USR-GPRS232-734 User Manual

File Version: V1.0.3.01

Contents

Brief Introduction

USR-GPRS232-734 is GPRS DTU. User can realize the two-way data transparent transmission from the serial port to the network by simply configuring it. USR-GPRS232-734 supports identity packet, heartbeat packet, two socket connections.

Features

- Support GSM850/900, DCS1800/1900
- Support GSM/GPRS/EDGE; Support 2G flow of 2G/3G/4G SIM card
- Support two way network connections simultaneously; Support TCP and UDP
- Every connection supports 4KB Data Cache
- Support identity packet function
- Support heartbeat packet function
- Support configuring DTU parameters via SMS
- Support three work modes: SMS transparent transmission mode, network transparent transmission mode and HTTPD Client mode
- Support sending CN/EN SMS via commands
- Support baud rate synchronization function which can modify DTU serial parameters via network dynamically
- Support 5~36V power supply
- RS485 circuit adopts electrical isolation solution which has anti-interference ability

1. Get Start

Product link:
http://www.usriot.com/p/rs485-gsm-modems-rs485-gprs/
USR-GPRS232-734 setup software, download address:
http://www.usriot.com/usr-gm3-setup-software/

Figure 1 Download Page

If user has any question, please submit it to customer center: **http://h.usriot.com**

1.1. DTU Application

1.1.1. Data transmission

Data transmission diagram as follow:

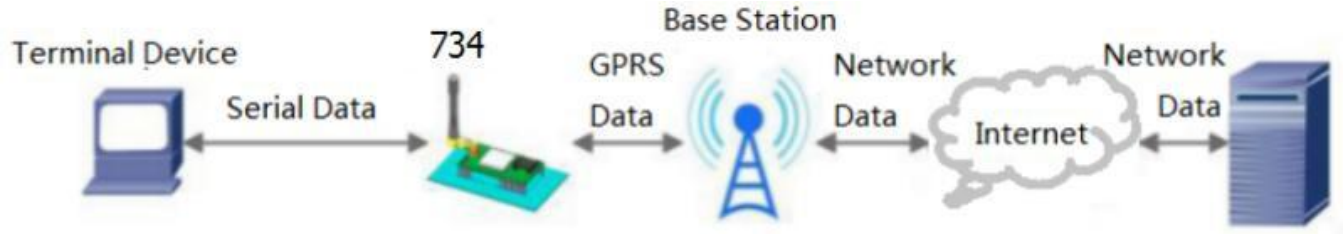


Figure 2 Data transmission diagram

1.1.2. Hardware Connection

Figure 3 Hardware connection diagram

1.2. Module Default Parameters

Work mode	Network transparent transmission mode
Server Address	test.usr.cn
Server Port	2317
Serial Parameters	115200,8,1,None
Heartbeat packet	Packet Data:www.usr.cn

Figure 4 Default parameters

1.3. Basic Parameters

	Parameter	Index
Wireless Parameters	Wireless Standards	GSM/GPRS/EDGE
	Standard frequency range	850/900/1800/1900MHz
	Max. transmitted power	GSM900 class4（2W）
		DCS1800 class1（1W）
	GPRS Terminal Device Class	Class B
	GPRS Multi-slot Class	GPRS Class 10
	GPRS Coding Schemes	CS1 ~ CS4
	Antenna	SMA Interface
Hardware Parameters	Data Interface	RS485 level, 5.08*3 terminal
	Baud Rate	2400bps - 921600bps
	Working Voltage	DC 5V~36V
	Working Current	59mA~65mA(12V)
	Working Temp.	-25℃- 85℃
	Storage Temp.	-40℃- 125℃

	Dimension	82.5×86.0×24.0mm
	RS485 protection	Electrical isolation; ESD atmosphere: 15KV; Surge: 4KV(8/20us)
Software Parameters	Wireless network type	GSM/GPRS/EDGE
	Work Mode	Network transparent transmission mode, SMS transparent mode and HTTPD Client mode
	Configuration Command	AT Command mode
	Network protocol	TCP /UDP/ DNS/HTTP
	Max. TCP connections	2
	User Configuration Method	Serial AT command, network AT command, SMS AT command
Software Functions	DNS	Support
	Transparent Mode	TCP Client or UDP Client
	HTTP	Support HTTPD Client Mode
	SMS Mode	Support
	Heartbeat packet	Support
	Baud rate synchronization	Support
	Identity packet	Support user editable, ICCID, IMEI, ID

Figure 5 Basic parameters

1.4. Hardware Introductions

1.4.1.Hardware interface

Below is the hardware interface diagram of USR-GPRS232-734:

Figure 6 Hardware interface diagram

Note: Two power interfaces can't be used simultaneously.

