

Coolmay

CX-4G module

user manual

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Overview



CX-4G is a small, feature-rich GPRS transparent transmission module for Mobile, China Unicom, Telecommunications 4G and Mobile, China Unicom 3G and 2G network standard.

To "pass through" as the core function, a high degree of ease of use, users can quickly and easily integrated in their own systems.

And support the custom registration package, heartbeat package function, support 4-way Socket connection, and support transparent transmission with high speed, low latency.

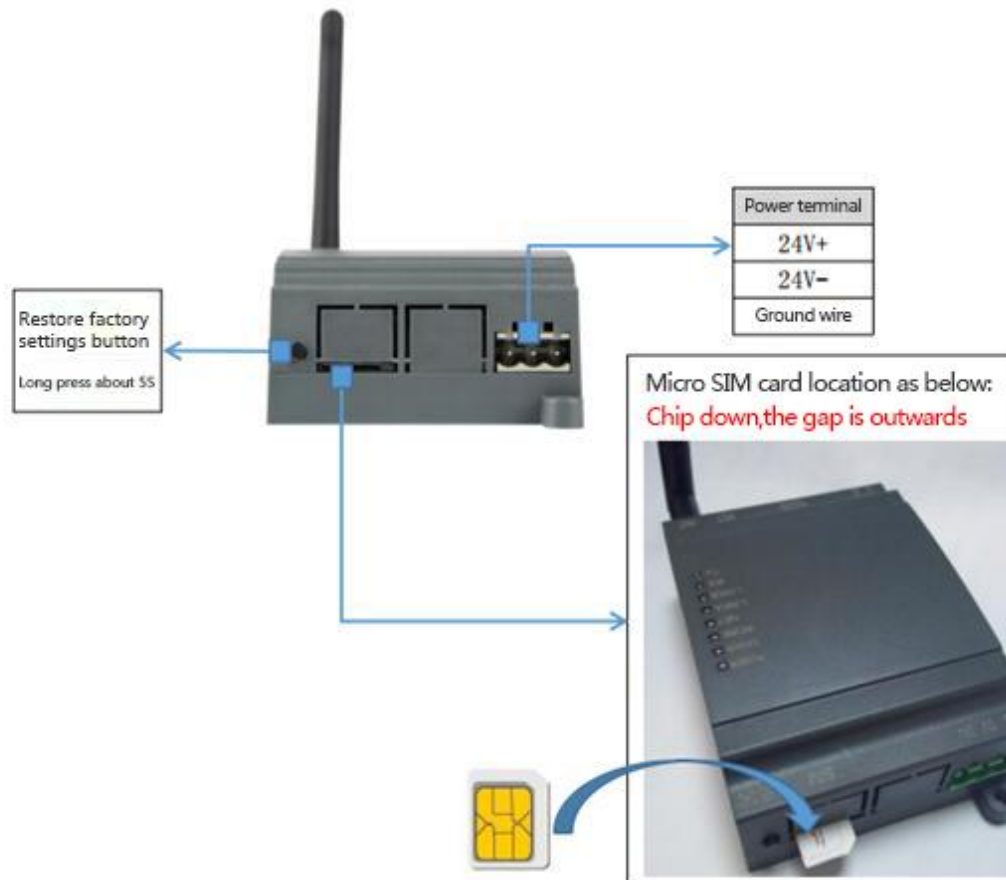
The module is compatible with our CM-GPRS module 2G product, the user can directly replace, in order to achieve a substantial increase in communication speed, we have hardware design on the hardware watchdog to ensure long-term stability of the product.

The module software features perfect, covering the vast majority of conventional application scenarios, users simply through a simple set, you can achieve serial to the network of two-way data transparent transmission

— . Hardware component description

1.1. Module model and appearance





1.2 Indicator light function

CX-4G module have eight indicator lights: POWER, CHAR, WORK, NET, LINKA, LINKB, RX, TX, the state are as below:



Indicator lights name	Indicator function	state
POWER	Indicator light of power supply	Power supply works normal
CHAR	Lithium battery charge indicator(optional)	When lithium battery is optional, and be charged
WORK	System operating indication	Indicator lights always normal when system operation
NET	Network state indicator	2G network flashes twice within one second 3G network flashes three times within one second 4G network flashes four

		times within one second
LINKA	Socket A connect indication	Lights always normal when connect successfully
LINKB	Socket B connect indication	Lights always normal when connect successfully
RX	Data transmit indication	There is data flash in serial network RX
TX	Data transmit indication	There is data flash in serial network TX

