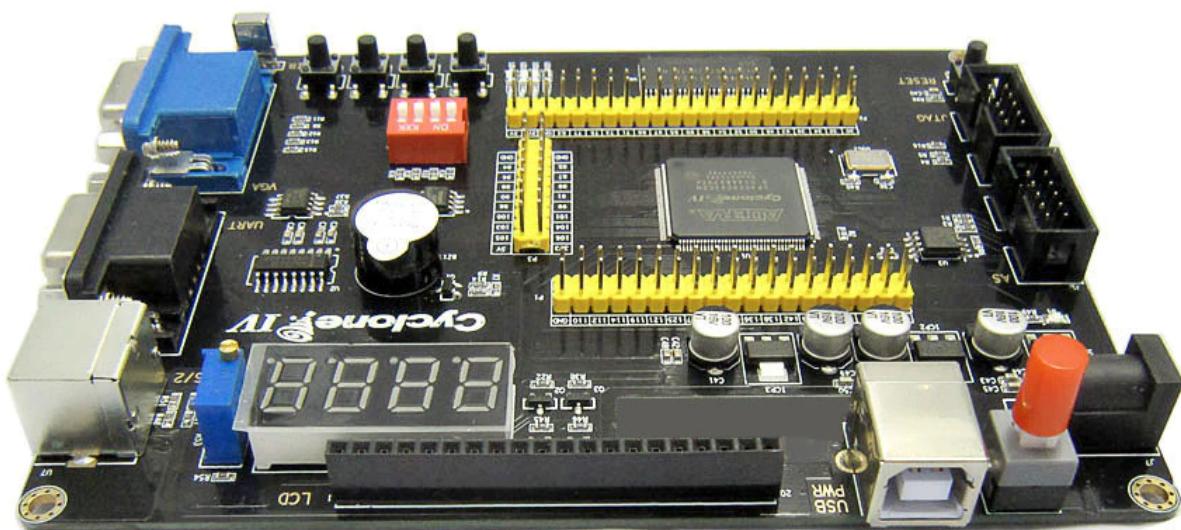
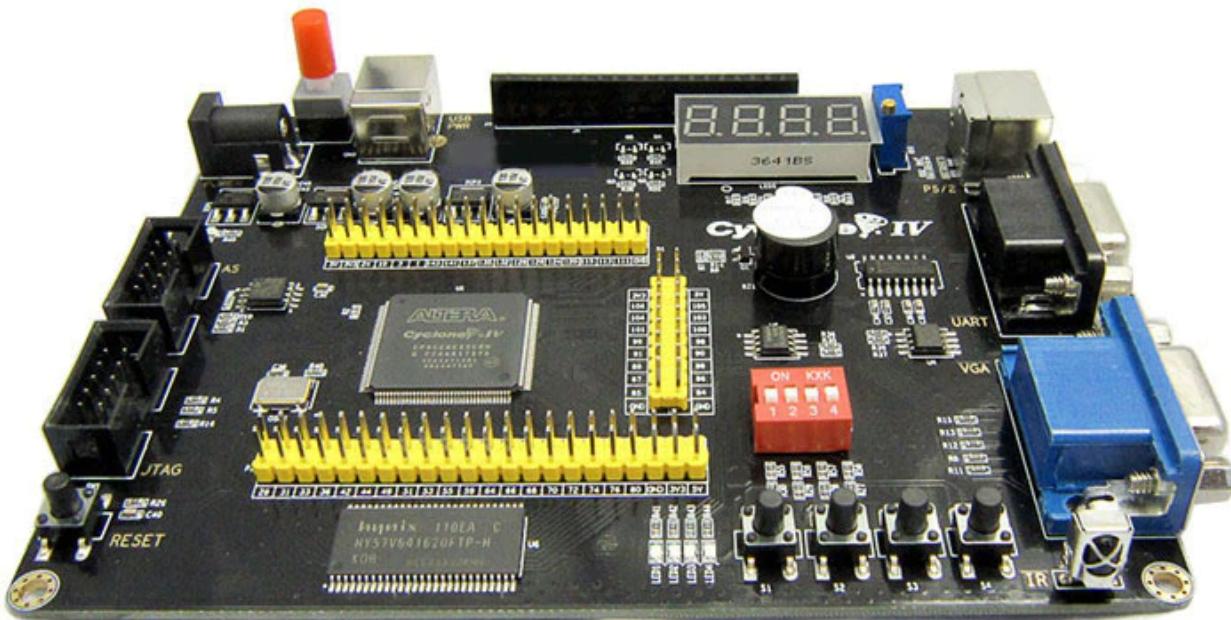
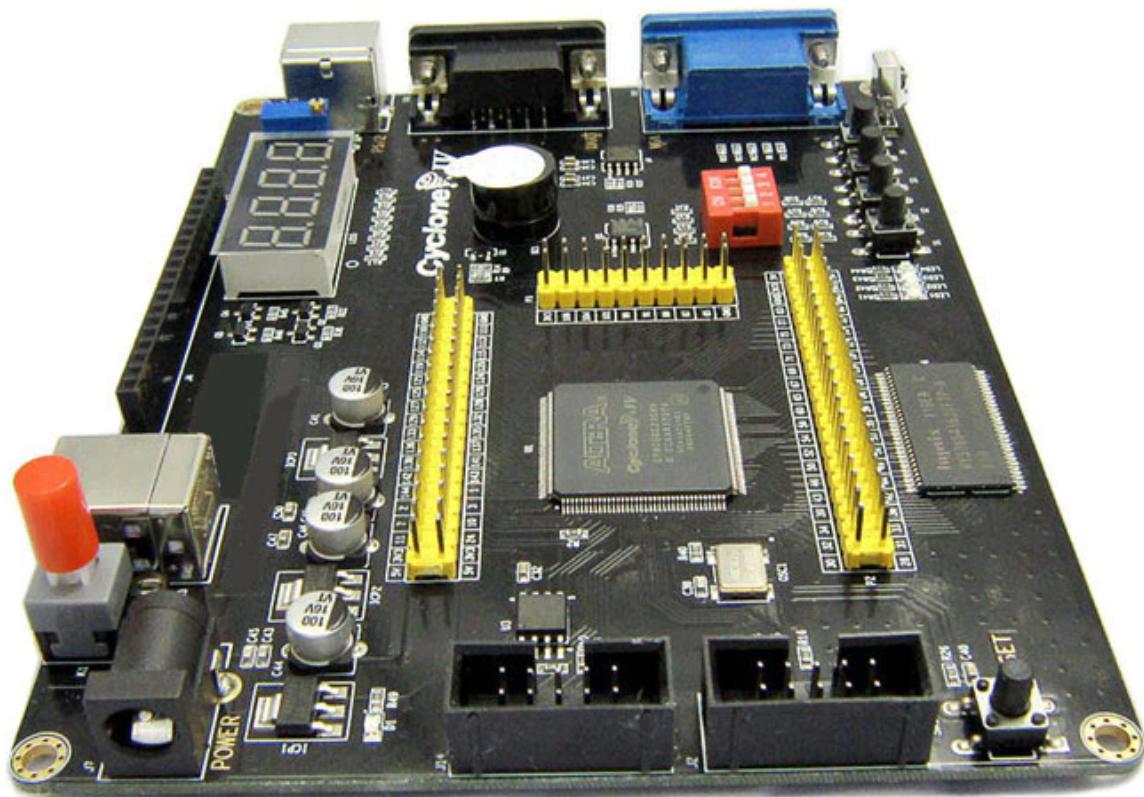
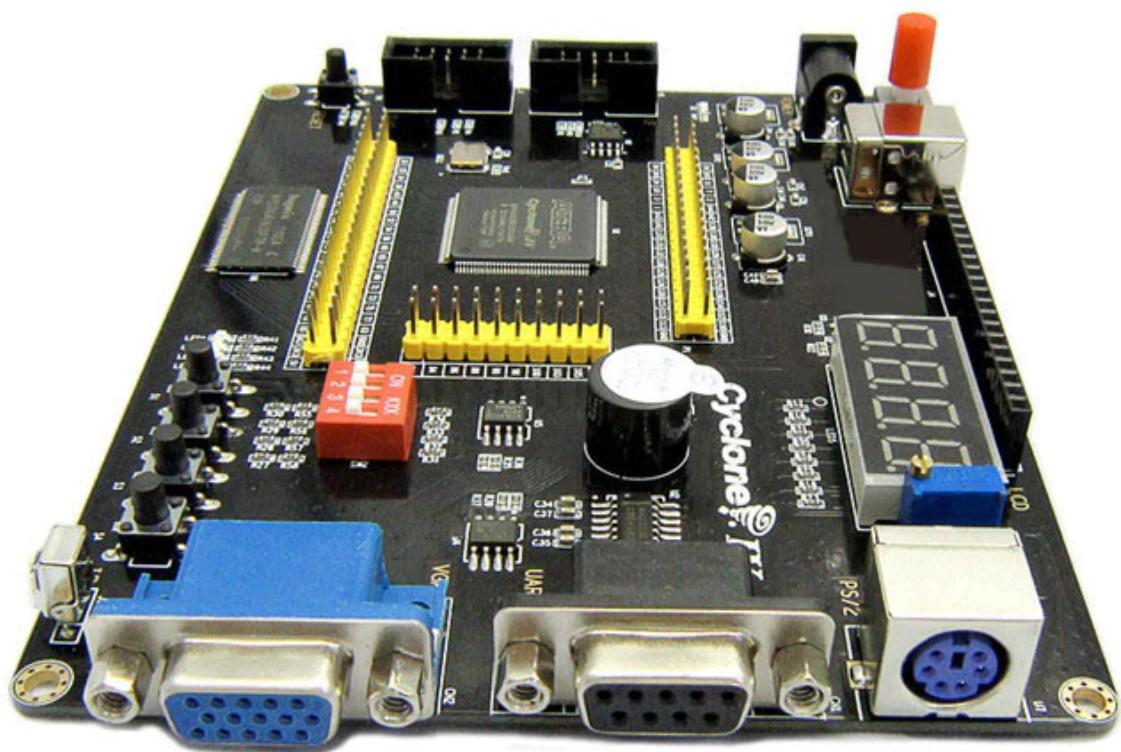