1.4.2.Dimension

Below is the dimension figure of USR-GPRS232-734:

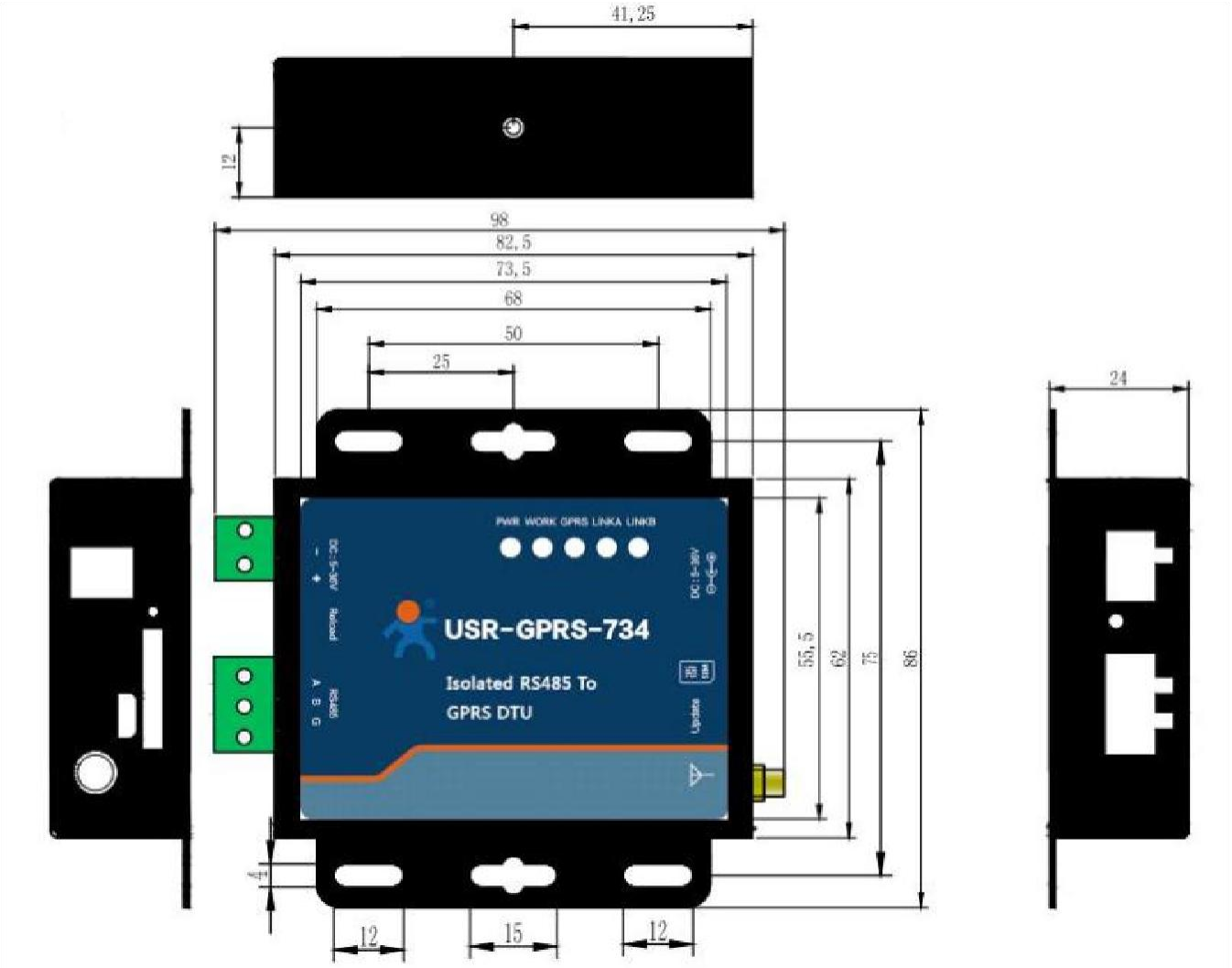


Figure 7 Dimension

1.4.3.LED

LEDs of USR-GPRS232-734 are POWER, WORK, GPRS, LINKA, LINKB.

