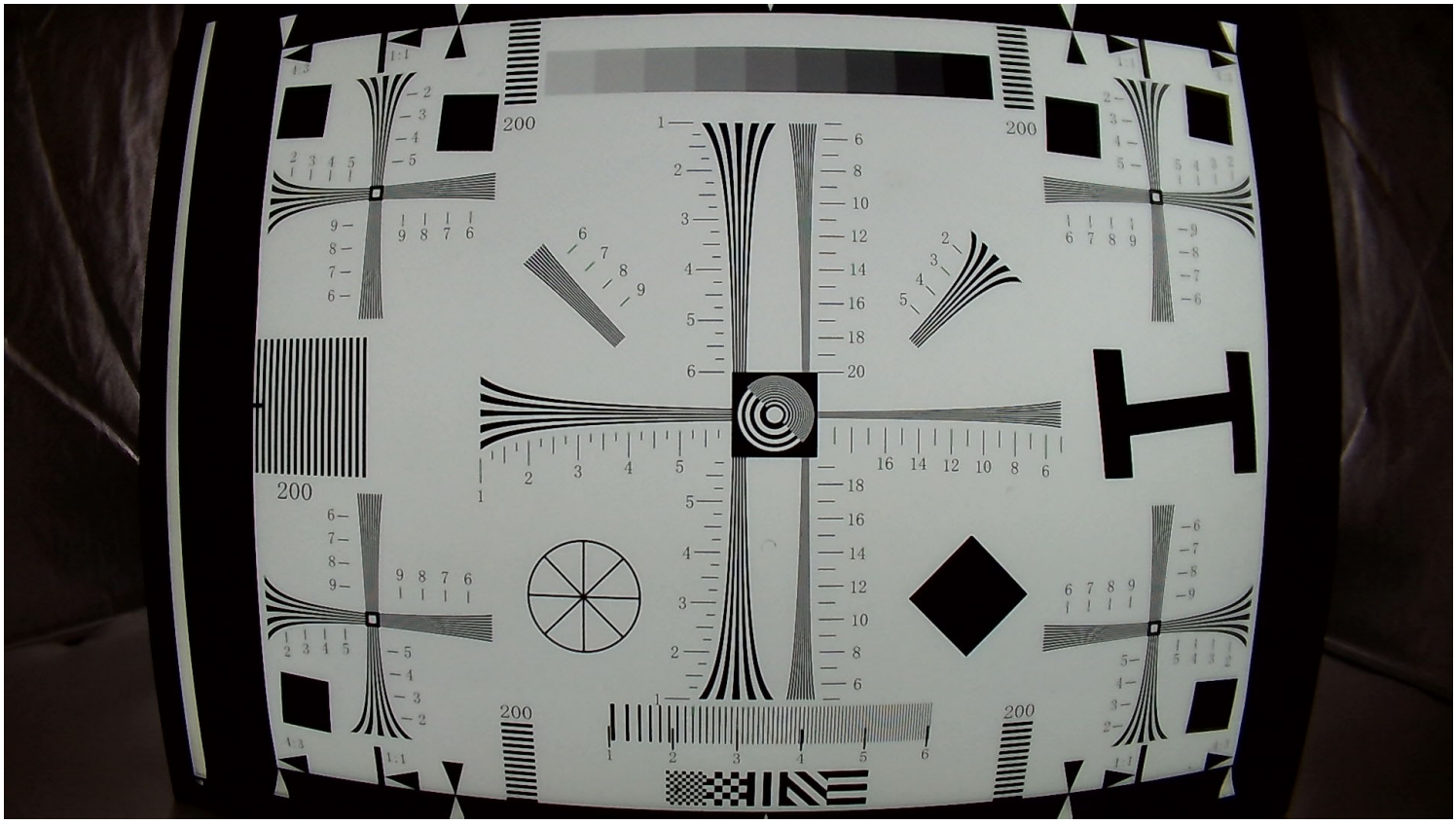