1.3 Function features

- 5 mode 12 frequency: Mobile, China Unicom, Telecommunications 4G high-speed access, while supporting mobile, China Unicom 3G and 2G access
- Based on the embedded Linux system development, with a high degree of reliability
- Support RNDIS remote network driver interface, the computer can connect the device through USB access to the Internet
- support 4 network online simultaneously, support TCP and UDP both
- Every channel supports 10KB serial data cache, when connect abnormal you can choose cache data not missing.
- Support sending data of register and heart beat
- support setting module parameters by message remotely
- support multi working modes: network transparent transmitting mode、HTTPD mode
- support basic instruction set
- Support socket distribution protocol, you can send data to different Socket
- support FTP man-made updated protocol, which can be convenient for customers update remotely.
- Support FTP self-updated protocol, keep solid state latest status
- Support RFC2217 function, can modify module serial data from network dynamics
- Can be compatible with our CM-GPRS module, customers can replace it directly.

1.4 Products parameters

	Project	Index	
Wireless parameters	Wireless standard	TDD-LTE FDD-LTE WCDMA TD-SCDMA GSM/GPRS/EDGE	
	Standard frequency band	TDD-LTE	Band 38/39/40/41
		FDD-LTE	Band 1/3
		WCDMA	Band 1/8
		TD-SCDMA	Band 34/39
		GSM/GPRS/EDGE	Band 3/8
	Transmit power	TDD-LTE	+23dBm(Power class 3)
		FDD-LTE	+23dBm(Power class 3)
		WCDMA	+23dBm(Power class 3)
		TD-SCDMA	+24dBm(Power class 2)
		GSM Band8	+33dBm(Power class 4)
		GSM Band3	+30dBm(Power class 1)
	specifications	TDD-LTE	3GPP R9 CAT4 downwards 150 Mbps , upwards 50 Mbps
		FDD-LTE	3GPP R9 CAT4 downwards 150 Mbps , upwards 50 Mbps
		WCDMA	HSPA+ downwards 21 Mbps upwards 5.76 Mbps
		TD-SCDMA	3GPP R9

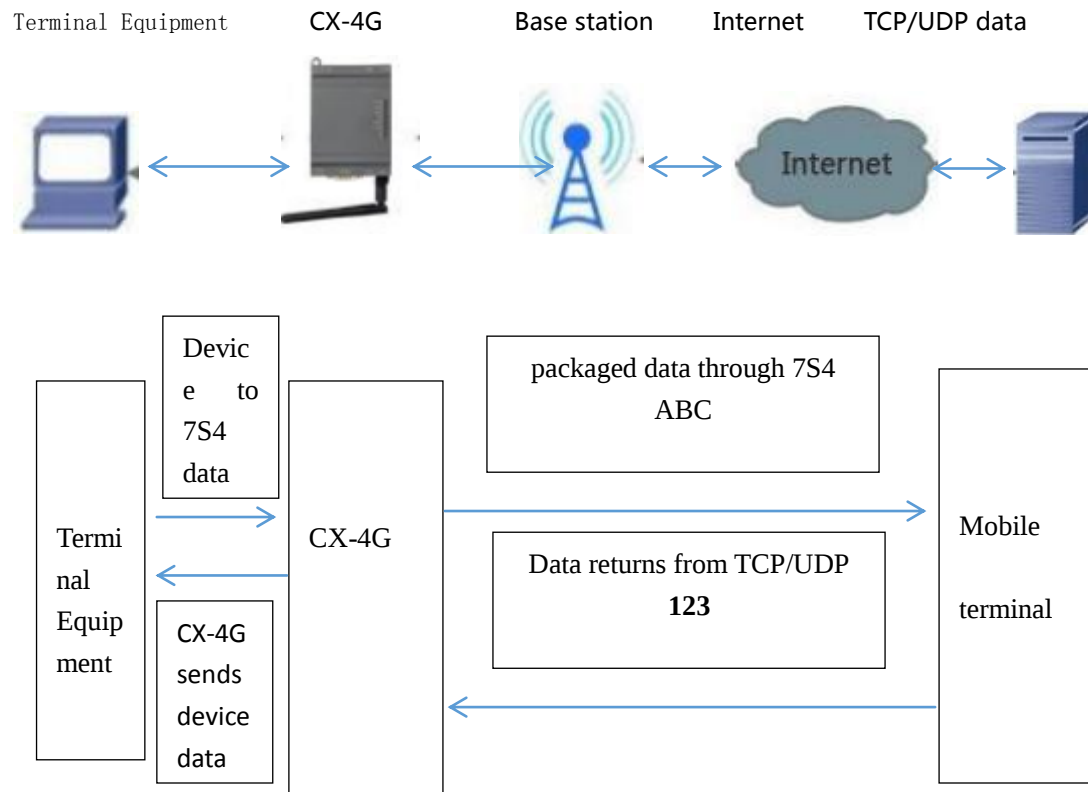
			downwards 2.8 Mbps upwards 2.2 Mbps
		GSM/GPRS/EDGE	MAX: downwards 384 kbps upwards 128 kbps
	Antenna options	IPEX port	
Hardware parameters	Data interface	UART : 300bps - 230400bps	
	Working voltage	DC 5V~30V	
	Working current/consumption	80mA@24V 3W MAX	
	Working temp	-20℃ - 70℃	
	Storage temp	-40℃ - 125℃	
	dimension	65×90×36mm	
Software parameters	Working mode	Transparent transmit, HTTPD mode	
	Setting command	AT+ command structure	
	Network protocol	TCP/UDP/DNS/HTTP/FTP	
	Maximum number of TCP connections	4	
	User configuration	Serial AT command, network AT command, message AT command	
	Customer application software	Supports custom application software	
Software function	DNS	Support	
	Simple way of transmission	Supports TCP clients/UDP clients	
	Socket distribution protocol	Support sending data to different Socket through protocol	
	HTTP protocol transmission	Support	
	Heartbeat packets	Support	
	RFC2217	Support	
	Registration package mechanism	Support for custom registration pack / ICCID registration package / IMEI registration package	