LED Name	LED Status	Module Status
POWER	ON	Power on
	OFF	Power off
WORK	BLINK	Working
	OFF	Not Working
GPRS	ON	GPRS network is connected
	OFF	GPRS network is disconnected
LINKA	ON	Socket A is connected
	OFF	Socket A is disconnected
LINKB	ON	Socket B is connected
	OFF	Socket B is disconnected

Figure 8 LED

2. Product Functions

This chapter introduces the functions of USR-GPRS232-734, as the following diagram shown, user can get an overall knowledge of it.

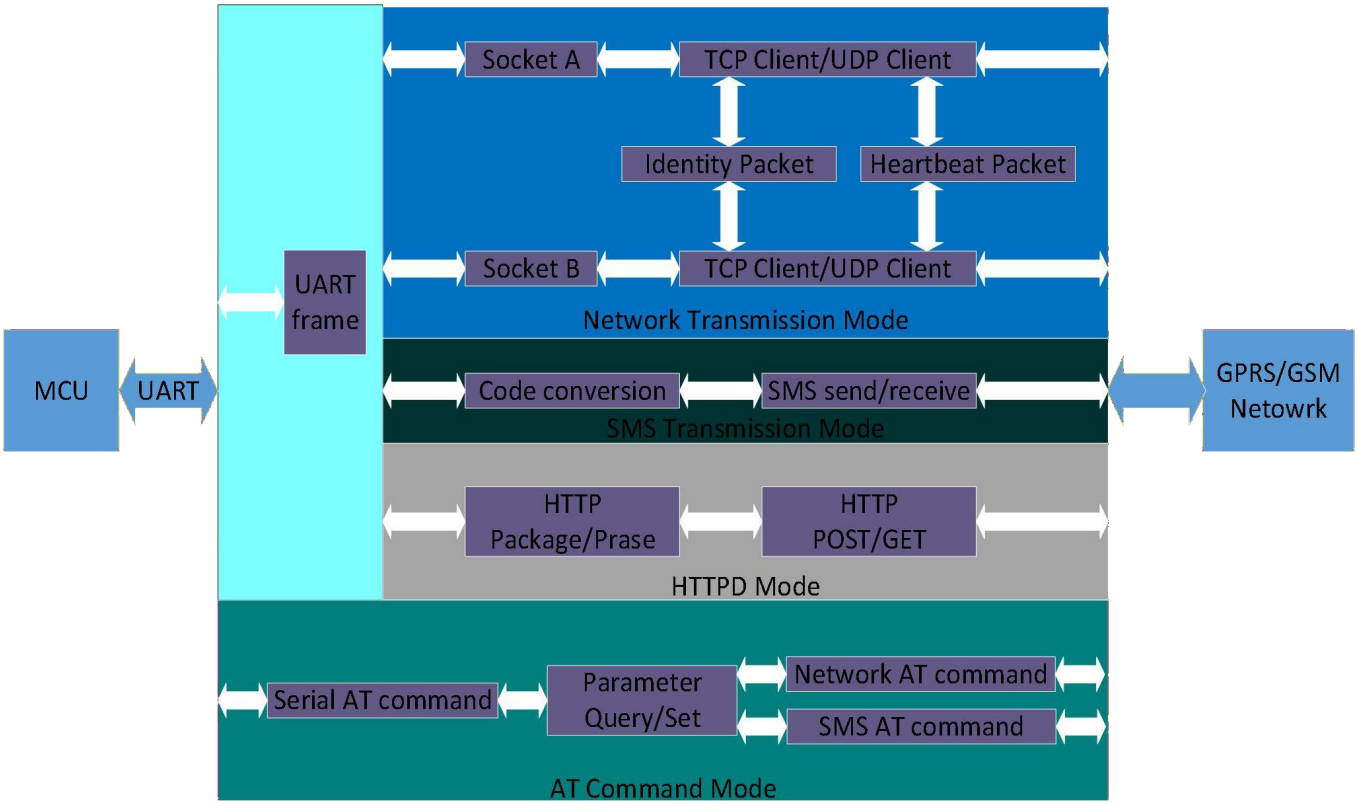


Figure 9 Functions diagram

2.1. APN

Different operator has different APN(access point name). If user uses the SIM card from the operator, user must know the APN. User can ask SIM card operator for APN information.

