# RGx00U&RM500U Series FTP(S) Application Note

**5G Module Series**

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# About the Document

## Revision History

| Version | Date | Author | Description |
|---------|------|--------|-------------|
| - | 2023-06-07 | Wayen XU | Creation of the document |
| 1.0 | 2023-07-31 | Wayen XU | First official release |

## Contents

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# **1** Introduction

Quectel RG200U series, RG500U series and RM500U series modules support FTP and FTPS file transfer protocols (hereinafter referred to as "FTP(S)").

The FTP (File Transfer Protocol) is a standard network protocol used for the transfer of computer files between a client and server on a computer network with high transmission rate.

FTPS (also known FTP over SSL, and FTP Secure) is an extension to the commonly used File Transfer Protocol (FTP) that adds support for the Transport Layer Security (TLS) and the Secure Sockets Layer (SSL) cryptographic protocols.

This document introduces how to use the FTP(S) function of Quectel RG200U series, RG500U series and RM500U series modules through AT commands.

# 2 The Process of Using FTP(S) AT Commands

As RG200U series, RG500U series and RM500U series modules support FTP(S) protocol, the file on FTP(S) server can be operated via FTP(S) AT commands. The general process is as follows:

**Step 1: Configure and activate a PDP context.**
1. Configure **<APN>**, **<username>**, **<password>** and other parameters of a PDP context through **AT+QICSGP**. See *document [1]* for details.
2. Activate the PDP context through **AT+QIACT**. See *document [1]* for details.

**Step 2: Configure FTP(S) server parameters, including user account, file type.**
1. Configure account information through **AT+QFTPCFG="account",<username>,<password>**.
2. Configure file type through **AT+QFTPCFG="filetype",<file_type>**. Either binary data or ASCII data can be transferred between FTP(S) server and client.

**Step 3: Log in to FTP(S) server.**
Log in to FTP(S) server through **AT+QFTPOPEN=<hostname>,<port>**. If **+QFTPOPEN: 0,0** URC is returned, it indicates a successful execution. **<port>** of FTPS and FTP servers are different. The port number of FTPS server depends on FTPS server provider, and it is usually 990. As for FTP server, the default port number is usually 21.

**Step 4: Download File.**
Download a file from FTP(S) server through **AT+QFTPGET**. The file can be outputted via COM port.

**Step 5: Close connection with FTP(S) server.**
Close the connection with FTP(S) server through **AT+QFTPCLOSE**.

**Step 6: Deactivate PDP context.**
Deactivate the PDP context through **AT+QIDEACT=<contextID>**. See *document [1]* for details.

> **NOTE**
>
> If you have not downloaded a file for a long time after logging in to FTP(S) server, the server is disconnected and an error is reported when you attempt to download a file at this time. You can first log out from FTP(S) server through **AT+QFTPCLOSE**, then log in to FTP(S) server through **AT+QFTPOPEN**. And after that, download the file.

# 3 Description of AT Commands

## 3.1. AT Command Introduction

### 3.1.1. Definitions

- **<CR>**　　　　Carriage return character.
- **<LF>**　　　　Line feed character.
- **<...>**　　　　Parameter name. Angle brackets do not appear on the command line.
- **[...]**　　　　Optional parameter of a command or an optional part of TA information response. Square brackets do not appear on the command line. When an optional parameter is not given in a command, the new value equals its previous value or the default settings, unless otherwise specified.
- **Underline**　　Default setting of a parameter.

### 3.1.2. AT Command Syntax

All command lines must start with **AT** or **at** and end with **<CR>**. Information responses and result codes always start and end with a carriage return character and a line feed character: **<CR><LF><response><CR><LF>**. In tables presenting commands and responses throughout this document, only the commands and responses are presented, and **<CR>** and **<LF>** are deliberately omitted.

