



Realtek UART Update User Manual

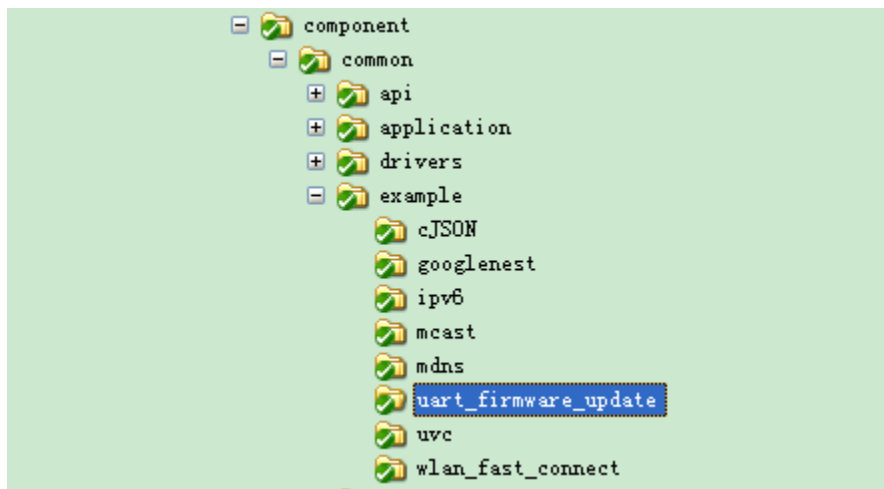
This document illustrates how to use UART, known as Ymodem protocol to update firmware.

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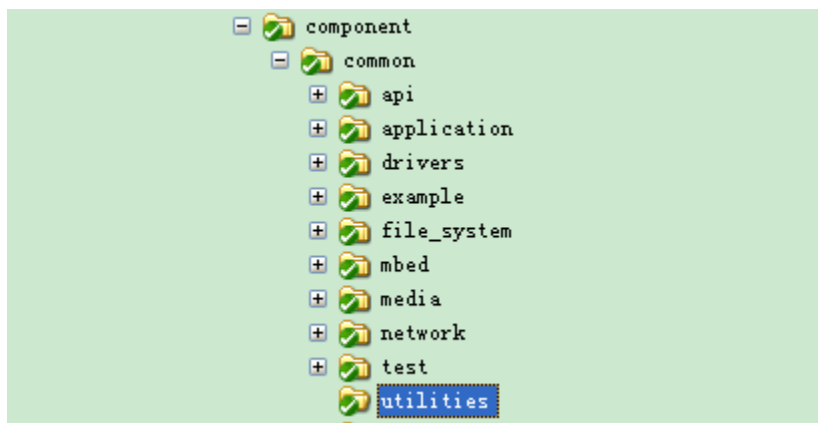
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1 SDK architecture

There are two files, `example_uart_update.c` and `example_uart_update.h` lies in path: `$$SDK_ROOT_PATH\component\common\example\uart_firmware_update` which include example code of UART Ymodem update.



Also, `uart_ymodem.c` and `uart_ymodem.h` lies in path: `$$SDK_ROOT_PATH\component\common\utilities` which include UART Ymodem update receive-end code.



2 Customization

2.1 Pin definition

Since RTL8711AM/RTL8195AM and RTL8711AF has different UART T/Rx pin definition, please go to `uart_ymodem.h` to make sure that UART T/Rx pins definition is correct.

```
// 8711AM
#define UART_TX PA_7
#define UART_RX PA_6
//8711AF
//#define UART_TX PA_4
//#define UART_RX PA_0
```

2.2 Flash address

IMAGE_TWO defined in uart_ymodem.h is a configurable variable represents the address of flash where to store the received files, typically are update images.

```
#define IMAGE_TWO (0x80000)
```

