JPEG Color Camera Serial UART Interface (TTL level)

MODEL: Y201-TTL

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1. Introduction

The Y201-TTL is a new generation serial port camera module. It captures high resolution pictures using the serial port. The Y201-TTL is a modular design that outputs JPEG images through UART (TTL level), and can be easily integrated into an existing design.

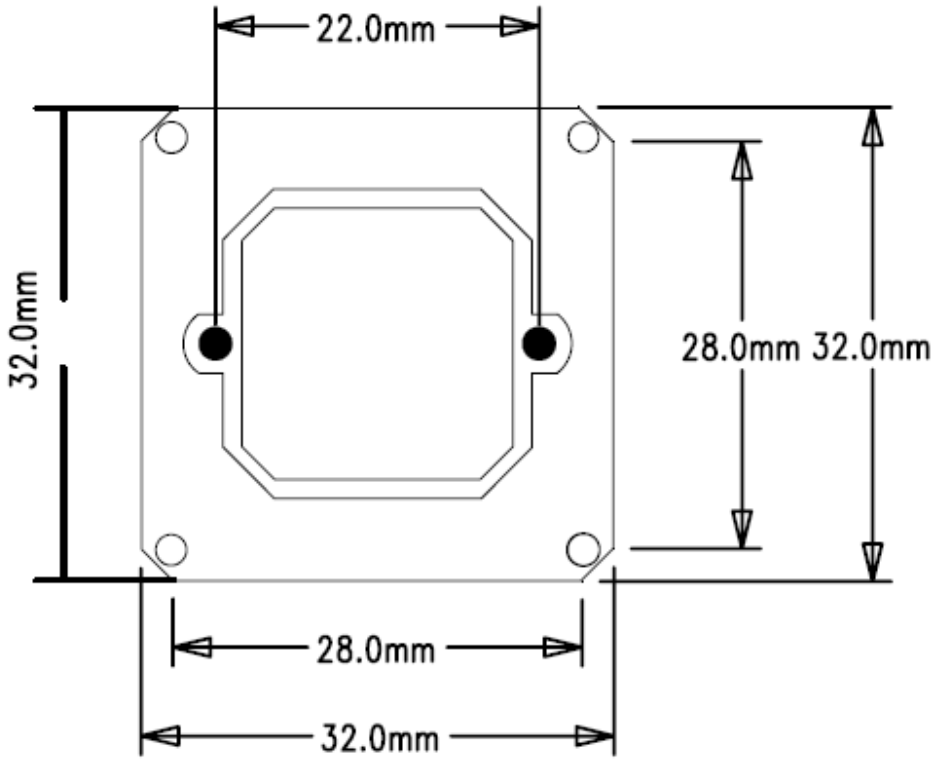
2. Specification

a. VGA/QVGA/160*120 resolution
b. Support capture JPEG from serial port
c. Default baud rate of serial port is 38400
d. DC 3.3V or 5V power supply
e. Size 32mm X 32mm
f. Current consumption: 80-100mA