There are three parameters about APN. They are APN code, username and password. Sometimes only configuring APN is enough.

2.2. Work Mode

2.2.1. Network transparent transmission Mode

Network transparent transmission mode: Data from serial device will be forward to network server. The transmission is bidirectional.

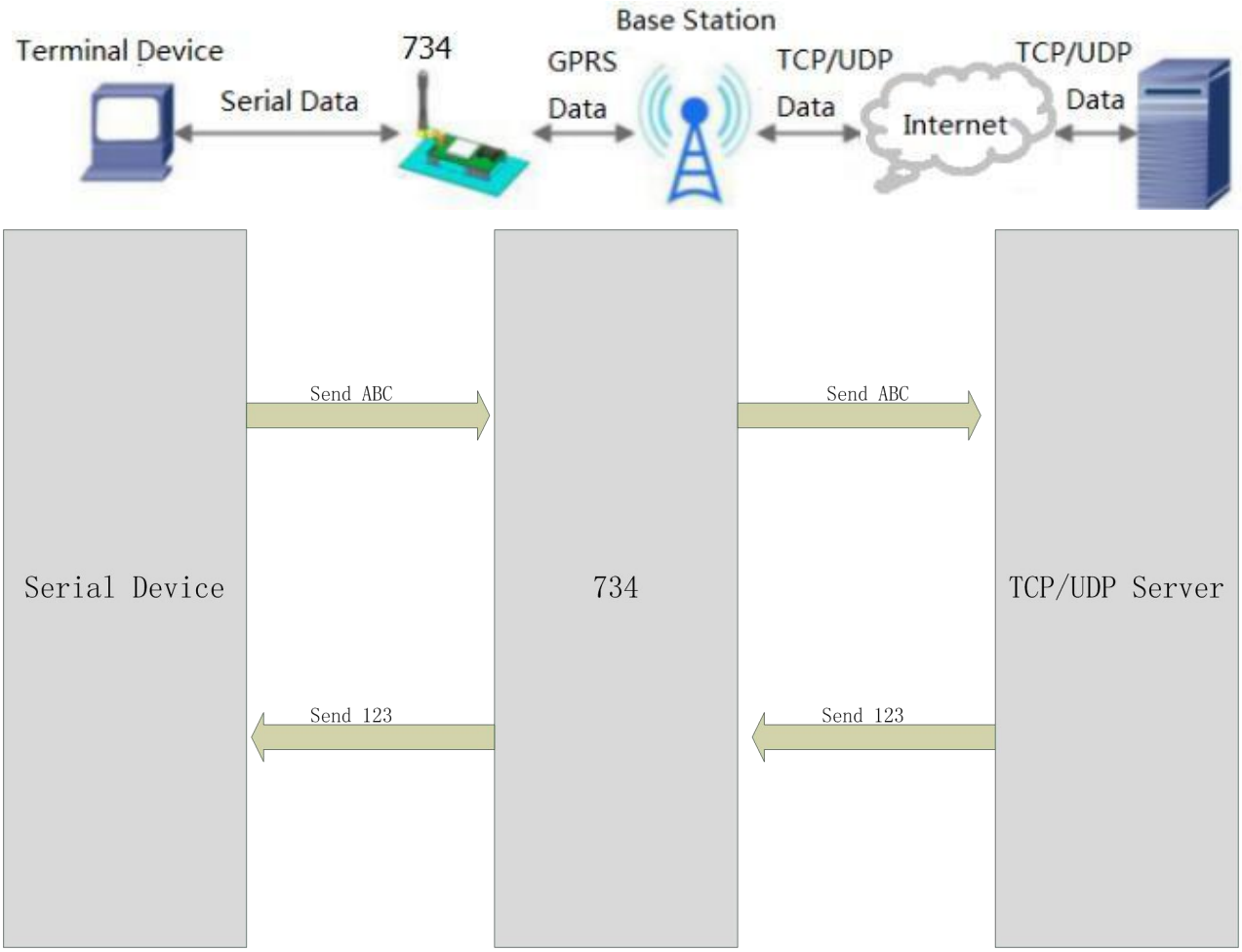


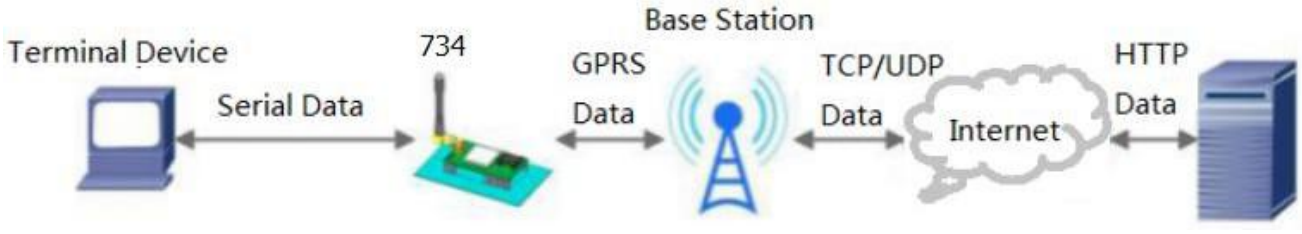
Figure 10 Network transparent transmission mode

<Illustration>:

USR-GPRS232-734 supports two socket connections simultaneously: socket A and socket B, they are independent. USR-GPRS232-734 only supports working as TCP Client and UDP Client.

2.2.2. HTTPD Client Mode

HTTPD Client Mode: DTU will add the HTTP Header for every data package from serial device and transfer HTTP format data to network server. User needs to configure the HTTP Header before using this mode. User can use this mode transfer the serial data to HTTP server.



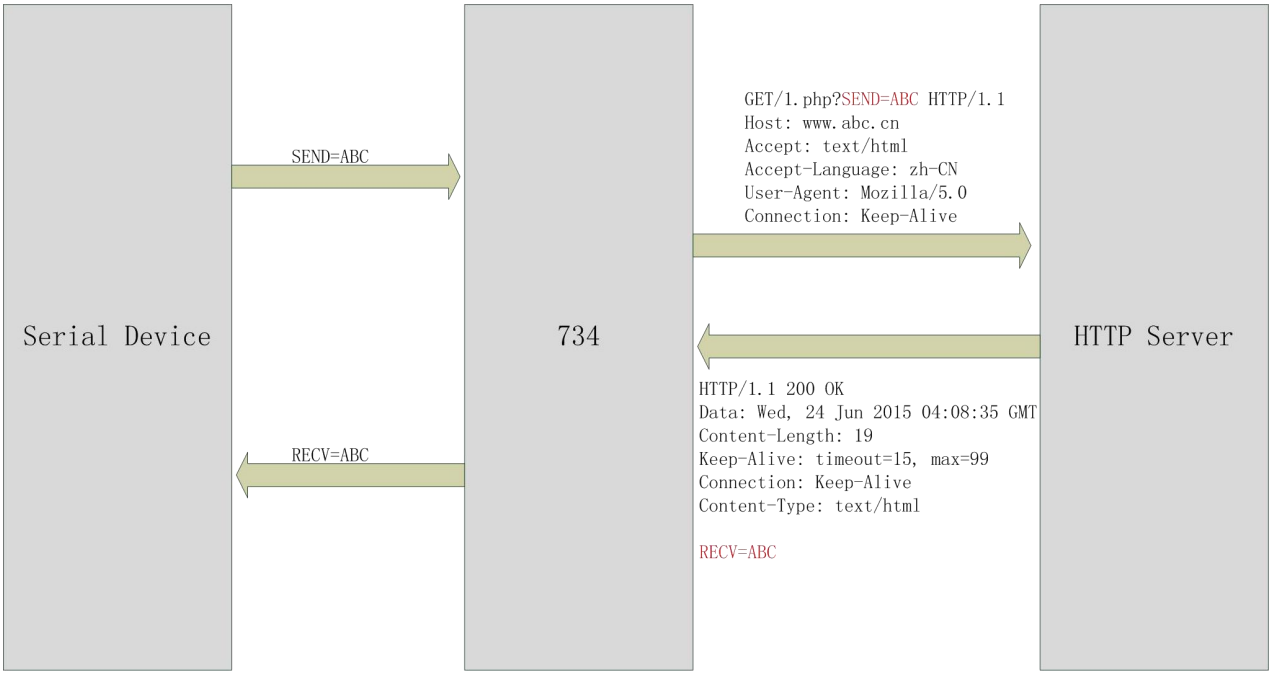


Figure 11 HTTPD Client mode

<Note>:

DTU can't work as HTTP server.