2.3 Serial configuration

As receiver, serial configuration should match with sender, such as baud rate. Default value is 115200, to change it, please goes to uart_ymode.h.

```
#define UART_BAUDRATE 115200
```

2.4 External interrupt pin definition

The external interrupt pin which triggers UART update can be modified also. See macro PIN_NAME defined in example_uart_update.h with default value PC_2.

```
#define PIN_NAME PC_2
```

2.5 Enable uart update example and other options

Set CONFIG_UART_UPDATE in platform_opts.h to 1 to enable support UART update example.

```
/*For uart update example*/
#define CONFIG_UART_UPDATE 1
```

Set AUTO_REBOOT in uart_ymodem.h to 1 to enable auto reboot after update successfully.

```
#define AUTO_REBOOT 0
```

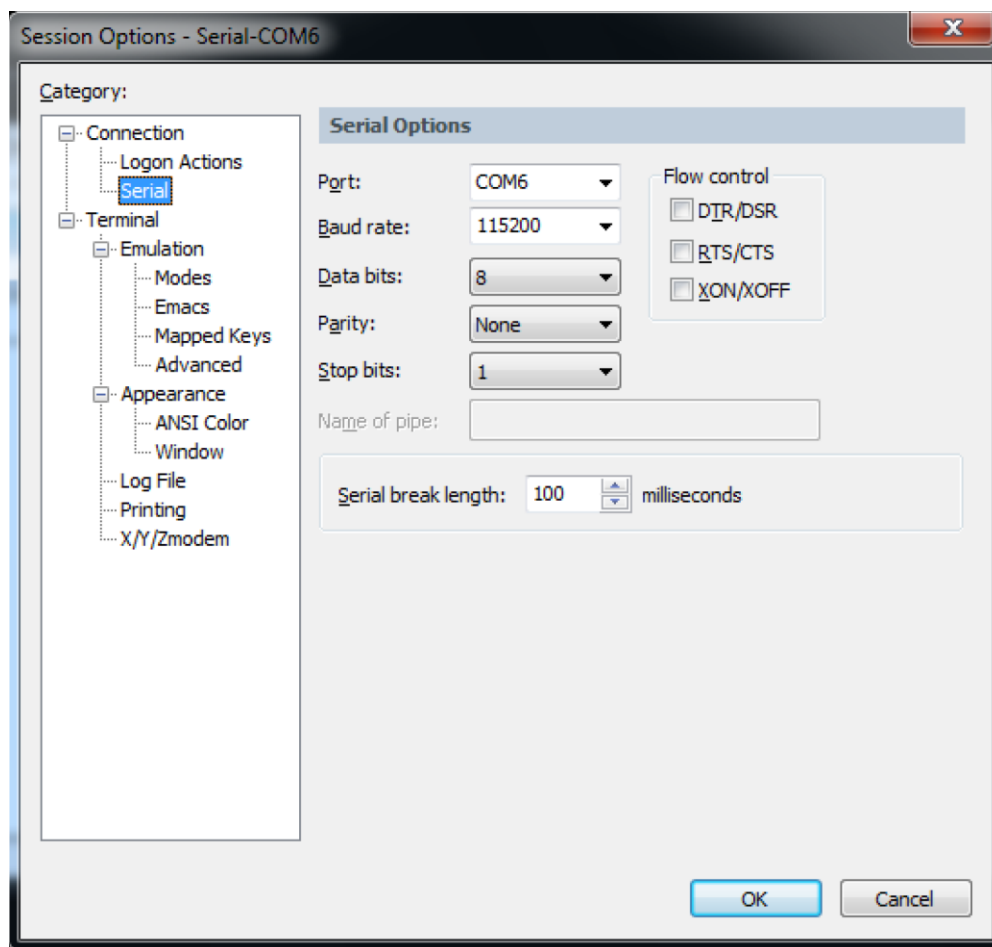
Please rebuild project after modification and download active application.