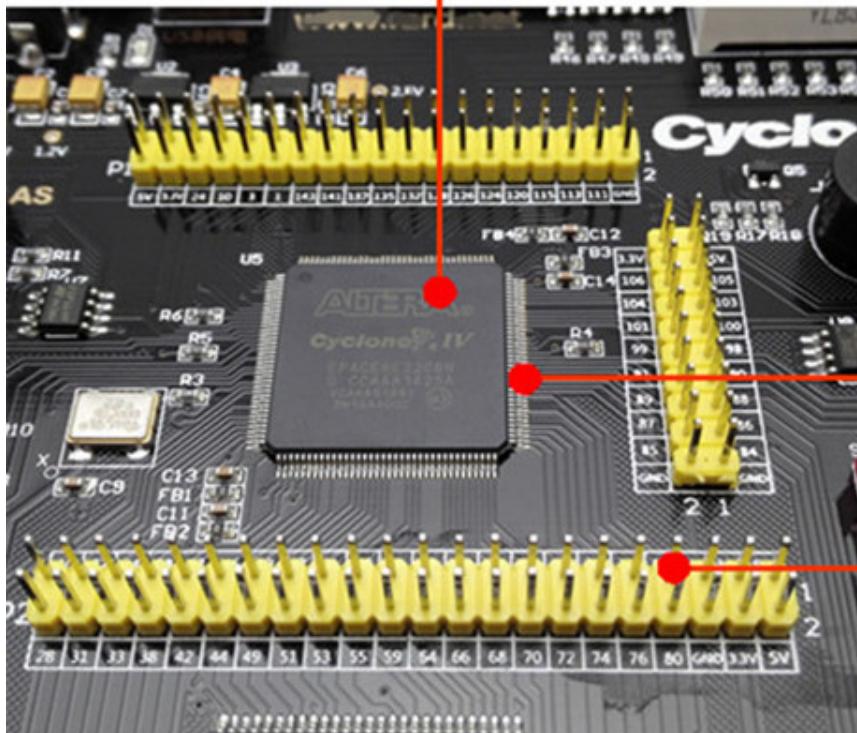
# Altera Cyclone IV EP4CE6 FPGA Development Board NIOSII EP4CE PCB and USB Blaster Jtag AS Programmer





## Characteristics:

- The main chip of the development board is Altera EP4CE6, with a variety of peripheral interfaces such as LCD, VGA, serial port and so on. And contains schematics and sample programs, the development kit is very suitable for college student.
- The FPGA chip of the board uses QFP package chip, compared with the BGA package, it is easier to learn and debug.



Using QFP chip,  
instead of the BGA  
package, easy to  
learn

High quality  
welding

The main chip I/Os  
are all drawn to  
2.54mm pitch pins,  
scalability is strong

- The main chip IOs are all drawn to 2.54mm pitch pins, scalability is strong.
- The development board is equipped with a transparent protection board to protect the chip and prevent electrostatic damage.
- The product contains an Altera USB blaster, that can be used to download programs into the FPGA.



- The product contains a USB cable, that can be used to power the development board.



- Each development board and usb blaster will be fully tested before shipment to ensure that their function are normal.
-

- We provide datasheet, schematic, sample programs and software. We will send you a OneDrive link to download these files.

## Parameters:

1. **Main chip:** ALTERA Cyclone IV EP4CE6E22C8N.

2. **Memory configuration:**

1) The board with 16Mbit EPICS16N serial configuration chip, the user can download and debug the program code via JTAG interface or AS interface.

2) The board with 64Mbit SDRAM, support SOPC, NIOSII development.

3. **The voltage regulator chip:**

1) Using 1117-3.3V voltage regulator chip, to provide 3.3V voltage output.

2) Using 1117-1.2V voltage regulator chip to provide FPGA core voltage.

3) Using 1117-2.5V voltage regulator chip, to provide PLL voltage output.

4. **Voltage input:** DC 5V. The board also can be powered through the USB interface.

