

RAK WISCAM PROGRAMMING GUIDE V1.0

Shenzhen Rakwireless Technology Co., Ltd

www.rakwireless.com

info@rakwireless.com

© 2015 Rakwireless Reserves All Rights

The Name Of Actual Companies And Products Mentioned
Herein Are The Trademarks Of Their Respective Owners

No Parts Of This Document May Be Reproduced ,Stored In
Any Retrieval System ,Or Transmitted In Any Form Not Expressly
Approved By Rakwireless

This Document Is Subject To Change Without Notice

Directory

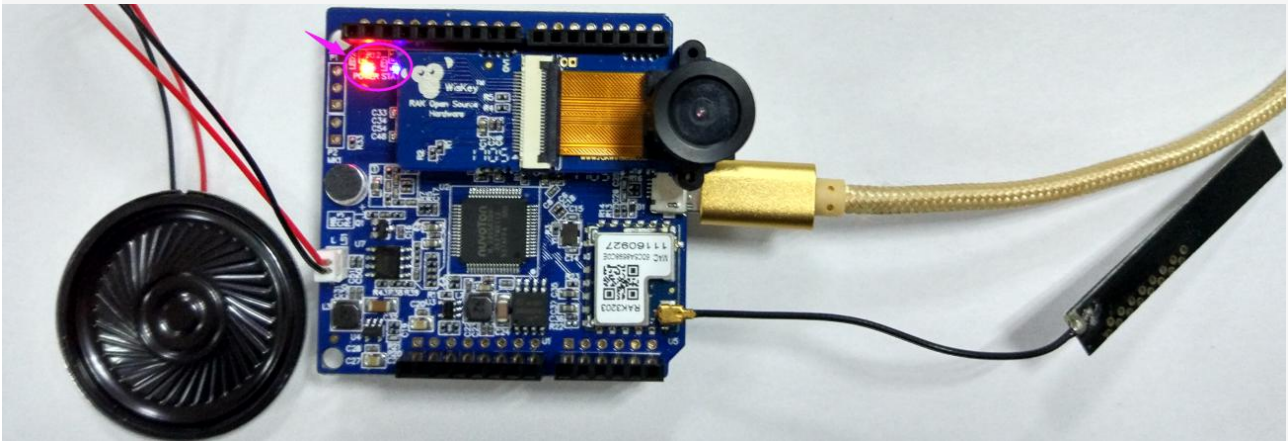
| | |
|---|-----------|
| 1 Serial Use..... | 1 |
| 2 Functions Introduce..... | 3 |
| 2.1 Transfer File Function..... | 3 |
| 2.2 Net Function..... | 4 |
| 2.3 Transparent Transmission Function..... | 5 |
| 2.4 Telnet Function..... | 6 |
| 2.5 Demo..... | 6 |
| 2.6 HTTP Command..... | 7 |
| 3 Open-source List..... | 9 |
| 4 Modification Record..... | 10 |

1 Serial Use

(RS232 Level)

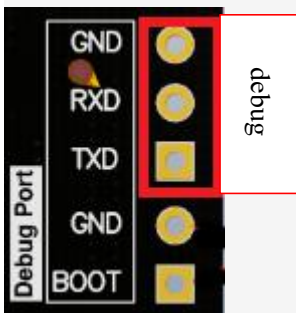
Install the antenna and camera of RAK CAM development board in the corresponding position, and power supply with the Micro USB (Voltage: 5V, 1A, I am here to demonstrate a separate power supply situation, but you can combine with Arduino when you use it) Normal phenomenon: the red light is on, and the blue light flashes after a few seconds,

Example:

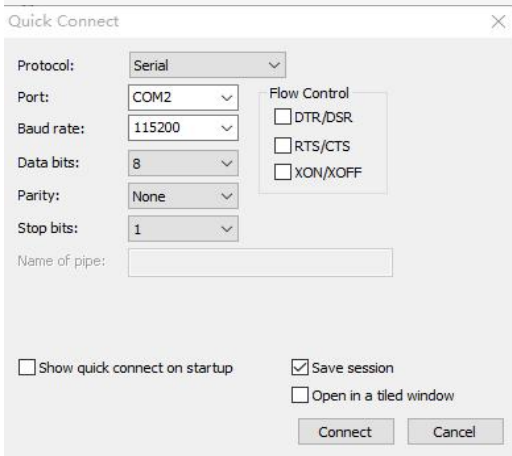


RAK CAM Normal Start

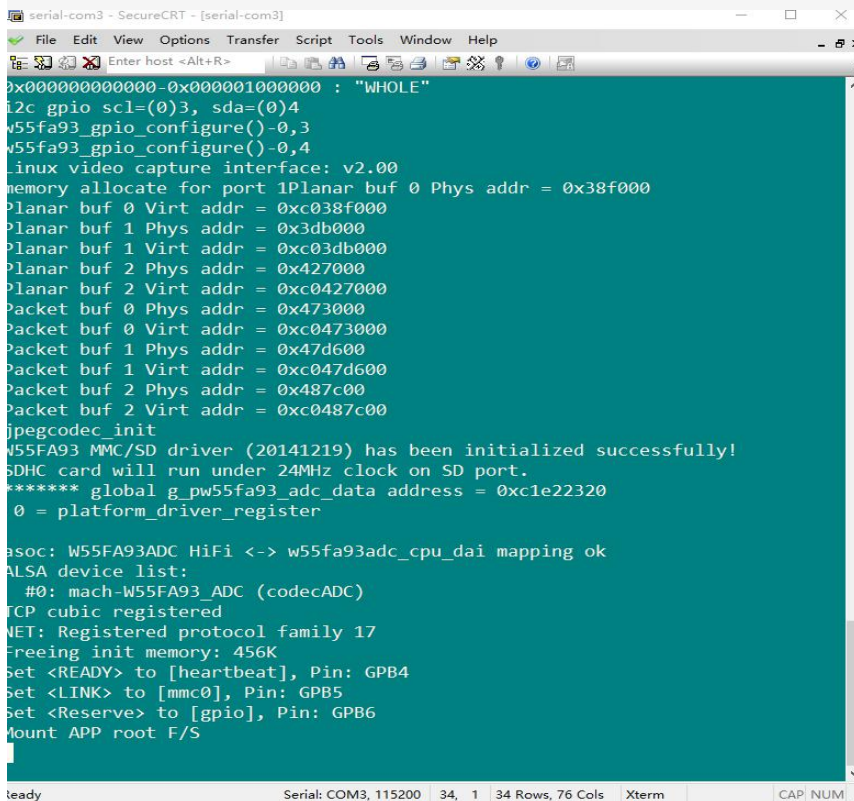
on the back of the board, you can see "debug port", connect it to your serial console and the Baud rate is 115200. Then connect to the serial port.



After connect your pc and board,configure your tool ,then click 'connect'



Finally start your board ,you will see the print message



2 Functions Introduce

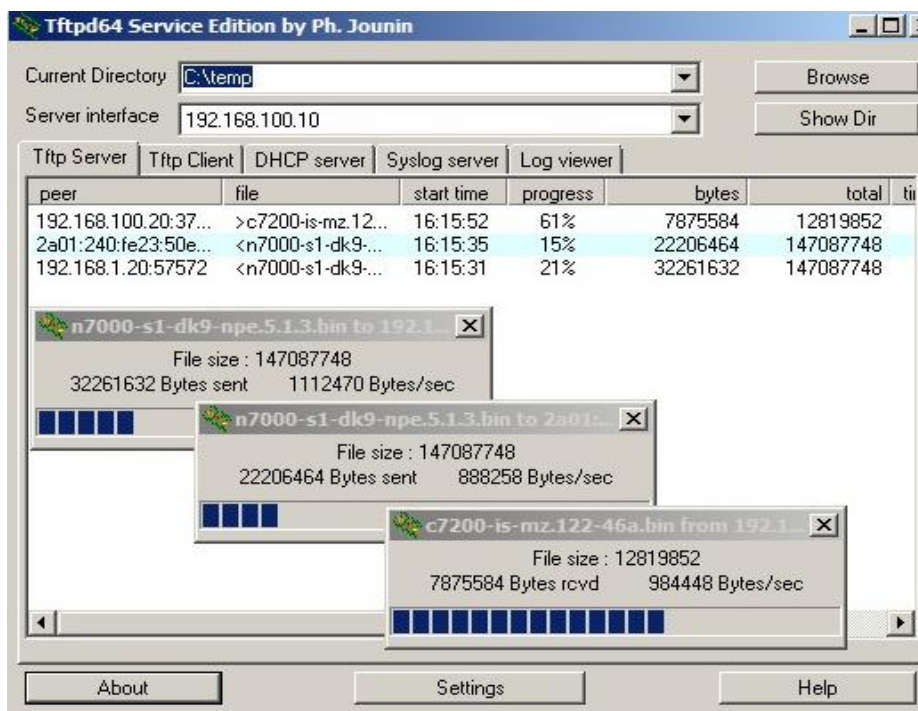
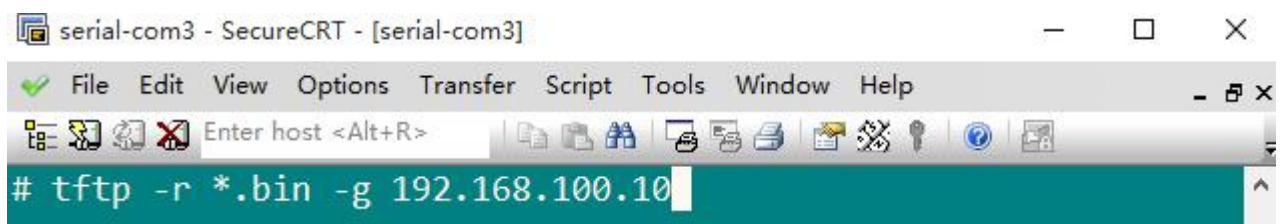
The module includes many functions:

- 1 tftp : you can send files with tftp
- 2 Network : by default it only “Access Point”,you can connect it to other router . And you can change some configures with http-command
- 3 Transparent Transmission: this function can change “serial data” to “tcp data” .
- 4 Telnet: remote login.
- 5 demo: gpio and audio demo.
- 6 http command: best command list.

2.1 Transfer File Function

Though tftp:

- 1 download “Tftpd” and install it
- 2 execute tftpd.exe ,choose [Server interfaces](#),and [Current Directory](#)
- 3 copy files to your directory
- 4 input command :tftp -r filename -g ip([Server interfaces](#)) in your terminal



2.2 Net Function

change AP to STA (connect the module to the router)

By default,the AP starts,and ssid: WisCam+mac address

Password:12345678

IP: 192.168.100.1

(connect the module to the router)Through the “list”command (behind the interface command),you can see the wifi-related information.

BOOTPROTO:

STATIC: the static ip, you can manually set the ip and gateway ,and you can see the ip and gateway through the “list” command;

DHCP: the dynamic ip, ip address randomly assigned,but you can't see the ip and gateway through the “list” command ,you can connect to the serial port and view the ip address through “ifconfig” command.



<1>When you distribute Network you can open the web,and input command (By default :DHCP,you can change it through command) :

<http://<IP-Address>/cgi-bin/param.cgi?action=update&group=wifi&SSID=wifi name>

http://<IP-Address>/cgi-bin/param.cgi?action=update&group=wifi&AUTH_KEY=wifi password



<2> restart the development board (the board will connect to the router)

<3> connect your phone to the internet

<4> watch the video with your App

<5>In STA : if you want to restore factory (AP), you can pull down the GPIOA5 about 5 seconds

2.3 Transparent Transmission Function

In this function , you can change “serial data” to “tcp data” , and change “tcp data ” to “serial data” , if you want to process data on internet ,you can use this function . So it's very suitable for IOT.