3 UART update example

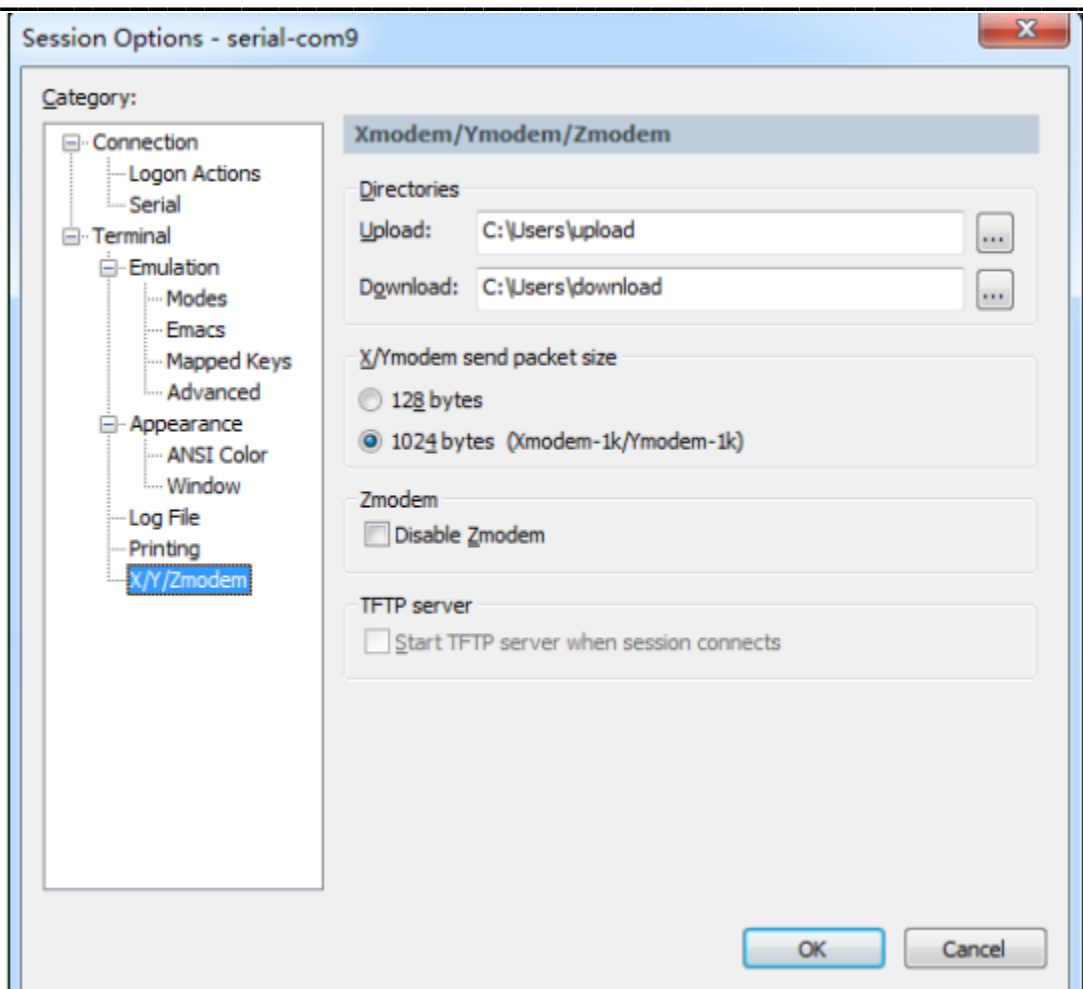
Here gives an example how to use UART update function in RTL8711AM/RTL8195AM.

After rebuild all and download active application, open a PC tools as UART sender, such as SecureCRT or hyper terminal, SecureCRT is recommended.

Step1: Open SecureCRT and set serial correctly. (Baud rate: 115200, the same as on SDK)



Step2: Choose Ymodem send packet size, 1024 or 128 bytes.