**Table 1: Types of AT Commands**

| Command Type | Syntax | Description |
|---|---|---|
| Test Command | **AT+<cmd>=?** | Test the existence of the corresponding command and return information about the type, value, or range of its parameter. |
| Read Command | **AT+<cmd>?** | Check the current parameter value of the corresponding command. |
| Write Command | **AT+<cmd>=<p1>[,<p2>[,<p3>[...]]]** | Set user-definable parameter value. |
| Execution Command | **AT+<cmd>** | Return a specific information parameter or perform a specific action. |

## 3.2. Declaration of AT Command Examples

The AT command examples in this document are provided to help you learn about the use of the AT commands introduced herein. The examples, however, should not be taken as Quectel's recommendations or suggestions about how to design a program flow or what status to set the module into. Sometimes multiple examples may be provided for one AT command. However, this does not mean that there is a correlation among these examples, or that they should be executed in a given sequence.

## 3.3. AT+QFTPCFG   Configure Parameters for FTP(S) Server

This command configures FTP(S) server parameters, including user account, file type.

| AT+QFTPCFG   Configure Parameters for FTP(S) Server | |
|---|---|
| Test Command<br>**AT+QFTPCFG=?** | Response<br>**+QFTPCFG: "account",<username>,<password>**<br>**+QFTPCFG: "filetype",(list of supported <file_type>s)**<br><br>**OK** |
| Write Command<br>**AT+QFTPCFG="account"[,<username>,<password>]** | Response<br>If the optional parameters are omitted, query the current setting:<br>**+QFTPCFG: "account",<username>,<password>**<br><br>**OK**<br><br>If the optional parameters are specified, configure the user account:<br>**OK**<br><br>If there is any error:<br>**+CME ERROR: <err>** |
| Write Command<br>**AT+QFTPCFG="filetype"[,<file_type>]** | Response<br>If the optional parameter is omitted, query the current setting:<br>**+QFTPCFG: "filetype",<file_type>**<br><br>**OK**<br><br>If the optional parameter is specified, configure the file type:<br>**OK** |

| | |
|---|---|
| | If there is any error:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300 ms |
| Characteristics | The command takes effect immediately.<br>The configurations are not saved. |

**Parameter**

| | |
|---|---|
| **<username>** | String type. Username for authentication. Maximum size: 255; Unit: byte. |
| **<password>** | String type. The password for authentication. Maximum size: 255; Unit: byte. |
| **<file_type>** | Integer type. File type. |
| | <u>0</u>        Binary |
| | 1        ASCII |
| **<err>** | Integer type. Error codes. See **document [2]** for details. |

## 3.4. AT+QFTPOPEN   Log in to FTP(S) Server

This command logs in to FTP(S) server. Activate the PDP context with **AT+QIACT** first before executing this AT command.

| AT+QFTPOPEN   Log in to FTP(S) Server | |
|---|---|
| Test Command<br>**AT+QFTPOPEN=?** | Response<br>**+QFTPOPEN: <hostname>,(range of supported <port>s)**<br><br>**OK** |
| Write Command<br>**AT+QFTPOPEN=<hostname>[,<port>]** | Response<br>**OK**<br><br>If there is any error:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 125 s |
| Characteristics | The command takes effect immediately.<br>The configurations are not saved. |

## Parameter

| | |
|---|---|
| **\<hostname\>** | String type. IP address or domain name of the FTP(S) server. Maximum length: 200; Unit: byte. |
| **\<port\>** | Integer type. FTP(S) server port number. Default value: 21. Range: 1–65535. |
| **\<err\>** | Integer type. Error codes. See *document [2]* for details. |

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**NOTE**

FTPS and FTP server port numbers are different. The FTPS server port number depends on FTPS server provider, and it is usually 990. As for FTP server, the default port number is usually 21.