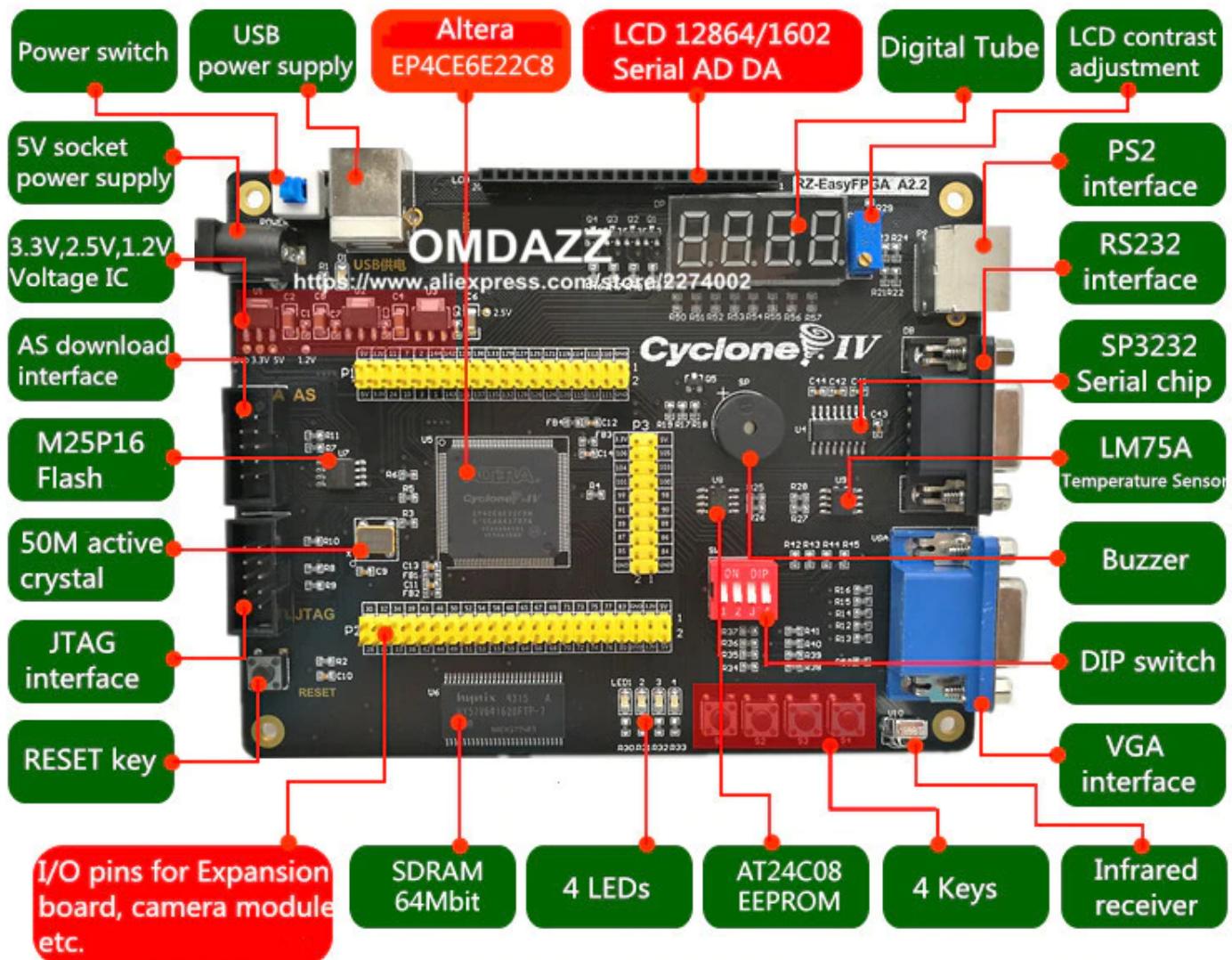
5. **Program debug and download interface:**

1) JTAG interface: download .SOF file, the speed is fast. No loss of data after power failure.

2) AS interface: download .POF file. No loss of data after power failure.

6. **Expansion interface:** leads to all pins of the main chip, 2.54mm spacing.

7. **Size:** 136mm \* 106mm



## Peripheral interfaces and resources:

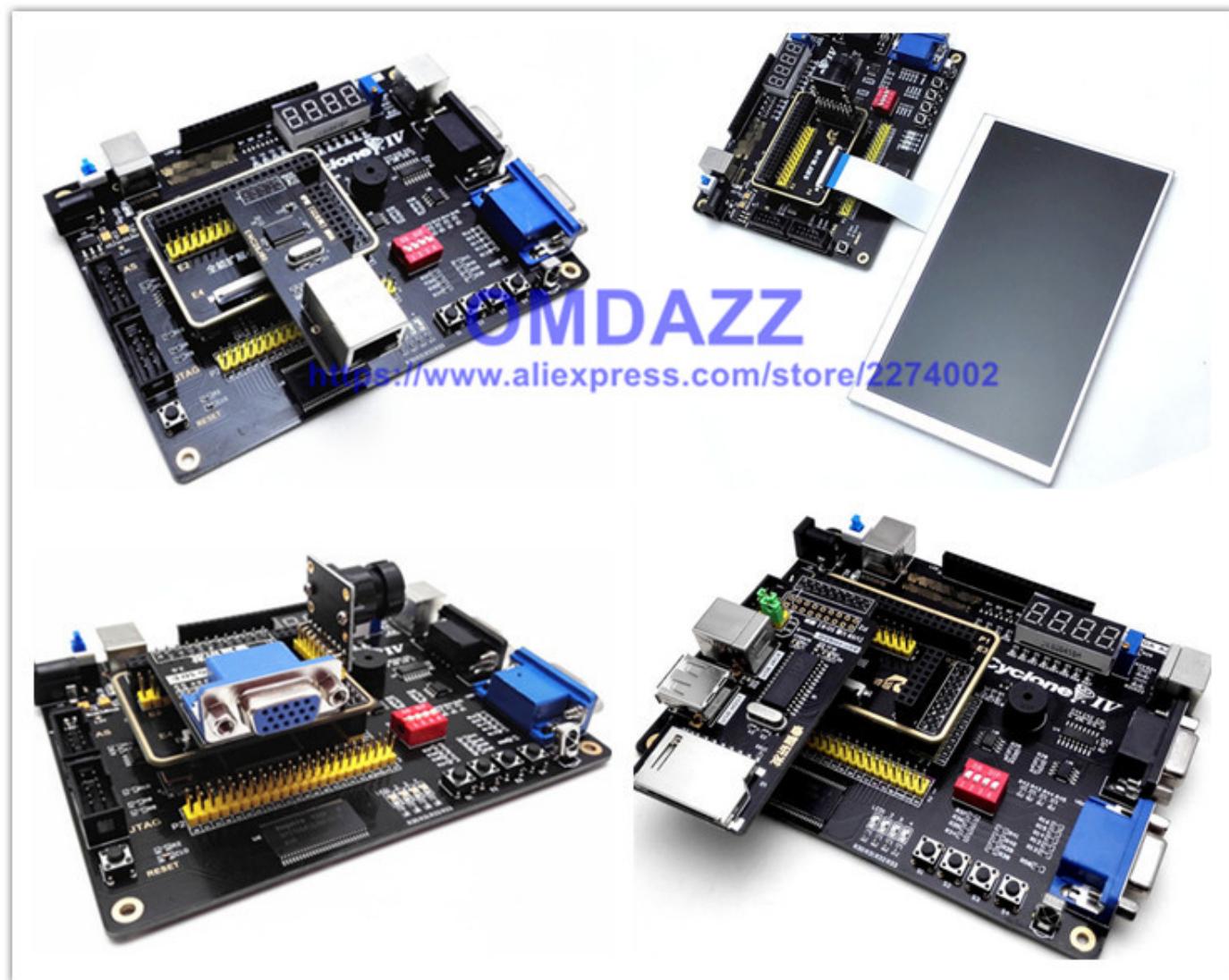
- 1 self-locking button power switch, 1 reset key, 4 user keys.
- 2 LED diodes.
3. 4-digit tube.
4. 4-digit DIP switch.
5. 1 buzzer.
6. PS2 interface.
7. RS232 serial port
8. 1\*20 pin LCD socket, support LCD1602, LCD12864, TFT LCD.
9. Precision adjustable resistance, adjustable LCD backlight.
10. Temperature sensor chip LM754A.
11. 8-color VGA interface.
12. I2C serial EEPROM AT24C08, for IIC bus experiment
13. Infrared receiving module.
14. RS232 Serial port.
15. Leads to all pins of the main chip, 2.54mm spacing.