1.5 Serial parameters

Project	Parameters
Baud rate	300 , 600 , 1200 , 2400 , 4800 , 9600 , 19200 ,38400 , 57600 ,115200 ,230400
Data bits	7, 8
Stop bit	1, 2
Check Digit	NONE(No parity bit) EVEN(Even parity) ODD(Odd parity)

二 . Operating mode

2.1. Network transparent transmit mode



Network transmission mode diagram

In this mode, the user's serial device, through the module to send data to the specified server on the network. The module can also accept data from the server and forward the information to the serial device.

Users do not need to focus on serial data and network data packet data conversion process, just through a simple parameter settings, you can achieve data transparent communication between serial device and network server.

The CX-4G module supports four socket connections, Socket A, Socket B, Socket C, and Socket D, which are independent of each other.

The CX-4G module supports four channels that are set to long and short links, and when set to long connections, the module remains connected when the module is

connected to the server. When the short link is set only when the serial port has the data to send the connection, establish a connection without data transmission over the set time-out time automatically disconnect, used to save the server resources and traffic.

AT command setting method:

1. Set the work mode for the network transparent:

AT+WKMOD=NET

2. Set Socket A to the enabled state

AT+SOCKAEN=ON

3. Set Socket A to TCP Client

AT+SOCKA=TCP,120.76.116.193,25565

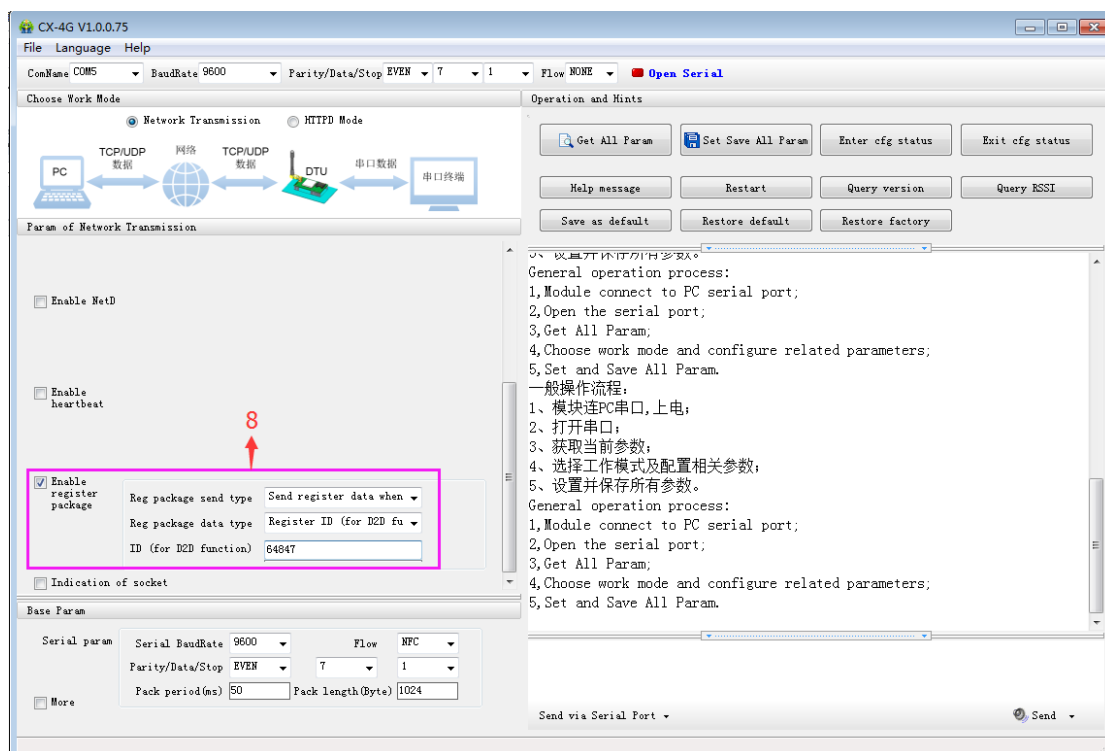
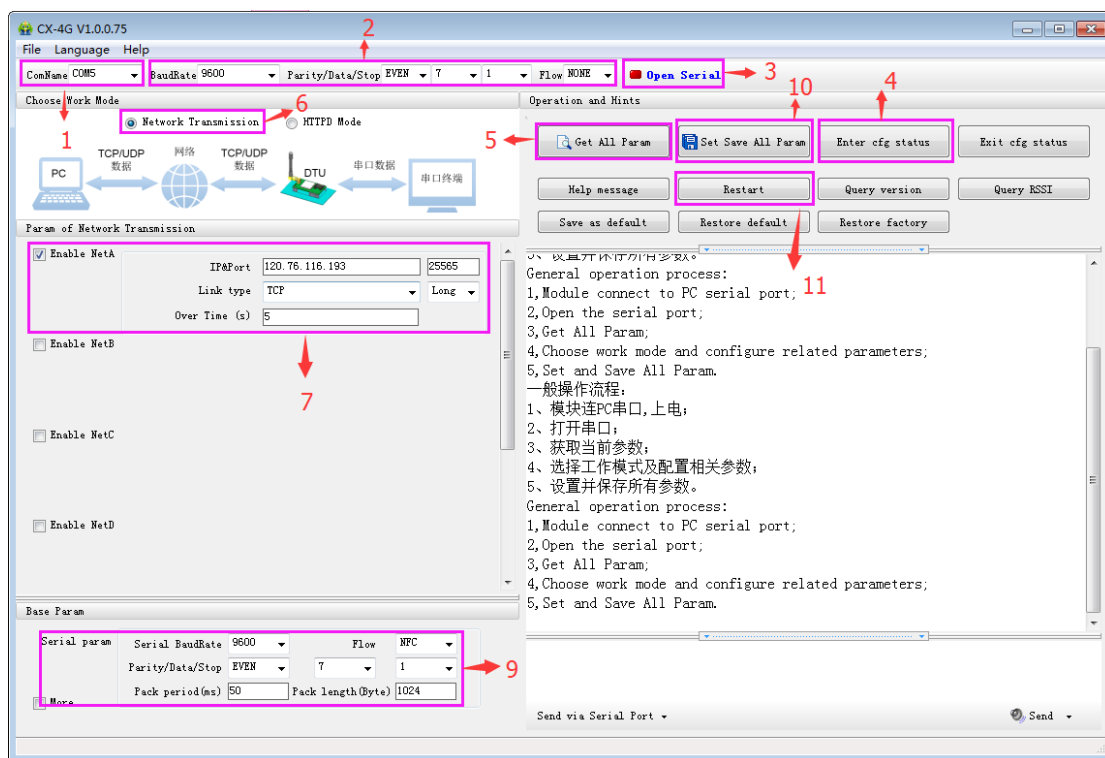
4. Set Socket A to long connection