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## Example

| | |
|---|---|
| **AT+QFTPOPEN="101.95.183.122",21** | //Log in to FTP server. |
| **OK** | |
| **AT+QFTPOPEN="quectel.3322.org",990** | //Log in to FTPS server. |
| **OK** | |

## 3.5. AT+QFTPGET   Download a File from FTP(S) Server

This command downloads a file from FTP(S) server. The file data can be outputted via COM port with **AT+QFTPGET="filename","COM:"**.

| AT+QFTPGET   Download a File from FTP(S) Server | |
|---|---|
| Test Command<br>**AT+QFTPGET=?** | Response<br>**+QFTPGET: \<file_name\>,\<local_name\>,\<startpos\>,\<downloadlen\>**<br><br>**OK** |
| Write Command<br>**AT+QFTPGET=\<file_name\>,\<local_name\>[,\<startpos\>[,\<downloadlen\>]]** | Response<br>**CONNECT**<br>**\<Output file data\>**<br>**OK**<br><br>If there is any error:<br>**+CME ERROR: \<err\>** |
| Maximum Response Time | 5 s |
| Characteristics | The command takes effect immediately.<br>The configurations are not saved. |

**Parameter**

| | |
|---|---|
| **<file_name>** | String type. File name on FTP(S) server. Maximum length: 255; Unit: byte. |
| **<local_name>** | String type. Local file name. Maximum length: 60; Unit: byte. **<local_name>** can only be set to "**COM:**". If it is "**COM:**", the data are outputted via COM port. |
| **<startpos>** | Integer type. Start position of the file to be downloaded. Default value: 0. Unit: byte. |
| **<downloadlen>** | Integer type. Length of data to be downloaded. If this parameter is specified, the module will output **<downloadlen>** bytes to COM port. The remaining data, if any, can be downloaded from its **<startpos>** through executing the same AT command again. Unit: byte. |
| **<err>** | Integer type. Error codes. See *document [2]* for details. |

---

**NOTE**

1. **<startpos>** and **<downloadlen>** are invalid currently.
2. If **<startpos>** and **<downloadlen>** are not specified, a whole file will be downloaded from FTP(S) server.

## 3.6. AT+QFTPCLOSE   Log out from FTP(S) Server

This command logs out from FTP(S) server.

| AT+QFTPCLOSE   Log out from FTP(S) Server | |
|---|---|
| Test Command<br>**AT+QFTPCLOSE=?** | Response<br>**OK** |
| Execution Command<br>**AT+QFTPCLOSE** | Response<br>**OK**<br><br>If there is any error:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 5 s |
| Characteristics | The command takes effect immediately.<br>The configurations are not saved. |

**Parameter**

| | |
|---|---|
| **<err>** | Integer type. Error codes. See *document [2]* for details. |

# 4 Example

```
//Step 1: Configure and activate the PDP
context.
AT+QICSGP=1,1,"UNINET","","",0        //Set PDP context as 1 and China Unicom APN as
                                       "UNINET".

OK
AT+QIACT=1                            //Activate PDP context 1.
OK                                    //Activated successfully.
AT+QIACT?                             //Query the state of PDP context.
+QIACT: 1,1,1,"10.7.157.1"


OK

//Step 2: Configure user account and file type.

AT+QFTPCFG="account","test","test"    //Set username and password.
OK
AT+QFTPCFG="filetype",1               //Set file type as ASCII.
OK

//Step 3: Log in to FTP server.

AT+QFTPOPEN="quectel.3322.org",21
OK

//Step 4: Download file
AT+QFTPGET="RUOXINHAO.txt","COM:"      //Download RUOXINHAO.txt from FTP server and
                                       output file data via COM port.

CONNECT
<Output file data>
OK

//Step 5: Close connection with FTP(S) server.

AT+QFTPCLOSE                          //Log out from FTP(S) server.
OK

//Step 6: Deactivate PDP context.

AT+QIDEACT=1                          //Deactivate PDP context 1
OK
```

# 5 Appendix References

**Table 2: Related Documents**

| Document Name |
| --- |
| [1]  Quectel_RGx00U&RM500U_Series_TCP(IP)_Application_Note |
| [2]  Quectel_RGx00U&RM500U_Series_AT_Commands_Manual |

**Table 3: Terms and Abbreviations**

| Abbreviation | Description |
| --- | --- |
| APN | Access Point Name |
| ASCII | American Standard Code for Information Interchange |
| FTP | File Transfer Protocol |
| FTPS | FTP-SSL: FTP over SSL / FTP Secure |
| ID | Mostly refers to Identifier in terms of software |
| IP | Internet Protocol |
| PDP | Packet Data Protocol |