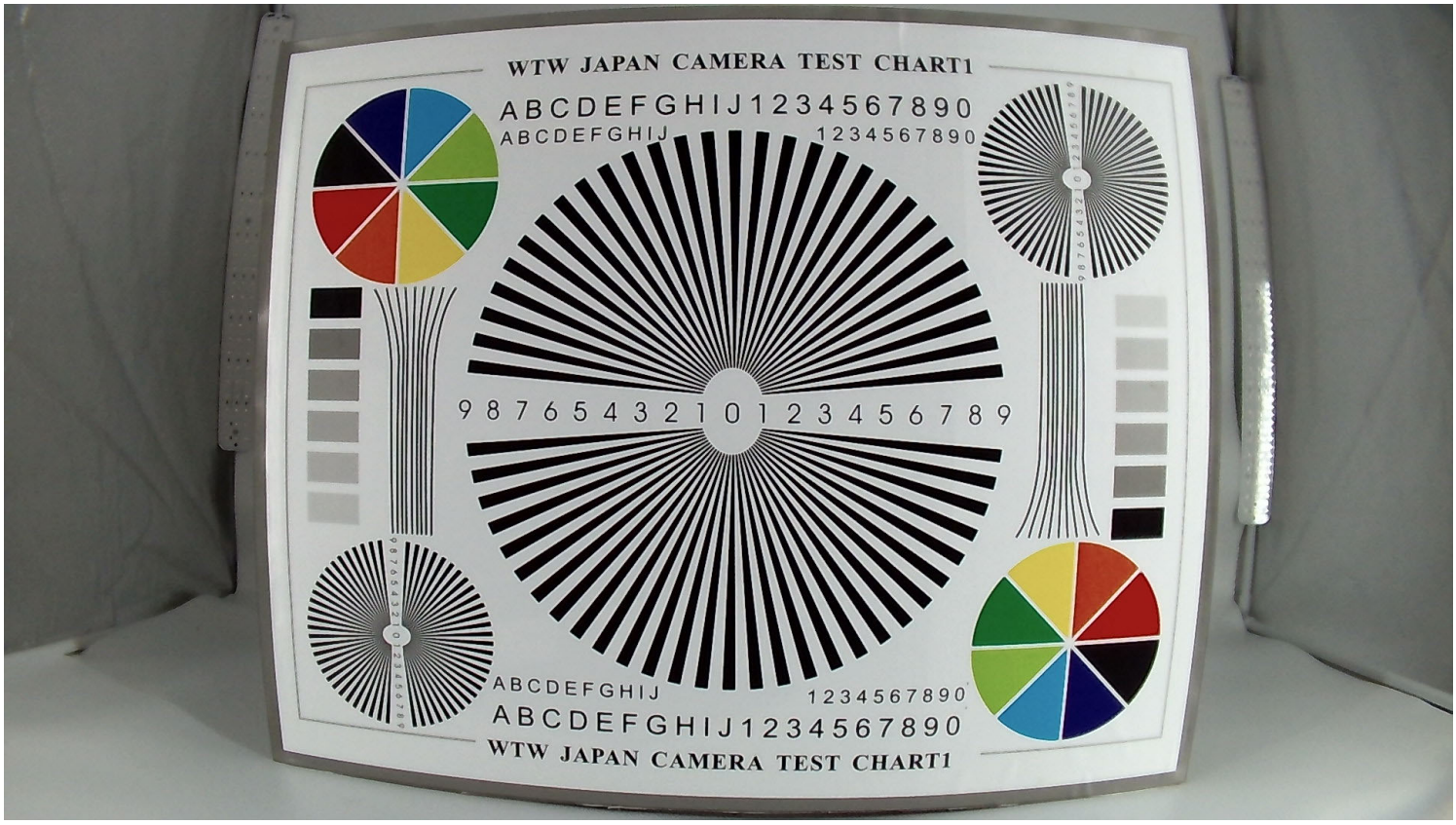

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