AT+SOCKASL=LONG

5. Restart

AT+Z

2.1.1. Network pass-through mode setting steps by using software



1. Open the setting software “CX-4G”. Connect Rs232 or Rs485 of CX-4G with computer(if there isn’t Rs232 in computer, a USB to Rs232 male port cable can be used, and then connect to Rs232 cable, the pin definition is 2-3、 3-2、 5-5; Or adopt USB to Rs485 to connect computer and Rs485 of CX-4G), and then set the corresponding serial port.
2. Set the current internal baud rate、 parity bit、 data bit、 stop bit、 flow control and related parameters. The factory defaulted parameters: baud rate 9600、 parity bit EVEN、 data bit 7、 stop bit 1、 flow control NONE ; recover to factory defaulted parameters: baud rate 115200、 parity bit NONE、 data bit 8、 stop bit 1、 flow control NONE.
3. Click to open the serial port, connect CX-4G with computer.
4. Click “Configuration state”, Waiting for the equipment into the AT command configuration mode
5. Click “achieve current parameter”, after all the current parameters obtained, other parameters can be achieved, such as address、 port、 connect type、 registered ID.
6. Select “network pass-through mode” in “Working mode”
7. Select link to Server A, set “address and port” as 120.76.116.193 and 25565。 Set “link type” as TCP and long connection, other server not selected.
8. Select Enable registration packet, set “register package transmit mode” to send to server once when connect with server. Set “register data type” as registered ID. Set “registered ID” as module factory defaulted ID (Detailed ID please refer to factory defaulted parameters, the corresponding registered ID is noted in product label. If you forget the ID, please turn to Coolmay for it again.)
9. All parameters Settings, settings of serial port、 baud rate、 parity、 data、 stop are parameters needed for devices with serial port. If communicate with Coolmay PLC , HMI/PLC all-in-one , Mitsubishi PLC or PLC which is compatible with Mitsubishi

PLC, parameters are: 9600 EVEN 7, stop bit 1, control flow NFC.