Step4: Open an Ameba debug terminal, UART update function run automatic after power on, log as below. The log means waiting for external interrupt to trigger UART update with 5 seconds, if timeout, it will run the normal boot flow.

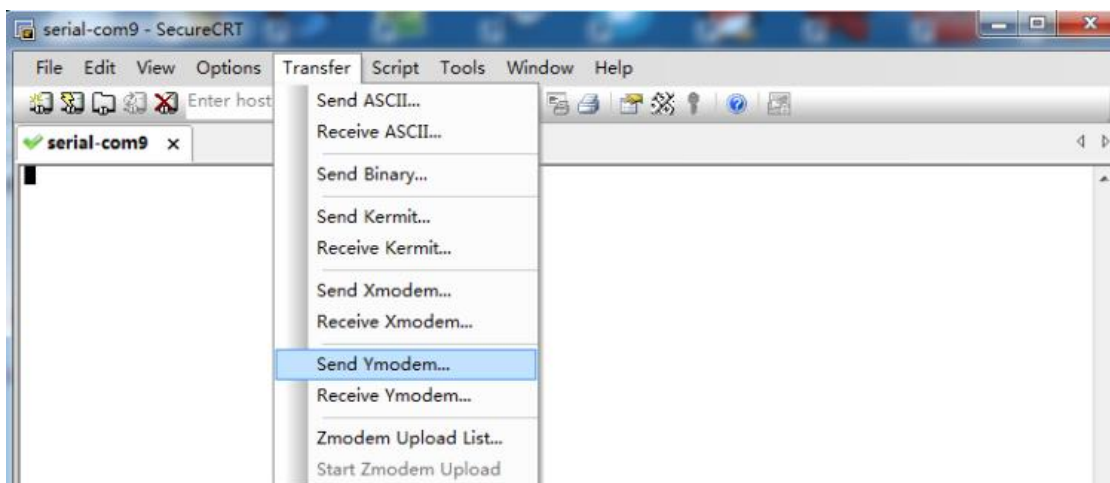
```
waitting update enable
waitting update enable
waitting update enable
waitting update enable
waitting update enable
waitting update enable
```

If pull GPIO PC_2 low, which used as interrupt pin to trigger UART update within 5 seconds, the log in debug terminal will goes like this.

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```
waitting update enable
waitting update enable
waitting update enable
waitting update enable
update image enabled!
uart ymodem update start
```

Step3: Choose the file (**ota.bin**) which will send with Ymodem protocol in SecureCRT.



The SecureCRT user interface will be looking like below if step1 to step3 is done correctly. Please make suere step 3 be completed in 2mins, because Ameba as receive-end, will waiting send-end 2mins.

```
Starting ymodem transfer. Press Ctrl+C to cancel.
Transferring ota.bin...
 2%   11 KB   866 bytes/sec 00:11:55 ETA   0 Errors
```

After update over, log shows in SecureCRT window.

```
Starting ymodem transfer. Press Ctrl+C to cancel.
Transferring ota.bin...
100%  616 KB   857 bytes/sec 00:12:16       0 Errors
```

If AUTO_REBOOT in uart_ymodem.h is set to 1, then, after update success, Ameba will reboot from new firmware automatically, otherwise, it will reboot from new firmware by reset button.

Step4: If the old firmware is still running instead of the new firmware after reset, run command **"ATSR"** to recover the OTA signature, and reset Ameba board. Then the new firmware will run. Please refer to document **"AN0025"** for more information about this command.

4 Trouble shooting

If the UART Ymodem update does not work well, please check the following places first.

1. Make sure UART T/Rx pin definition is correct.
2. Make sure baud rate is the same between send-side and receive-side.
3. Make sure Physical connection of UART is correct.
4. Make sure CONFIG_UART_UPDATE in platform_opts.h is enabled.
5. Make sure external interrupt pin is connected correctly.