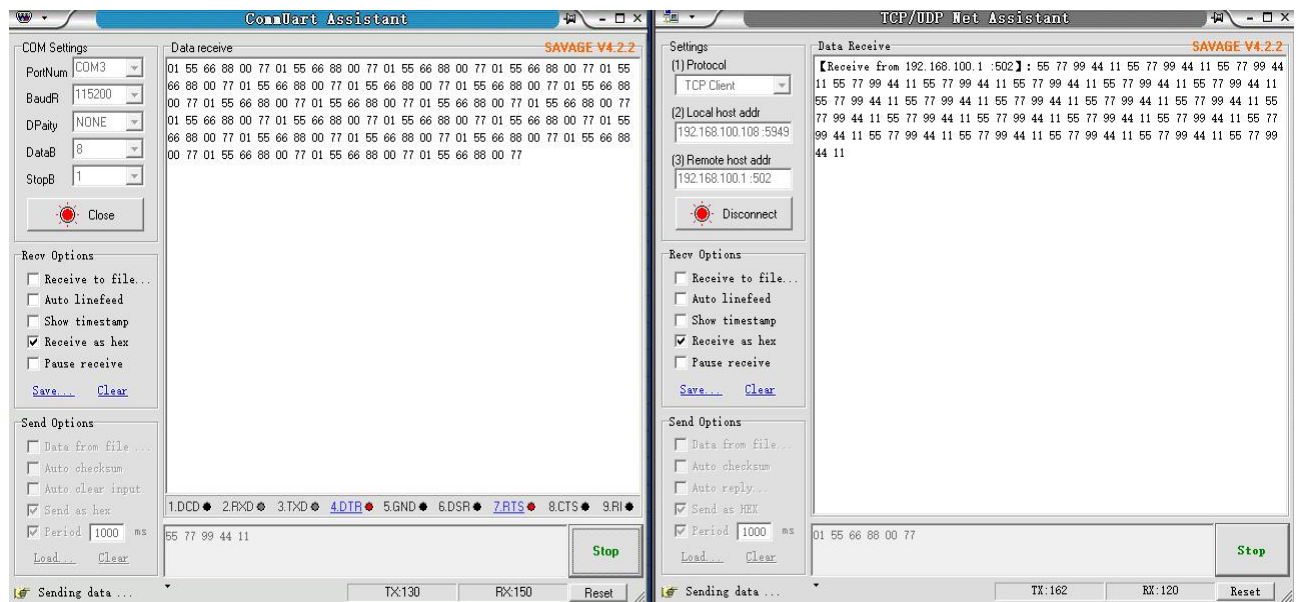
Connect uart(Pin 1,2) to the serial port:

Through the “UartAssistant” and “NetAssistant” test:

UartAssistant: 115200 N 8 1

NetAssistant: TCP Client , local ip, remote ip port 502

After connect you can send and receive data

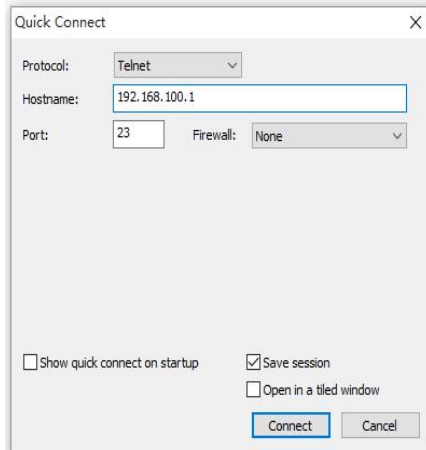


2.4 Telnet Function

Our module also supports remote control: **Telnet**

you can use your tool connect ,choose Telnet and input your hostname ,then connect ,finally you can control your board.

for example:



remote control:



2.5 Demo

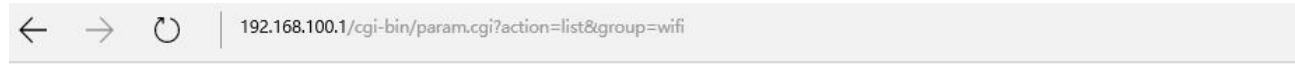
Gpio Demo and Audio Demo

In sdk demo

2.6 HTTP Command

Available characters: "ABCDEFGHIJKLMNOPQRSTUVWXYZ", "abcdefghijklmnopqrstuvwxyz", "0123456789", "-_!.~*'):@=+\$/?"

Example:



1 http://<IP-Address>/cgi-bin/param.cgi?action=list&group=wifi

| Name | Value | Description |
|--------------|-----------------------------|------------------------------|
| BOOTPROTO | STATIC or DHCP | Boot protocol |
| IPADDR | xxx.xxx.xxx.xxx | IP address for static |
| GATEWAY | xxx.xxx.xxx.xxx | Gateway static |
| SSID | String | SSID |
| AUTH_MODE | OPEN/SHARED/WPA2PSK/WPA2PSK | Authentication mode |
| ENCRYPT_TYPE | NONE/WEP/TKIP/AES | Encryption type |
| AUTH_KEY | String | Authentication key |
| WPS_TRIG_KEY | HOME | WPS key |
| AP_SSID | String | SSID |
| AP_AUTH_KEY | String | Soft AP's authentication key |
| AP_CHANNEL | 1 ~ 13, AUTO | Soft AP's channel |