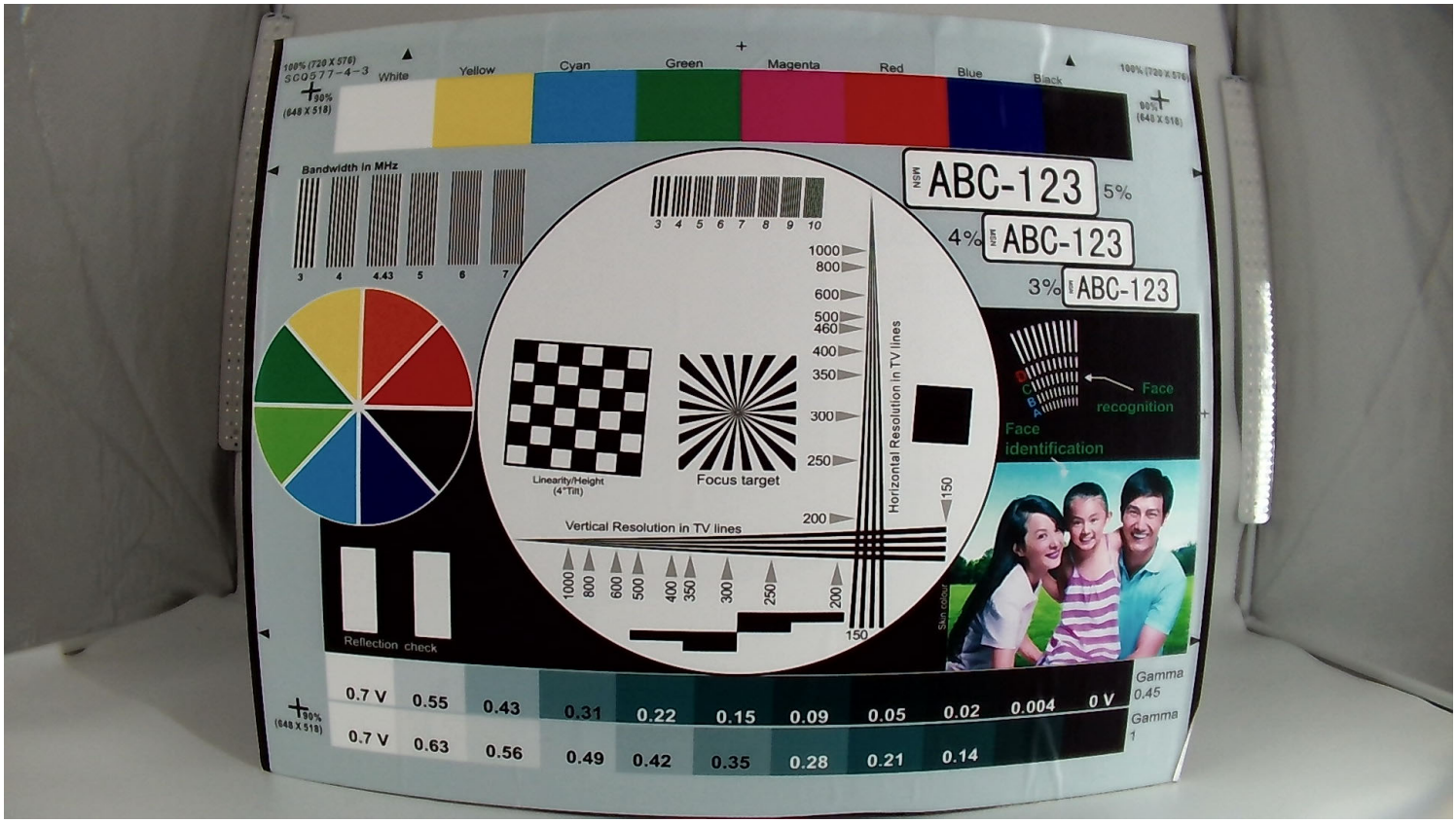