2.2.3. SMS transparent transmission mode

SMS transparent transmission mode: Send serial data to mobile as SMS. The transmission is bidirectional.

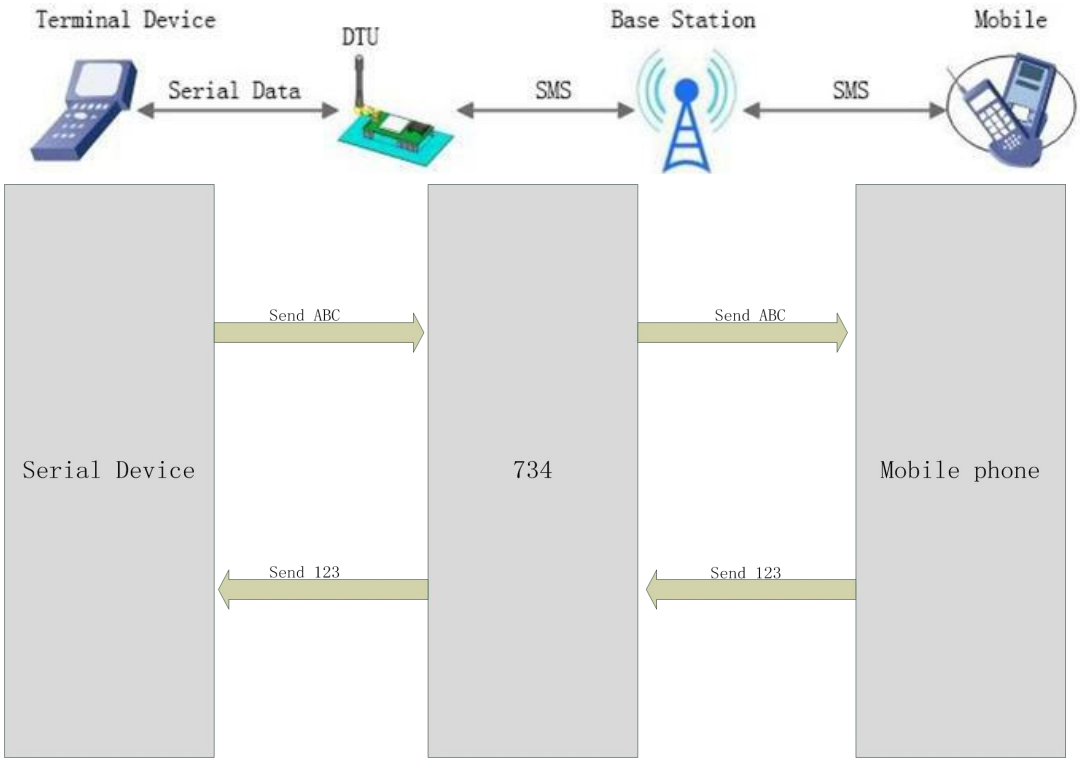


Figure 12 SMS transparent transmission mode

2.3. Serial port

2.3.1. Basic parameters

Parameters	Range
Baud Rate	2400, 4800, 9600, 14400, 19200, 38400, 57600, 115200, 128000, 230400, 460800, 921600
Data Bits	7, 8
Stop Bits	1, 2
Parity	NONE, EVEN, ODD

Figure 13 Serial parameters

2.3.2. Serial package methods

USR-GPRS232-734 adopts fixed packaging time-200ms.

2.3.3. Baud Rate Synchronization

When USR-GPRS232-734 works with USR devices or software, serial parameters will change dynamically according to network protocol. User can modify serial parameters by sending data conformed to specific protocol via network. It is temporary, after resetting DTU, the parameters will back to original values.