#### PIN List:

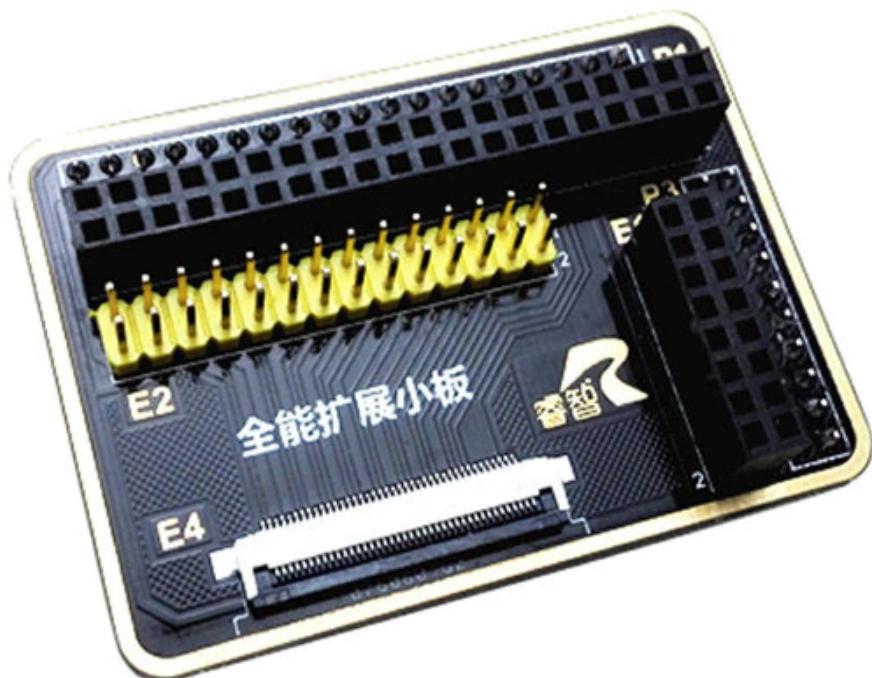
<b>RESET button</b>	25	<b>Digital tube</b>	<b>Pin number</b>
FPGA_CLK	23	DIG1	133
		DIG2	135
		DIG3	136
		DIG4	137
<b>Keys</b>	<b>Pin number</b>	SEGO	128
KEY1	88	SEG1	121
KEY2	89	SEG2	125
KEY3	90	SEG3	129
KEY4	91	SEG4	132
<b>Buzzer</b>	<b>Pin number</b>	SEG5	126
beep	110	SEG6	124
		SEG7	127
<b>Dial switch</b>	<b>Pin number</b>	<b>SDRAM</b>	<b>Pin number</b>
ckey1	88	S DQ0	28
ckey2	89	S DQ1	30
ckey3	90	S DQ2	31
ckey4	91	S DQ3	32
		S DQ4	33
		S DQ5	34
		S DQ6	38
		S DQ7	39
		S DQ8	54
		S DQ9	53
<b>LED</b>	<b>Pin number</b>	S DQ10	52
led1	87	S DQ11	51
led2	86	S DQ12	50
led3	85	S DQ13	49
led4	84	S DQ14	46
<b>UART</b>	<b>Pin number</b>		
UART_TXD	114		
UART_RXD	115		
<b>IIC</b>	<b>Pin number</b>		
SCL	112		

SDA	113	S DQ15	44
I2C_SCL	99		
I2C_SDA	98	S A0	76
		S A1	77
<b>PS2</b>		S A2	80
PS_CLOCK	119	S A3	83
PS_DATA	120	S A4	68
		S A5	67
<b>IR</b>		S A6	66
IR	100	S A7	65
		S A8	64
<b>VGA</b>	<b>Pin number</b>	S A9	60
VGA_HSYNC	101	S A10	75
VGA_VSYNC	103	S A11	59
VGA_B	104		
VGA_G	105	SD_BS0	73
VGA_R	106	SD_BS1	74
		SD_LDQM	42
		SD_UDQM	55
<b>LCD 1602 12864</b>	<b>Pin number</b>		
LCD1_RS	141	SD_CKE	58
LCD2_RW	138	SD_CLK	43
LCD3_E	143	SD_CS	72
LCD4_D0	142	SD_RAS	71
LCD5_D1	1	SD_CAS	70
LCD6_D2	144	SD_WE	69
LCD7_D3	3		
LCD8_D4	2		
LCD9_D5	10		
LCD10_D6	7		
LCD11_D7	11		

Other matching connecting board and peripheral modules:



**Connecting Board:**

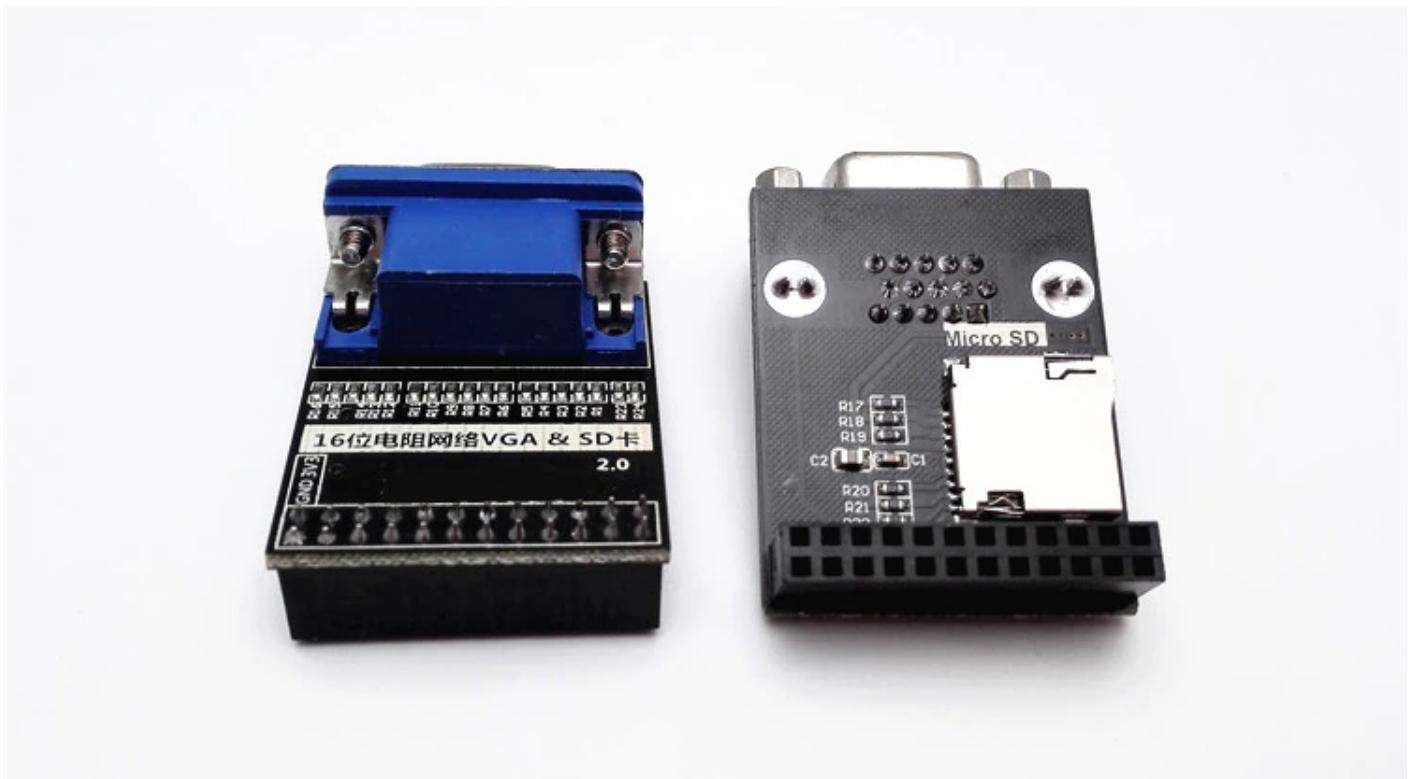


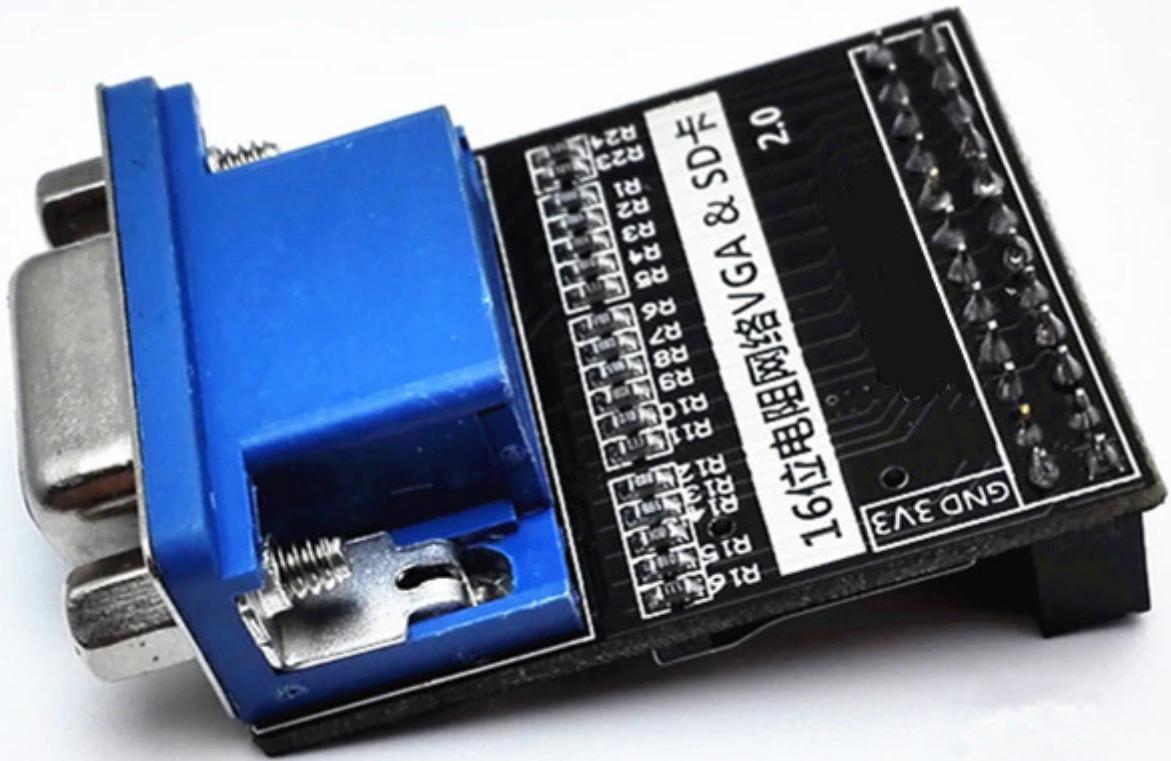
**OV7670 camera module:**



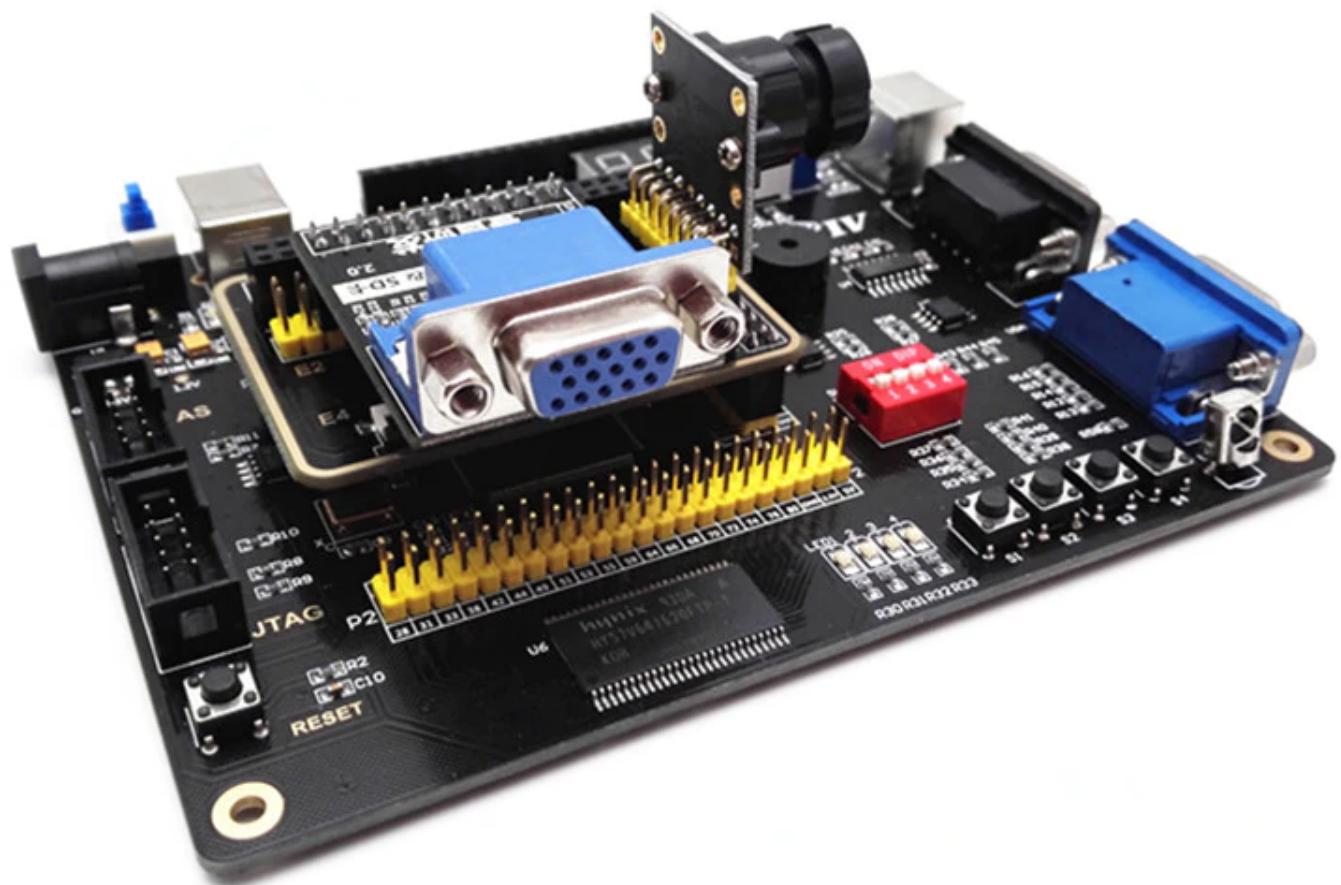
## VGA Module:

- 16 bit true color, support 65536 colors
  - The VGA module with SD card socket





Development board and camera, VGA module, to achieve image acquisition and display



2.4 inch TFT Module:

- With touch IC
- With SD card socket

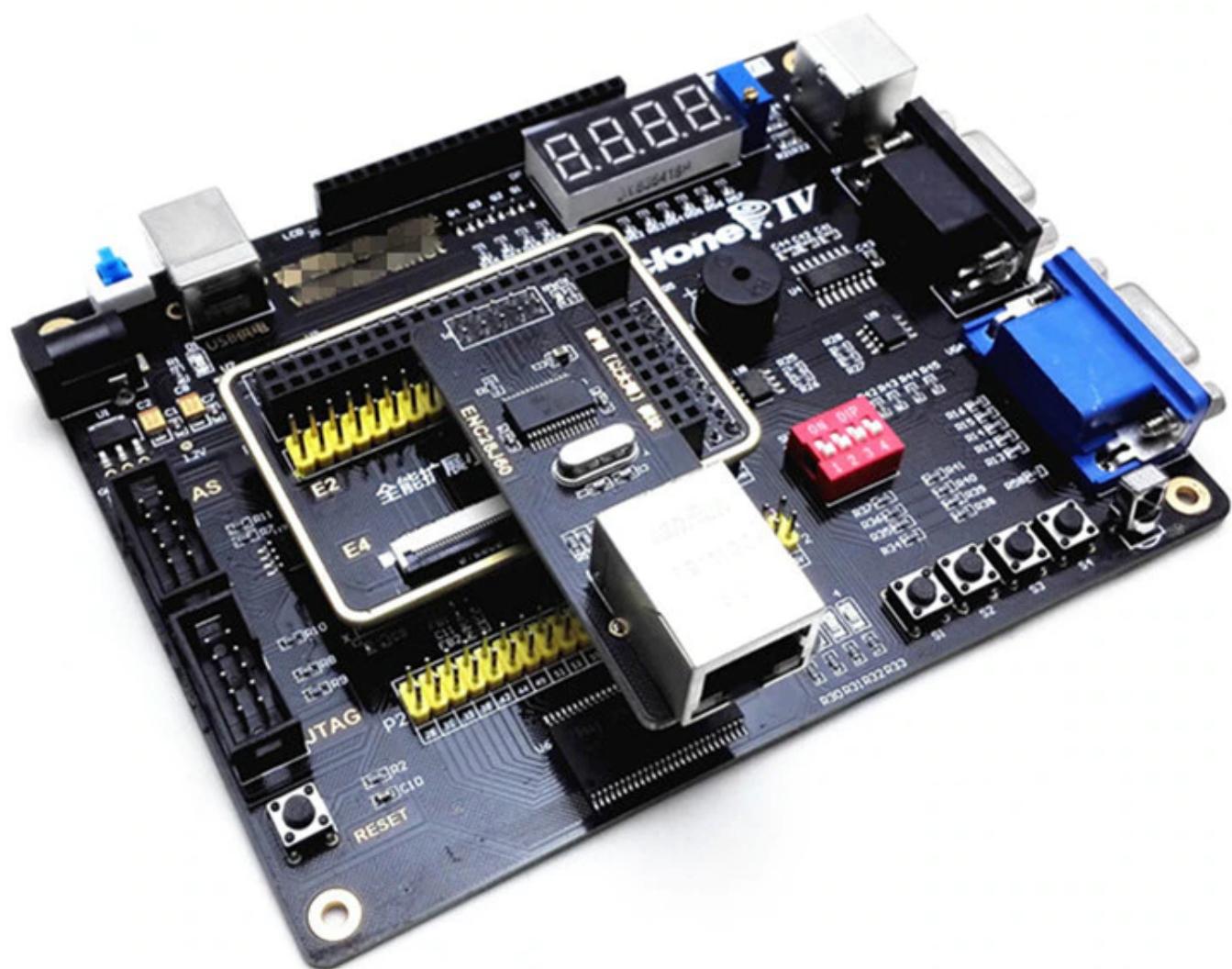
Development board and TFT connection, plug in the SD card, to achieve picture playback