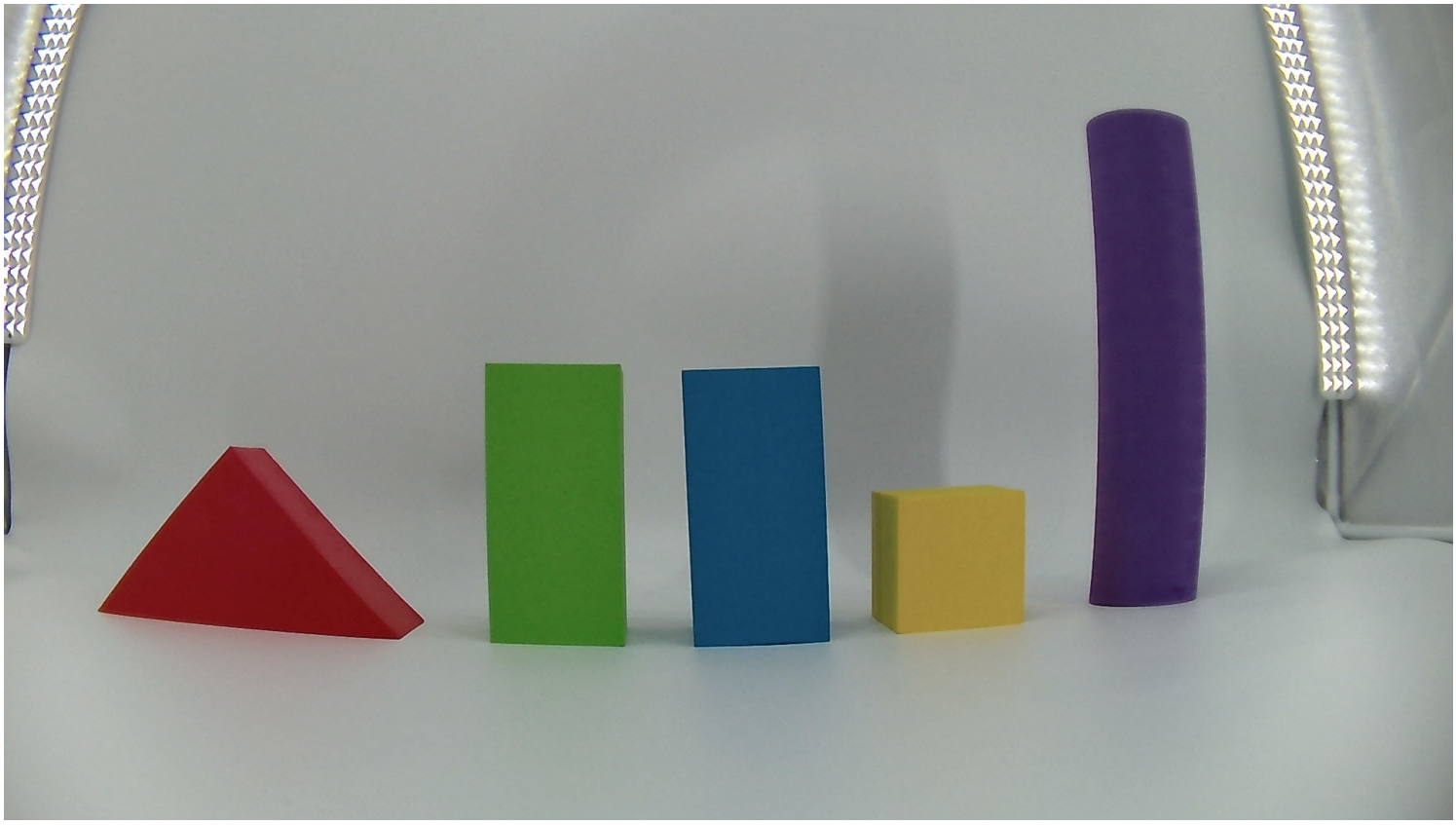

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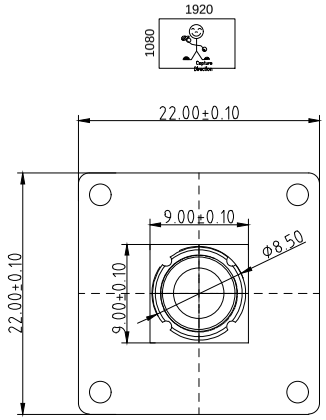
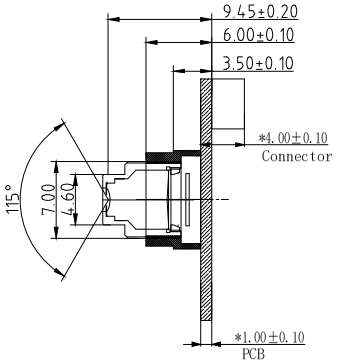
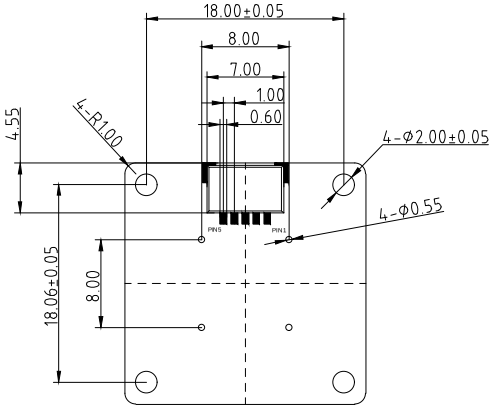
Version	Mark	Information	Date
V1.0	PD	First Version	12-06-2019



TOP VIEW



SIDE VIEW



BOTTOM VIEW

Connector Pin Assignment

1. VCC5V
2. D+
3. D−
4. GND
5. GND

Parameters:

1、Sensor specification:

Image Sensor: OV2732
Pixel: 2um×2um
Lens Type: 1/4
Important Voltage Description: Power 5V

2、Lens specification:

FOV: 115°(D),85°(H),50°(V)
F/NO.: 2.4
TV distortion: <-11.9%
Focal length: 3.04mm
Composition: 4G+IR FILTER
IR Cut Coating: 650nm±10nm@50%

Designed By	Kevin	Model Name:	USB2A-OV2732 V1.0
Checked By	Aouly_Yan	Projection Type: Third Angle	Unit: mm / Material: ---------- / Scale: 1:1 / Sheet: 1 of 1 / Version: 1/0

OV2732 1080p product brief

Low-Power 1080p High Definition PureCel® Sensor for Security Applications

lead free

available in a lead-free package

OmniVision's OV2732 is a compact and power-efficient PureCel® image sensor designed for IoT-based residential and commercial monitoring systems. The OV2732 captures quality images and videos with staggered high dynamic range (HDR), ensuring excellent scene reproduction in all lighting environments. The sensor features frame sync for use in multi-camera or 360-degree camera systems and supports ultra-low power mode (ULPM) and an ambient light sensor (ALS), making it particularly well-suited for battery-powered security applications.