http://<IP-Address>/cgi-bin/param.cgi?action=update&group=wifi&{Name}={Value}

| Name | Value | Description |
|--------------|-----------------------------|------------------------------|
| BOOTPROTO | STATIC or DHCP | Boot protocol |
| IPADDR | xxx.xxx.xxx.xxx | IP address for static |
| GATEWAY | xxx.xxx.xxx.xxx | Gateway static |
| SSID | String | SSID |
| AUTH_MODE | OPEN/SHARED/WPA2PSK/WPA2PSK | Authentication mode |
| ENCRYPT_TYPE | NONE/WEP/TKIP/AES | Encryption type |
| AUTH_KEY | String | Authentication key |
| WPS_TRIG_KEY | HOME | WPS key |
| AP_SSID | String | SSID |
| AP_AUTH_KEY | String | Soft AP's authentication key |
| AP_CHANNEL | 1 ~ 13, AUTO | Soft AP's channel |

AP_AUTH_KEY:AP password > 8 bits

2 <http://<IP-Address>/cgi-bin/param.cgi?action=list&group=stream>

Check the video resolution and baudrate

| Name | Value | Description |
|---------------|-----------|-------------|
| VINWIDTH | 8~4096 | Unit: pixel |
| VINHEIGHT | 8~4096 | Unit: pixel |
| JPEGENCWIDTH | 8~4096 | Unit: pixel |
| JPEGENCHEIGHT | 8~4096 | Unit: pixel |
| BITRATE | 1024~8192 | Unit: Kbps |

<http://<IP-Address>/cgi-bin/param.cgi?action=update&group=stream&{Name}={Value}>

Modify the video resolution and baudrate

| Name | Value | Description |
|---------------|-----------|-------------|
| VINWIDTH | 8~4096 | Unit: pixel |
| VINHEIGHT | 8~4096 | Unit: pixel |
| JPEGENCWIDTH | 8~4096 | Unit: pixel |
| JPEGENCHEIGHT | 8~4096 | Unit: pixel |
| BITRATE | 1024~8192 | Unit: Kbps |

3 <http://<IP-Address>/cgi-bin/param.cgi?action=list&group=nabto>

Check the nabto id and password

| Name | Value | Description |
|-----------|--------|-------------|
| nabto_id | String | Nabto id |
| Nabto_key | String | Nabto key |

<http://<IP-Address>/cgi-bin/param.cgi?action=update&group=nabto&{Name}={Value}>

Modify the nabto id and password

| Name | Value | Description |
|-----------|--------|-------------|
| nabto_id | String | Nabto id |
| Nabto_key | String | Nabto key |

4 <http://<IP-Address>/cgi-bin/restart.cgi?group={Name}>

| Name | Value | Description |
|--------|--------|----------------------------------|
| wifi | wifi | Restart Wi-Fi start-up procedure |
| board | board | Reset board |
| stream | stream | Restart RTSP server |

3 Open-source List

| Item | Description | URL& Major modification |
|------------------|--|---|
| linux-2.6.35.4 | Linux kernel | http://www.linux.org/ |
| busybox.1.15.2 | Linux shell | http://www.busybox.net/about.html |
| dnsmasq-2.60 | DHCP server | http://www.thekelleys.org.uk/dnsmasq/doc.html |
| hostapd | Wi-Fi access point and authentication server | http://hostap.epitest.fi/wpa_supplicant/ |
| spook-20050207 | RTSP server | http://www.litech.org/spook/ |
| wireless-tool.29 | Network configuration utilities | http://www.hpl.hp.com/personal/Jean_Tourrilhes/Linux/Tools.html |
| wpa_supplicant | IEEE 802.11i supplicant | http://hostap.epitest.fi/wpa_supplicant/ |
| ser2net-2.10.0 | Serial to Network Proxy | http://ser2net.sourceforge.net/ |
| boa-0.94.13 | Light-weight Webserver | http://www.boa.org/ |

4 Modification Record

| Version | Author | Time | Modify The Content |
|---------|------------|------------|---------------------|
| V1.0 | Wentao.Sun | 2016/11/16 | Create the Document |