### Ethernet Module:

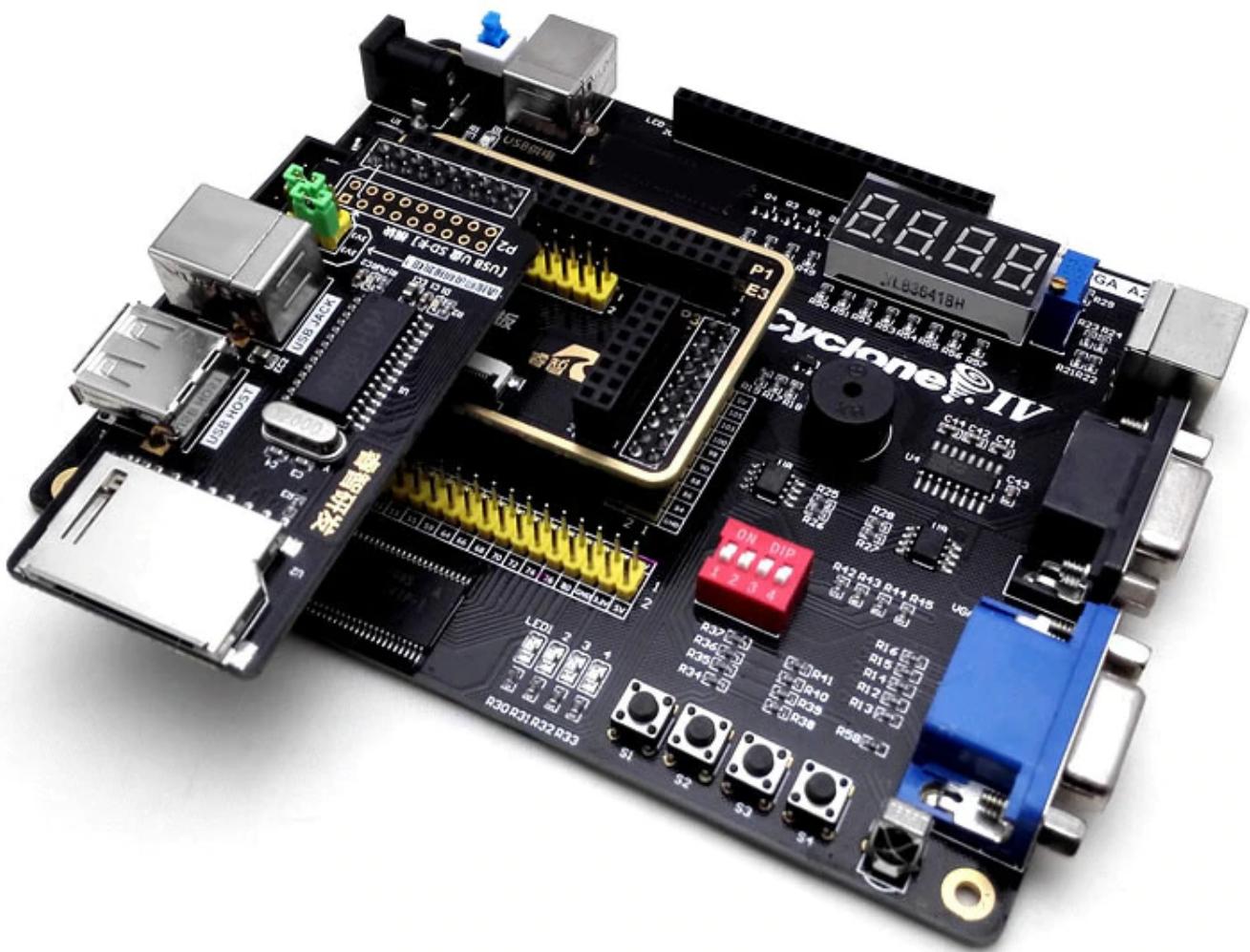
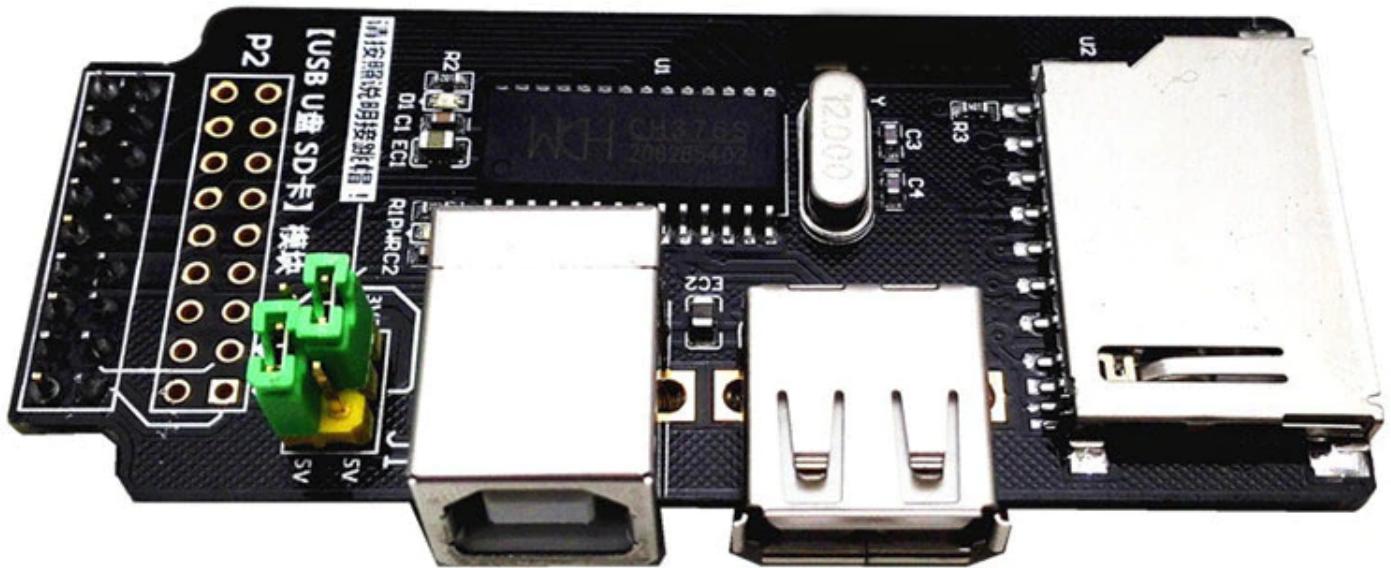


The development board is connected with the Ethernet module to complete the network communication experiment.



## **USB Module:**

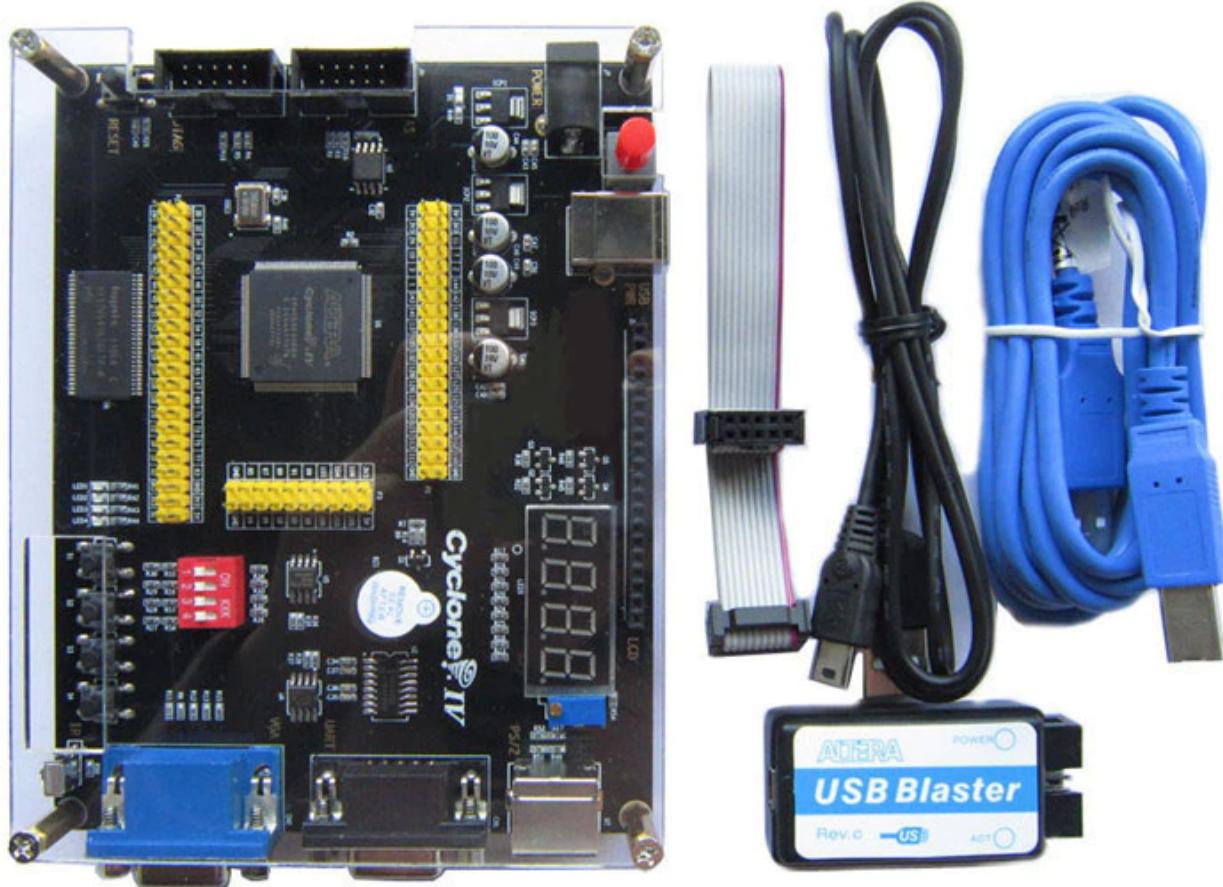
CH376S USB module, for USB and PC communications, USB flash disk read and write, SD card read and write.