Built on OmniVision's PureCel® technology, the 1/4-inch OV2732 captures 1080p high definition (HD) video at 60 frames per second (fps), 720p HD video at 90 fps, and VGA resolution video at 120 fps. The OV2732 delivers crisp images and video, even in challenging low-light conditions.

Find out more at www.ovt.com.

OmniVision

OV2732

Applications

- Internet of Things (IoT)
- High-end Video Conferencing
- Security
- Lifestyle Camera
- Home Monitoring

Ordering Information

- **OV02732-H57A**
  (color, lead-free, 57-pin CSP4)

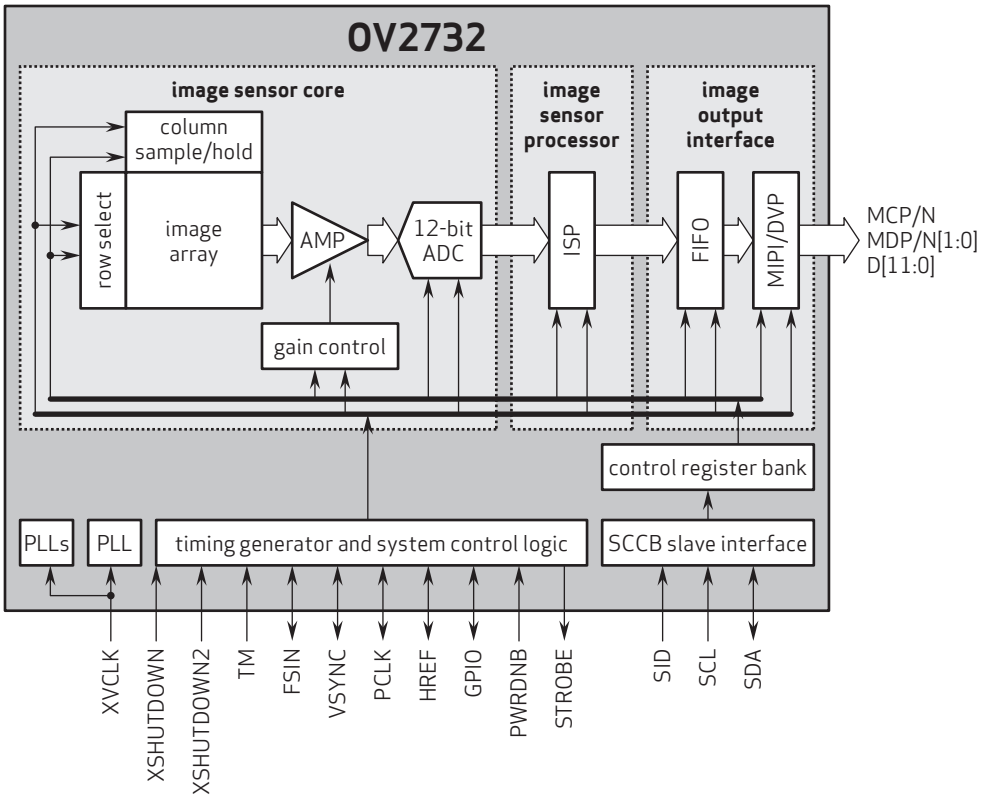
Product Features

- programmable controls:
  - gain
  - exposure
  - frame rate
  - image size
  - horizontal mirror
  - vertical flip
  - cropping
  - windowing
- automatic image control functions:
  - black level calibration (BLC)
- serial camera control bus (SCCB)
- defective pixel correction (DPC)
- digital video port (DVP) parallel output interface
- support for two lane MIPI interface (up to 800 Mbps)
- support for image sizes:
  - 1080p @ 60 fps
  - 720p @ 90 fps
  - VGA @ 120 fps
  - QVGA @ 240 fps, and more
- support for light sensing mode (LSM)
- support for staggered 2 frame HDR
- support for black sun cancellation
- on-chip phase lock loop (PLL)