10. Click “set and save all parameters”

11. After save all parameters, click “restart”, or discharge the device and then charge it again.

2.2. HTTPD Client

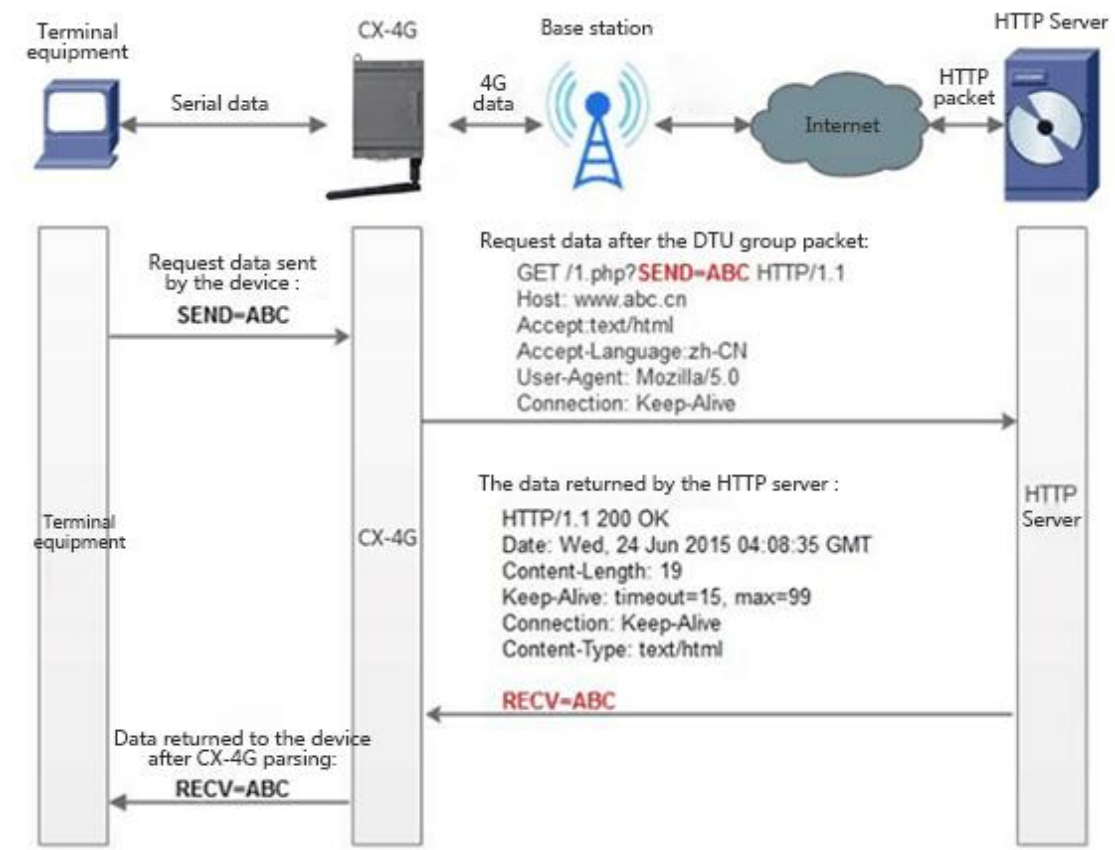


Diagram 4 HTTPD Client

Adopt the well set server address and port、 request mode and other information.

The user device send data to CX-4G, CX-4G package all data according to HTTP protocol and then send the request package to HTTP server. HTTP server send the results back to CX-4G, CX-4G parse the result to the required format and then send

them to the user device.

Since serial port receive buffer is 1000 byte, at most 1000 bytes when CX-4G is packaged.

If devices with serial port need to apply data from HTTP server, but where the device is located hasn't Ethernet, but has base station signal, a CX-4G can be adopted to build a bridge for devices with serial port and HTTP server.

AT instruct setting method

1. Set the working mode as HTTPD

AT+WKMOD=HTTPD

2. Set the request mode of HTTP

AT+HTPTP=GET

3. Set the request URL of HTTP

AT+HTPURL=/1.php[3F]

4. Set request server of HTTP

AT+HTPSV=120.76.116.193,80

5. Set the request head information of HTTP

AT+HTPHD=Connection: close[0D][0A]