**Shipping List of Bundle1:**

- 1 \* ALTERA EP4CE6 FPGA development board
- 1 \* USB Blaster (Used to download programs to FPGA)
- 1 \* USB cable (Used for power supply)

## Bundle1



## Shipping List of Bundle2:

- 1 \* ALTERA EP4CE6 FPGA development board
- 1 \* High Speed Altera USB Blaster (Used to download programs to FPGA)
- 1 \* USB cable (Used for power supply)

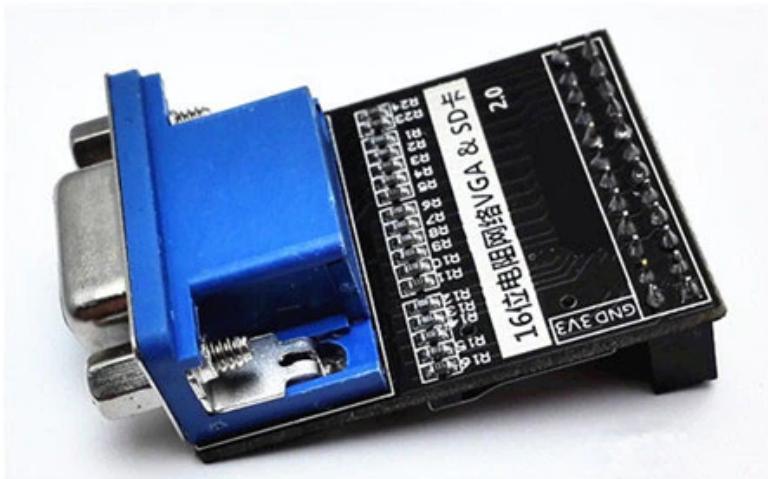
## Bundle2



## Shipping List of Bundle3:

- 1 \* ALTERA EP4CE6 FPGA development board
- 1 \* USB Blaster (Used to download programs to FPGA)
- 1 \* USB cable (Used for power supply)
- 1 \* Connecting Board
- 1 \* 16-bit 65526 color VGA Module
- 1 \* OV7670 camera

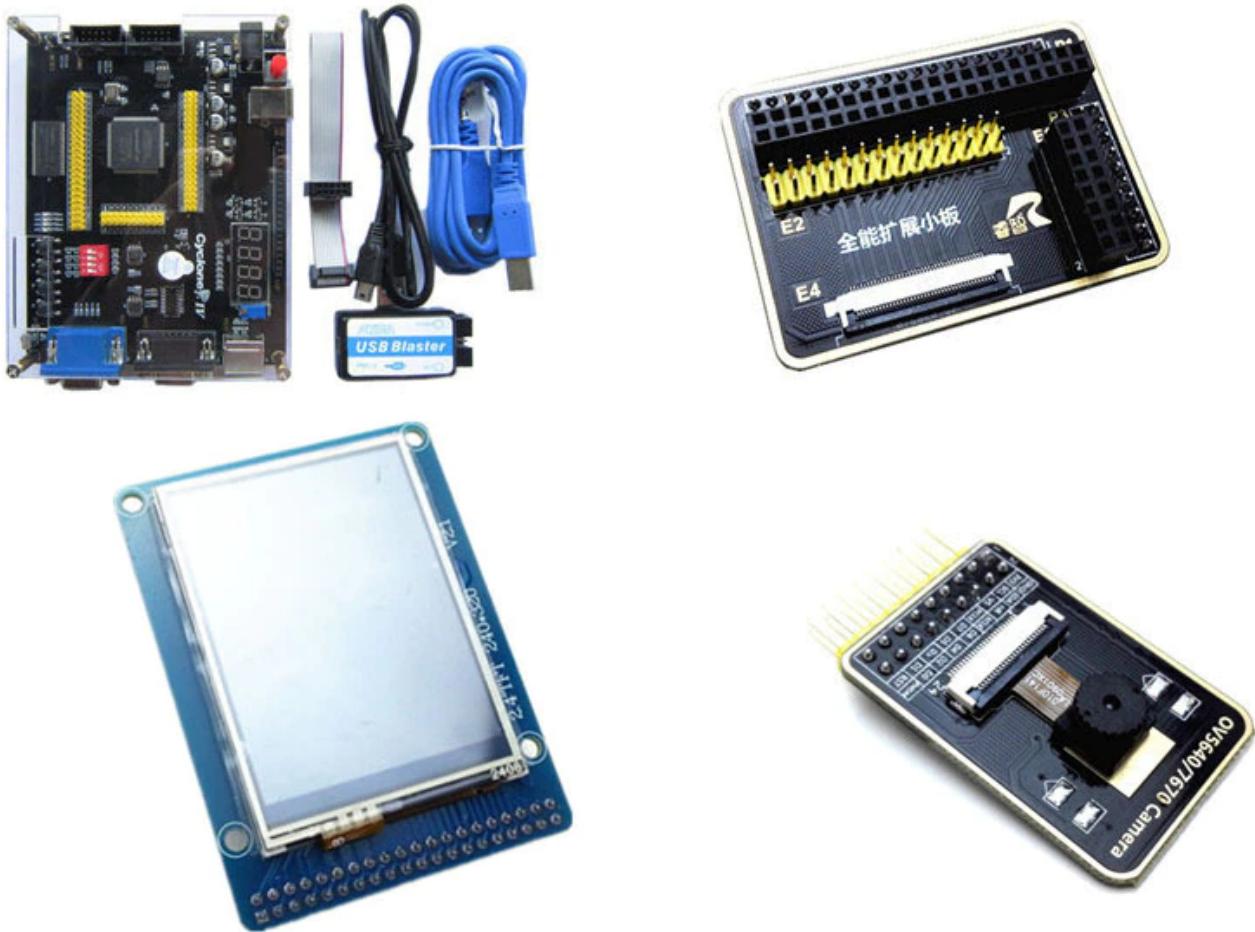
### Bundle3



### Shipping List of Bundle4:

- 1 \* ALTERA EP4CE6 FPGA development board
- 1 \* USB Blaster (Used to download programs to FPGA)
- 1 \* USB cable (Used for power supply)
- 1 \* Connecting Board
- 1 \* 2.4 inch TFT Module
- 1 \* OV7670 camera

## Bundle4



## Shipping List of Bundle5:

- 1 \* ALTERA EP4CE6 FPGA development board
- 1 \* USB Blaster (Used to download programs to FPGA)
- 1 \* USB cable (Used for power supply)
- 1 \* Connecting Board
- 1 \* Ethernet Module

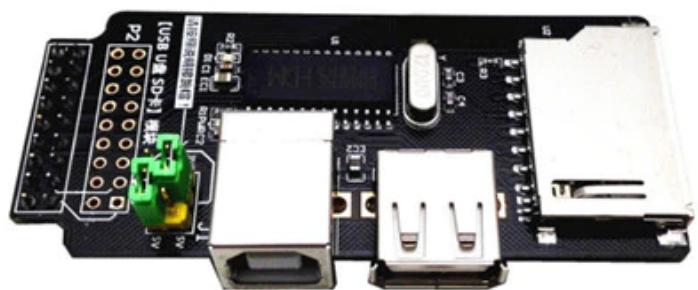
**Bundle5**



**Shipping List of Bundle6:**

- 1 \* ALTERA EP4CE6 FPGA development board
- 1 \* USB Blaster (Used to download programs to FPGA)
- 1 \* USB cable (Used for power supply)
- 1 \* Connecting Board
- 1 \* USB Module

## Bundle6



Development board files: include schematics, manuals, program code (Ask customer service for the download link)

### Packaging:

Anti-static bag + bubble wrap + strong cardboard box