Product Specifications

- **active array size:** 1920 x 1080
- **power supply:**
  - **core:** 1.2V
  - **analog:** 2.8V
  - **I/O:** 1.8V
- **power requirements:**
  - **active:** 110 mW
- **temperature range:**
  - **operating:** -40°C to +85°C junction temperature
  - **stable image:** 0°C to +60°C junction temperature
- **output interfaces:**
  two-lane MIPI / DVP parallel
- **output formats:** 10/12-bit RAW RGB
- **lens size:** 1/4"
- **lens chief ray angle:** 12° linear
- **input clock frequency:** 6 - 27 MHz
- **scan mode:** progressive
- **maximum image transfer rate:**
  - **1080p:** 60 fps
  - **720p:** 90 fps
  - **VGA:** 120 fps
  - **QVGA:** 240 fps
- **shutter:** rolling shutter
- **maximum exposure interval:**
  1184 × t_{ROW}
- **pixel size:** 2 µm x 2 µm
- **image area:**
  3868 µm x 2190 µm
- **package dimensions:**
  5174 µm x 3680 µm

Functional Block Diagram



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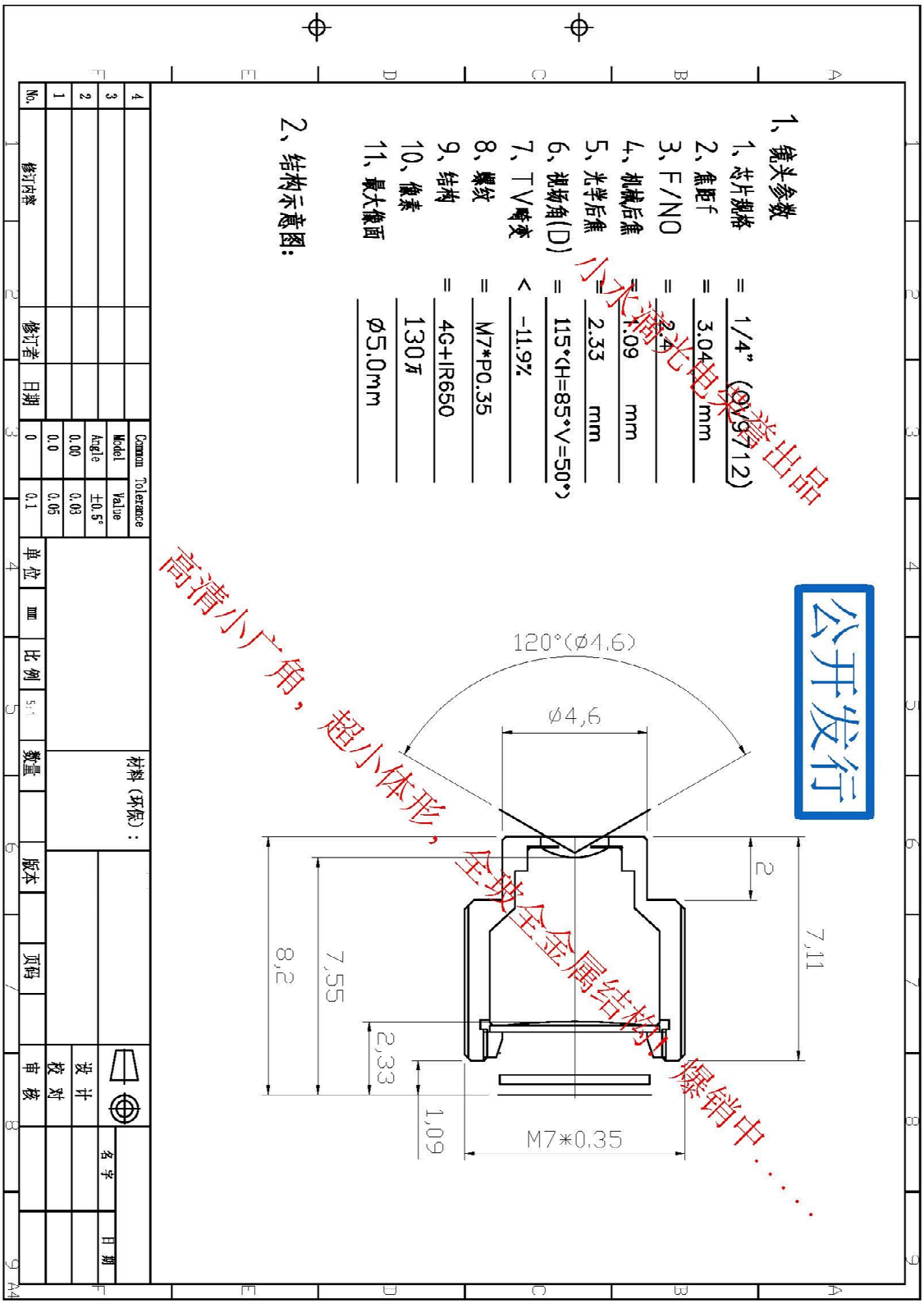
Version 1.1, October, 2016