2.4. Features

2.4.1. Identity packet function

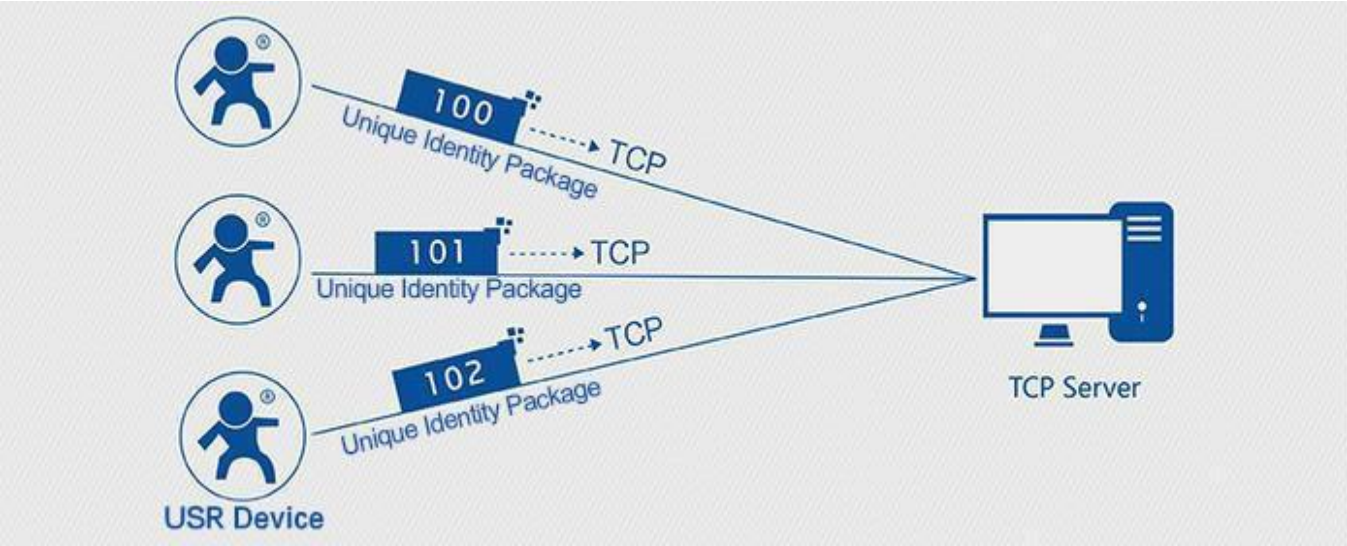


Figure 14 Identity packet diagram

Identity packet is used to identify the device when module works as TCP client/UDP client. There are two

methods to send identity packet.

- Identity packet will be sent when connection is established. (Only for TCP client)
- Identity packet will be added on the front of every data package. (TCP client and UDP client)

Types of identity packet: ICCID, IMEI and User.

- ICCID, the unique identifier of SIM card, suitable to the application based on SIM card identification.
- IMEI, the unique identifier of DTU, suitable to the application based on device identification.
- User, user can use own editable identity packet.

Identity packet can only work in network transparent transmission mode.

2.4.2. Heartbeat packet function

Heartbeat packet: Module will output heartbeat packet to serial port side or network side periodic. User can configure the heartbeat packet data and interval. Serial heartbeat packet can be used for polling Modbus data. Network heartbeat packet can be used for showing connection status and keeping the connection. When connection occurs failure, module can't send heartbeat packet to server successfully and after sending unsuccessfully over three times, module will try to reconnect to server.

Heartbeat packet can only work in network transparent transmission mode.

2.4.3. Sleep mode

User can send AT commands to set module into Sleep mode. In Sleep mode, module serial port can't receive data but can transmit data; module can receive data from network or SMS. Even though module in Sleep mode can also keep TCP connection, but user can use non-persistent connection or close connection temporarily to make power dissipation arrive best status.

User can use network/SMS AT commands or phone call to wake up module.

2.4.4. Location Based Service

LBS function: User can acquire approximate location of module through operator ' s network. Accuracy error is about 100 meters and user can acquire LBS information by AT commands.

2.4.5. Upgrading firmware version

USR-GPRS232-734 supports upgrading firmware version by serial and user can contact to our salespersons for firmware version and upgrading tools when has needs to upgrade.

3. Parameter Setting

There are three ways to use AT commands to configure module and query parameters status. They are serial AT command, SMS AT command and transparent AT command. We also provide the setup software based on serial AT command. User can download the setup software from **http://www.usriot.com/usr-gm3-setup-software/**.