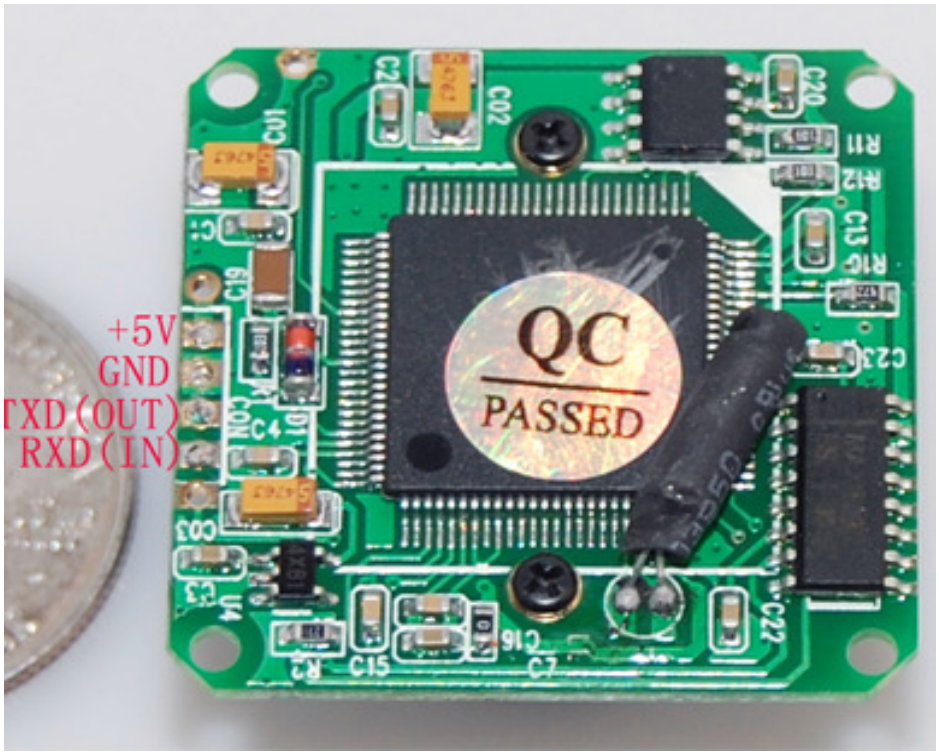
3. Application

a. Different image capture systems
b. Environmental monitoring
c. Industry monitoring
d. Medical equipment
e. Video phone
f. Security
g. Vehicle based GPS

4. Footprint



5.Interface definition



Name	**descriptions**
+5V	Power
GND	Ground
TXD（OUT）	RS232 level connected to MCU or PC RXD
RXD（IN）	RS232 level connected to MCU or PC TXD

6. Communication Protocol

1. Reset

Command (HEX)	Return (HEX)
56 00 26 00	76 00 26 00

2. Take picture

Command (HEX)	Return (HEX)
56 00 36 01 00	76 00 36 00 00

3. Read JPEG file size

Command (HEX)	Return (HEX)
56 00 34 01 00	76 00 34 00 04 00 00 XH XL

XH XL is the file length of JPEG file, MSB is in the front, and followed by LSB.

4. Read JPEG file content

JPEG file starts with FF D8 and ends with FF D9.

To read the JPEG file, always starts with address 00 00,and choose a chunk size that are an integer times of 8, and read the chunk many times until reds FF D9 which indicates the end of the JPEG file.

Command(HEX)
56 00 32 0C 00 0A 00 00 MH ML 00 00 KH KL XX XX

Return (HEX)
76 00 32 00 00 （Interval time） FF D8 。。。……。。。（Interval time） 76 00 32 00 00
（Interval time）= XX XX*0.01mS XX XX are recommended to be 00 0A
00 00 MH ML: Starting address
00 00 KH KL: Length of JPEG file
MSB first, and LSB last

5. Stop taking pictures

Command (HEX)	Return (HEX)
56 00 36 01 03	76 0 36 00 00

6. Compression Ratio

Command (HEX)	Return (HEX)
56 0 31 05 01 01 12 04 XX	76 00 31 00 00 XX (XX normally is 36)

XX: 0X00 to 0XFF

7. Image size

Command (HEX)	Return (HEX)
56 00 31 05 04 01 00 19 11 （320*240）	76 00 31 00 00
56 00 31 05 04 01 00 19 00 (640*480）	76 00 31 00 00
56 00 31 05 04 01 00 19 22 （160*120）	76 00 31 00 00

After changing the image size, it is needed to reset or power cycle.

8. Power Saving

Entering Power Saving Command (HEX)	Return (HEX)
56 00 3E 03 00 01 01	76 00 3E 00 00

Exiting Power Saving Command (HEX)	Return (HEX)
56 00 3E 03 00 01 00	76 0 3E 00 00

9. Chang baud rate

Command (HEX)	Return (HEX)
56 00 24 03 01 XX XX	76 00 24 00 00
XX XX	Data Rate
AE C8	9600
56 E4	19200
2A F2	38400
1C 4C	57600
0D A6	115200

Notes:

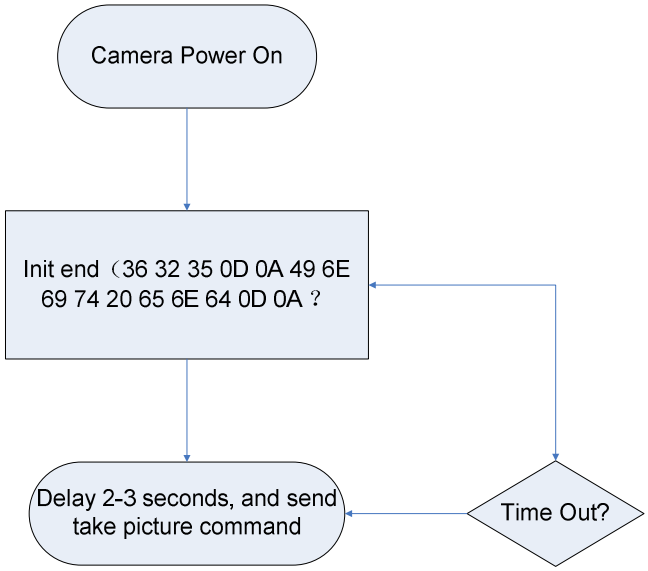
1. The starting read address must be integer times of 8.
2. When multiple cameras are used, XX of 56 XX 36 01 00 is the device ID.
3. The UART is RS232 level. If want to connected to MCU, please add a level shifter or remove MAX232IC. RS232 level is used in the module as the communication distance of raw UART cannot be longer than 1 meter.
4. When powered on, serial port will output the following message actively:

   Ctrl infr exist
   User-defined sensor
   625
   Init end

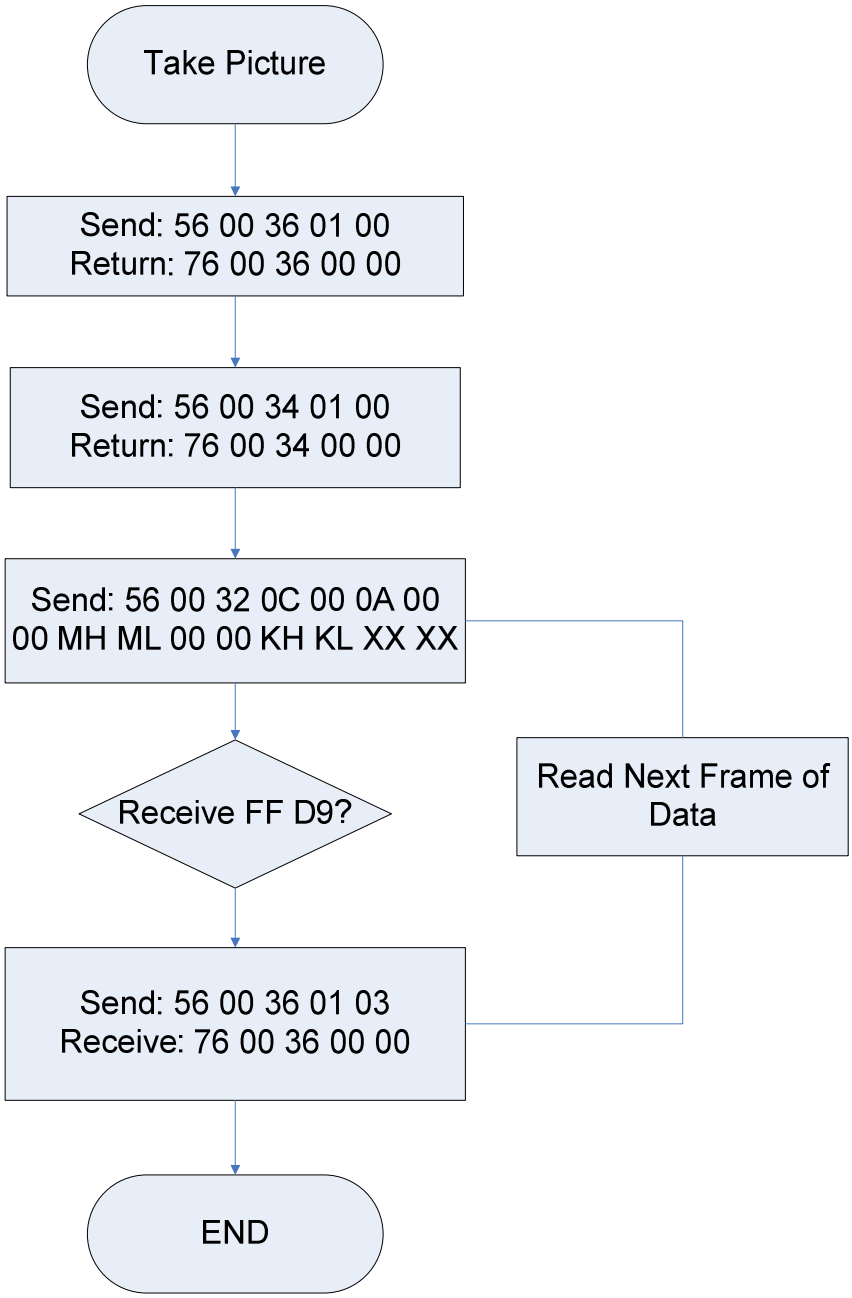
   The host only needs to determine when “Init end” （36 32 35 0D 0A 49 6E 69 74 20 65 6E 64 0D 0A ）is received. After “Init end” is received, the host can send the take picture command after waiting for another 2-3 seconds.

7. Program flow chart

Initialization:



Capture a JPEG picture:


Take Picture
Send: 56 00 36 01 00
Return: 76 00 36 00 00
Send: 56 00 34 01 00
Return: 76 00 34 00 00
Send: 56 00 32 0C 00 0A 00
00 MH ML 00 00 KH KL XX XX
Receive FF D9?
Read Next Frame of Data
Send: 56 00 36 01 03
Receive: 76 00 36 00 00
END