YDS-LENS-40106H1



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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

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Cameras Applications

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Camera Reliability Test

Reliability Inspection Item			Testing Method	Acceptance Criteria
Category		Item		
Environmental	Storage Temperature	High 60°C 96 Hours	Temperature Chamber	No Abnormal Situation
		Low -20°C 96 Hours	Temperature Chamber	No Abnormal Situation
	Operation Temperature	High 60°C 24 Hours	Temperature Chamber	No Abnormal Situation
		Low -20°C 24 Hours	Temperature Chamber	No Abnormal Situation
	Humidity	60°C 80% 24 Hours	Temperature Chamber	No Abnormal Situation
	Thermal Shock	High 60°C 0.5 Hours Low -20°C 0.5 Hours Cycling in 24 Hours	Temperature Chamber	No Abnormal Situation
Physical	Drop Test (Free Falling)	Without Package 60cm	10 Times on Wood Floor	Electrically Functional
		With Package 60cm	10 Times on Wood Floor	Electrically Functional
	Vibration Test	50Hz X-Axis 2mm 30min	Vibration Table	Electrically Functional
		50Hz Y-Axis 2mm 30min	Vibration Table	Electrically Functional
		50Hz Z-Axis 2mm 30min	Vibration Table	Electrically Functional
	Cable Tensile Strength Test	Loading Weight 4 kg 60 Seconds Cycling in 24 Hours	Tensile Testing Machine	Electrically Functional
Electrical	ESD Test	Contact Discharge 2 KV	ESD Testing Machine	Electrically Functional
		Air Discharge 4 KV	ESD Testing Machine	Electrically Functional
	Aging Test	On/Off 30 Seconds Cycling in 24 Hours	Power Switch	Electrically Functional
	USB Connector	On/Off 250 Times	Plug and Unplug	Electrically Functional

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Camera Inspection Standard

Inspection Item			Inspection Method	Standard of Inspection
Category		Item		
Appearance	FPC/ PCB	Color	The Naked Eye	Major Difference is Not Allowed.
		Be Torn/Chopped	The Naked Eye	Copper Crack Exposure is Not Allowed.
		Marking	The Naked Eye	Clear, Recognizable (Within 30cm Distance)
	Holder	Scratches	The Naked Eye	The Inside Crack Exposure is Not Allowed
		Gap	The Naked Eye	Meet the Height Standard
		Screw	The Naked Eye	Make Sure Screws Are Presented (If Any)
		Damage	The Naked Eye	The Inside Crack Exposure is Not Allowed
	Lens	Scratch	The Naked Eye	No Effect On Resolution Standard
		Contamination	The Naked Eye	No Effect On Resolution Standard
		Oil Film	The Naked Eye	No Effect On Resolution Standard
		Cover Tape	The Naked Eye	No Issue On Appearance.
Function	Image	No Communication	Test Board	Not Allowed
		Bright Pixel	Black Board	Not Allowed In the Image Center
		Dark Pixel	White board	Not Allowed In the Image Center
		Blurry	The Naked Eye	Not Allowed
		No Image	The Naked Eye	Not Allowed
		Vertical Line	The Naked Eye	Not Allowed
		Horizontal Line	The Naked Eye	Not Allowed
		Light Leakage	The Naked Eye	Not Allowed
		Blinking Image	The Naked Eye	Not Allowed
		Bruise	Inspection Jig	Not Allowed
		Resolution	Chart	Follows Outgoing Inspection Chart Standard
		Color	The Naked Eye	No Issue
		Noise	The Naked Eye	Not Allowed
		Corner Dark	The Naked Eye	Less Than 100px By 100px
		Color Resolution	The Naked Eye	No Issue
Dimension		Height	The Naked Eye	Follows Approval Data Sheet
		Width	The Naked Eye	Follows Approval Data Sheet
		Length	The Naked Eye	Follows Approval Data Sheet
		Overall	The Naked Eye	Follows Approval Data Sheet

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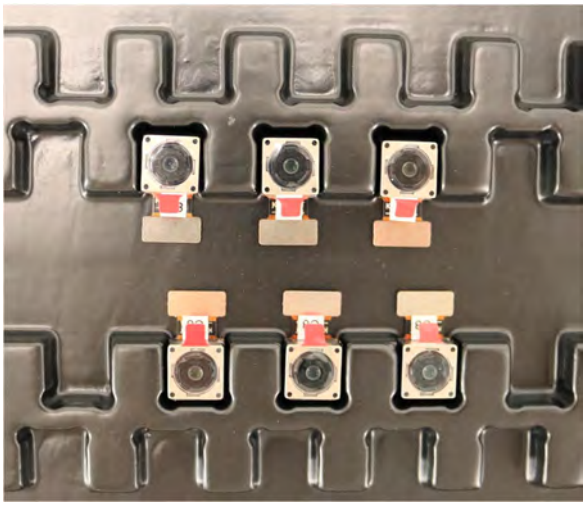
YDSCAM Package Solutions