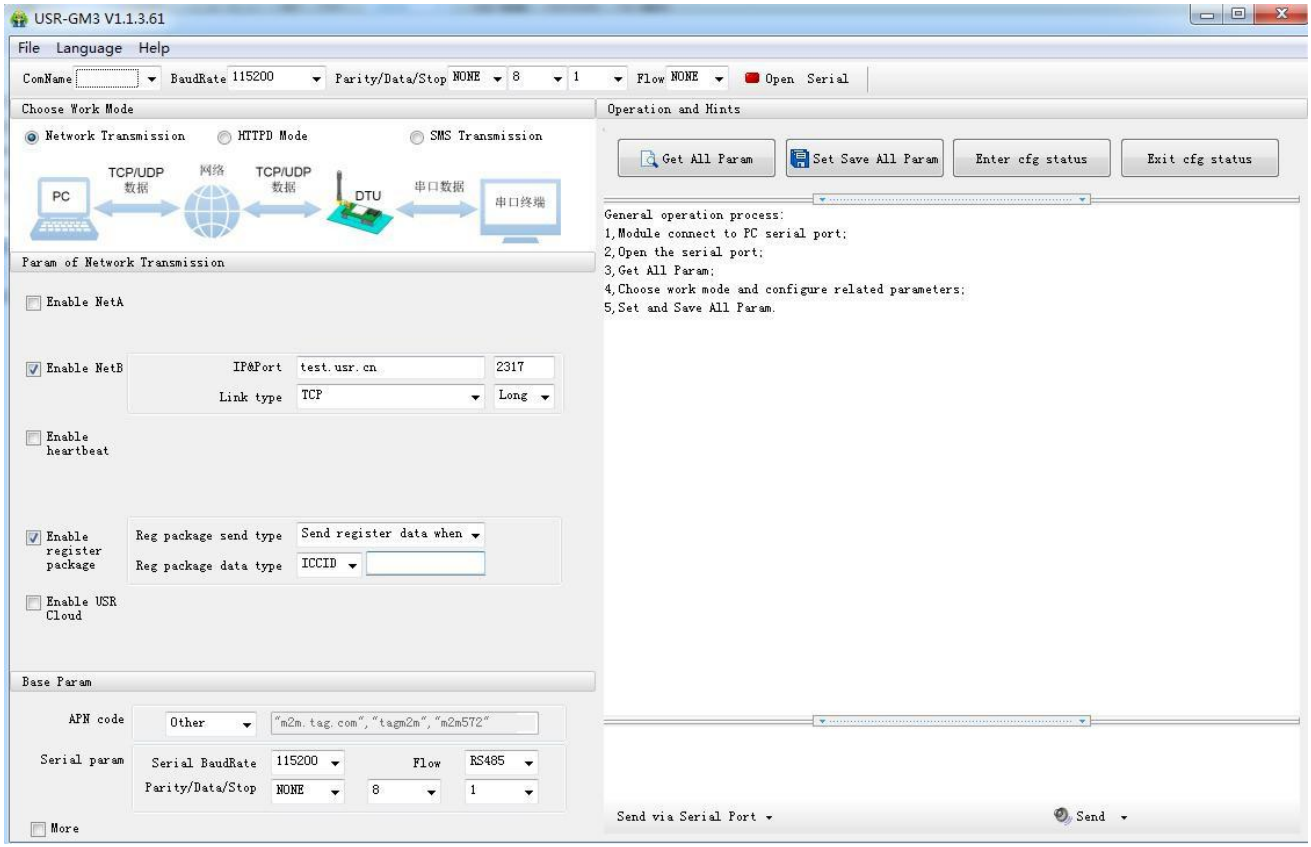


Figure 15 Setup software

3.1. AT Command

3.1.1. Serial AT Command

When module works in network transparent transmission mode, SMS transparent transmission mode or HTTPD Client mode, user can enter serial AT command mode. Then user can send AT command to module. Setup software is based on serial AT command. For entering serial AT command mode, please refer to this FAQ: **http://www.usriot.com/enter-serial-command-mode/**.

3.1.2. Transparent AT Command

When module works in network transparent transmission mode, user can send“Password,AT command” format data via serial or network. If user uses transparent AT command, user needn’t enter serial AT command mode.

3.1.3. SMS AT Command

User can configure module or query parameters status by SMS AT command to remotely control module in fields.

Note: SMS AT command can achieve sending more than one AT command by only one message after firmware version V3.0. User can achieve it by add ";" after each AT command.

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4. Update History

2017-10-23 V1.0.3.01 established based on Chinese version V1.0.3.