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LinkSprite JPEG Color Camera Serial UART Interface With Infrared



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1. Introduction

LS-Y201-Infrared is LinkSprite's new generation serial port camera module. It can capture high resolution pictures using the serial port. LS-Y201-infrared is a modular design that outputs JPEG images through UART, and can be easily integrated into existing design. The infrared feature has a built-in sensor to sense the ambient light and will automatically turn on the infrared LED.

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, 200mA when infrared LED is on.

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. Interface definition



| Name | descriptions |
|--------|--------------|
| RED | RXD (IN) |
| Brown | TXD(OUT) |
| Purple | GND |
| Gray | 5V DC |

Default baud rate is 38400 bps.



4. 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 reads 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 |

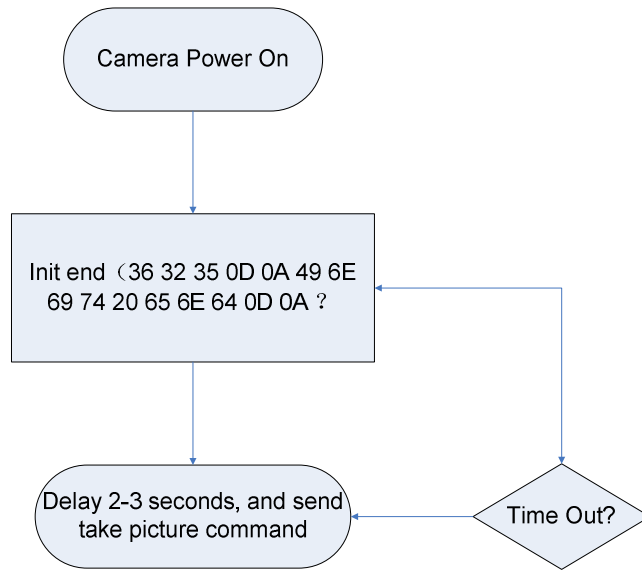
Notes:

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. If 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

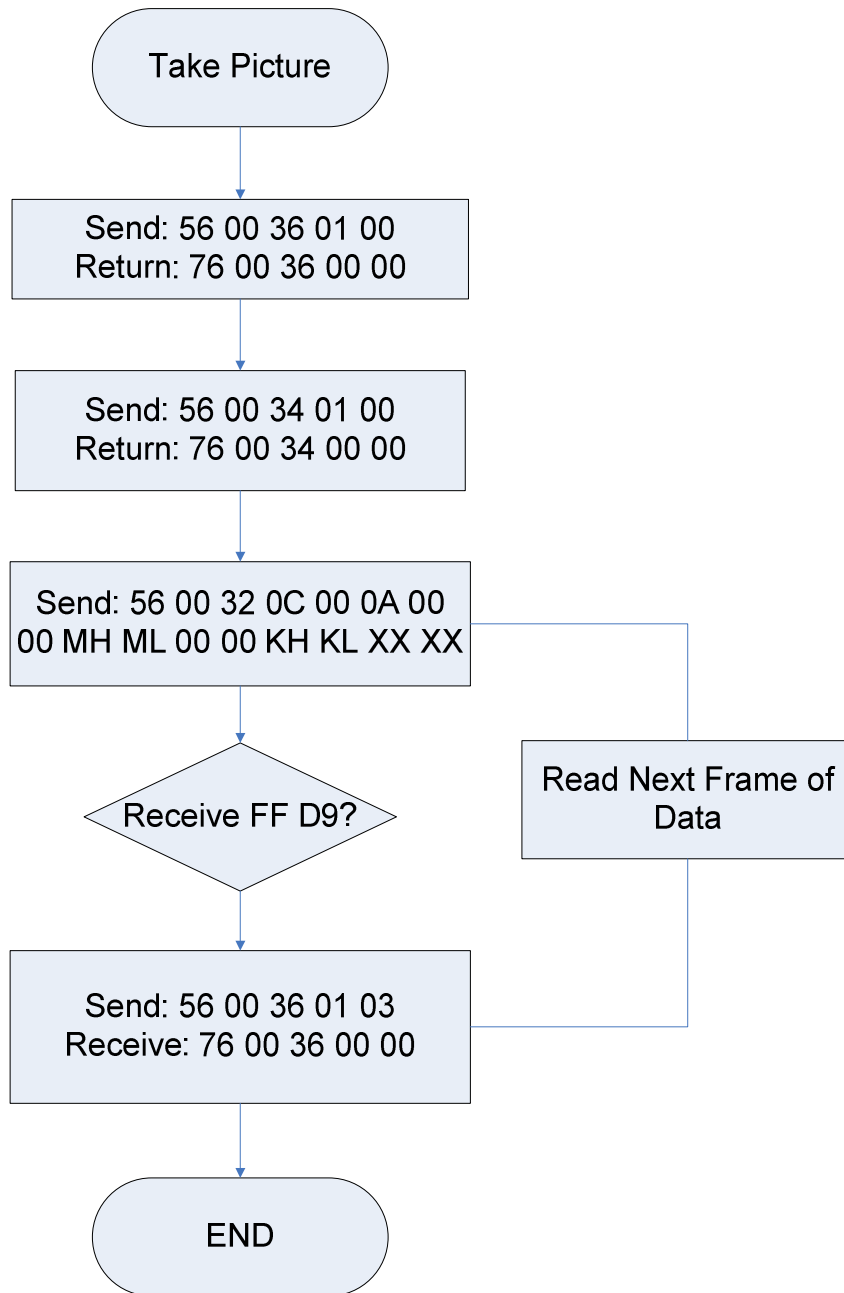
The host only needs to determine when “Init end” (36 32 35 0D 0A 49 6E 69 74 20 65 6E 64 0D 0A) is received. After “Init end” is received, the host can send the take picture command after waiting for another 2-3 seconds.

5. Program flow chart

Initialization:



Capture a JPEG picture:



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