6. Set the request over time of HTTP

AT+HTPTO=10

7. Set whether to filter reply information head

AT+HTPFLT=ON

8. Restart :

AT+Z

2.2.1.HTTPD Client mode setting steps by using software

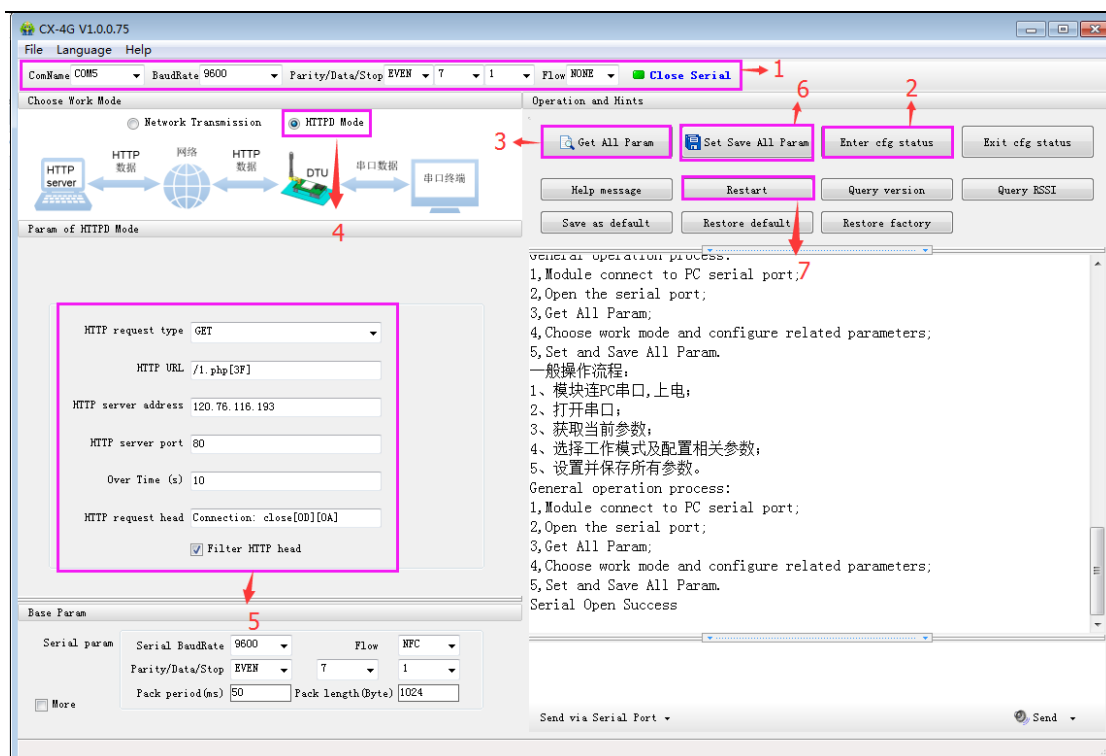


Diagram 5 setting software

1. Open the exclusive setting software “CX-4G”. set serial port parameters and click “open serial port” accordingly.
2. Click “achieve current parameter”, wait until all parameters are obtained.
3. Click “configuration state”, wait until the device enter into AT instruct configuration mode.
4. Click “HTTPD mode” in “select working mode”
5. Set “HTTP request mode” as get. “HTTP request URL” as “/1.php[3F]”. “Server address” as “120.76.116.193”. “server port” as 80, set “overtime” as 10s.

Set “HTTP request head information” as “connection: Keep-Alive[0D][0A]”, select “filter HTTP head information”

6. Click “set and save all parameters”
7. After well saved, click “restart” to start the device, or discharge it and then charge it again.

≡ . Virtual serial port software settings

1. Install Coolmay virtual serial port software, and add a virtual serial port

The screenshot shows the 'Add Virtual Serial Port' window. The 'Virtual COM' dropdown is set to 'COM2'. The 'Net Protocol' dropdown is set to 'TCP Client'. The 'Remote IP/addr' text box contains '120.76.116.193'. The 'Remote Port' text box contains '25565'. The 'Local Port' text box contains '8233'. The 'Remarks' text box is empty. At the bottom, there are three buttons: 'OK' (with a green checkmark icon), 'Cancel' (with a red X icon), and 'Advanced -'. Below the buttons, there are two sections. The first section is 'Use D2D' with a checked checkbox, a 'Register ID' text box containing '43589', and a question mark icon. The second section is 'Use USR CLOUD' with an unchecked checkbox, a 'Cloud ID' text box, and a 'Communication Code' text box.

Attention:

The virtual serial port is set to an unused COM port on the computer

Network protocol selects TCP Client;

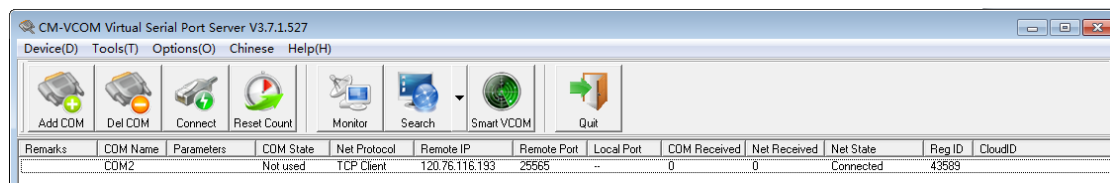
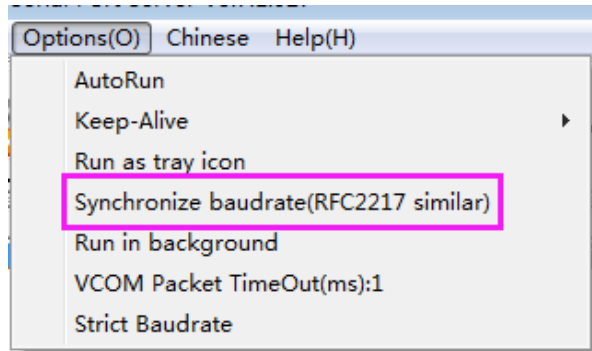
Target IP / domain name setting 120.76.116.193 (Note: Target IP / domain name for the Shenzhen-US technology domain name, must be connected with the US-US server)

Target port setting 25565

Advanced registration ID setting 43589 (Note: Each CX-4G module has a unique pair of registration ID, the specific registration ID in accordance with the factory parameters set, the product label will indicate each module corresponding to the

registration ID number, if you forgot or not saved please ask Coolmay to obtain).

After the success of the creation as shown below, and the option of the synchronization baud rate option to unselected state:



2.This procedure in the virtual serial port number COM2, PLC programming software to use COM2 connection, you can download the PLC program and remote monitoring control. Note: PLC software version must be GX 8.52 or WORKS 2 can be connected successfully.