YDS Camera Module

Complete with Lens Protection Film

Tray with Grid and Space

Place Cameras on the Tray



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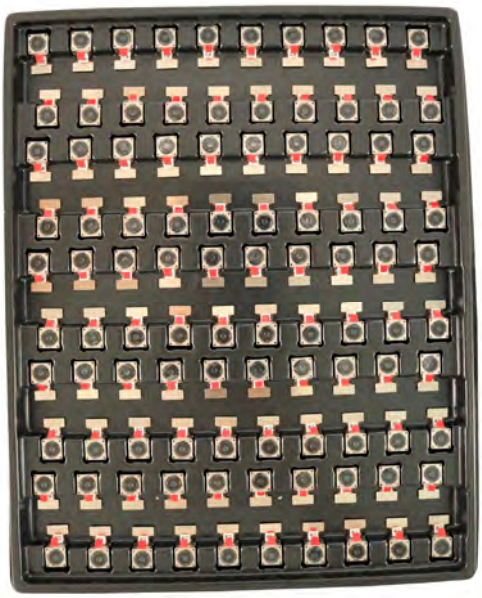
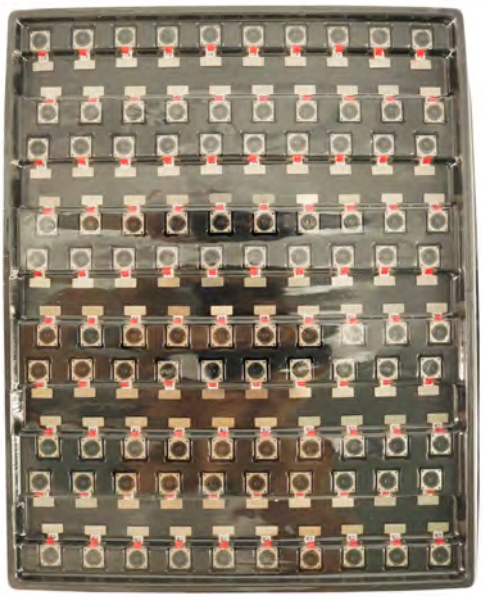
Full Tray of Cameras



Cover Tray with Lid



Place Tray into Anti-Static Bag

Vacuum the Anti-Static Bag

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YDSCAM Package Solutions

Sealed Vacuum Anti-Static Bag with Labels

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

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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

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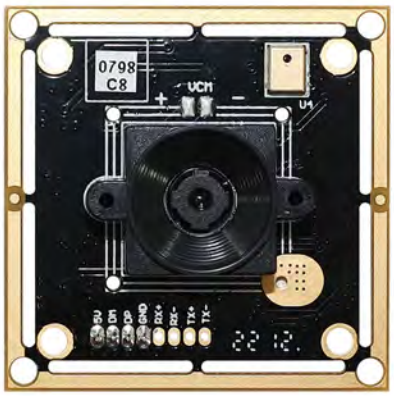
USB Camera Module



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

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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

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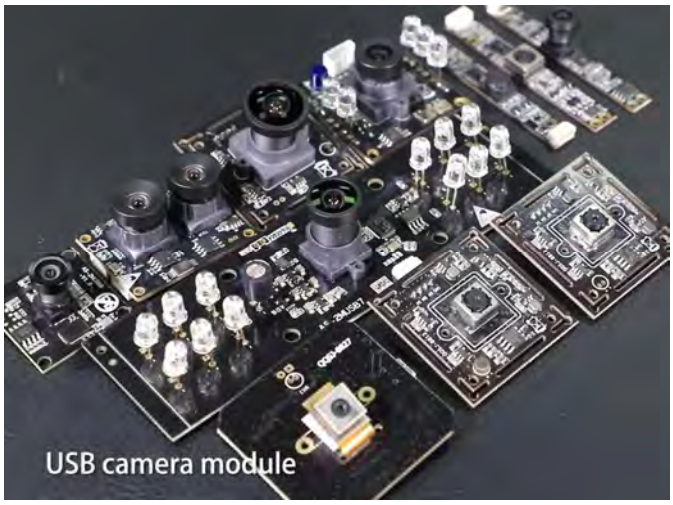
Company YDSCAM

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.

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