

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	Power supply works
	supply	normal
CHAR	Lithium battery charge	When lithium battery is
	indicator(optional)	optional, and be charged
WORK	System operating	Indicator lights always
	indication	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	А	connect	Lights	always	normal
	indication			when co	nnect succ	essfully
LINKB	Socket	В	connect	Lights	always	normal
	indication			when co	nnect succ	essfully
RX	Data transmit indication		There is	data flash	in serial	
				network	RX	
TX	Data transmit indication		lication There is data flash in ser		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 standard				
		TDD-LTE FDI	D-LTE WCDMA		
Wireless		TD-SCDMA GSM/C	SPRS/EDGE		
parameters	Standard frequency	TDD-LTE	Band 38/39/40/41		
	band	FDD-LTE	Band 1/3		
		WCDMA	Band 1/8		
		TD-SCDMA	Band 34/39		
		GSM/GPRS/EDGE	Band 3/8		
		TDD-LTE	+23dBm(Power		
			class 3)		
	Transmit power	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)		
		TDD-LTE	3GPP R9 CAT4		
			downwards 150		
	specifications		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 upwards2.2	
			Mbps	
		GSM/GPRS/EDGE	MAX: downwards	
			384 kbps upwards	
			128 kbps	
	Antenna options	IPEX	port	
	Data interface	UART: 300bps - 230	0400bps	
Hardware	Working voltage	DC 5V~30V		
parameters	Working	80mA@24V 3W MA	Х	
	current/consumption			
	Working temp	-20°C - 70°C		
	Storage temp	-40℃- 125℃		
	dimension	65×90×36mm		
	Working mode	Transparent transmit,	HTTPD mode	
	Setting command	AT+ command structu	ure	
Software	Network protocol	TCP/UDP/DNS/HTTP/FTP		
parameters	Maximum number of	4		
	TCP connections			
	User configuration	Serial AT comma	and, network AT	
		command, message A	T command	
	Customer application	Supports custom appl	ication software	
	software			
Software	DNS	Support		
function	Simple way of	Supports TCP clients/	UDP clients	
	transmission			
	Socket distribution	Support sending data	to different Socket	
	protocol	through protocol		
	HTTP protocol	Support		
	transmission			
	Heartbeat packets	Support		
	RFC2217	Support		
	Registration package	Support for custom	registration pack /	
	mechanism	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
	NONE(No parity bit)
Check Digit	EVEN(Even parity)
	ODD(Odd parity)



\blacksquare . 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



🔮 CX-4G V1.0.0.7	⁷⁵ 2						
File Language	Help						
ComName COM5	▼ BaudRate 9600 ▼ Parity/Data/Stop EVEN ▼ 7 ▼ 1		▼ Flow NONE ▼	🗰 Oper	n Serial 🔶 3	4	
Choose Work Mode	6		Operation and Hi	nts	10	+	
	Network Transmission MTTPD Mode HTTPD HTTPD Mode HTTPD H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H		` <u> </u>				
	VUDP 网络 TCP/UDP 。	•	👌 Get All	Param	🔚 Set Save All Param	Enter cfg status	Exit cfg status
PC 3	数据 DTU 串口数据 由口然谱						
			Help mess	age	Restart	Query version	Query RSSI
D CN I			Save as de:	ault	Restore default	Restore factory	
Taram of Network	(IT MISHISSION						
📝 Enable NetA	IP@Port 120.76.116.193 25565	Â	い 以且丌 MT Camanal anam	77171872	· 2X.0		*
	Link type TCP 🗸 Long 🗸		1. Module con	acion p nect to	process. p PC serial port: 1	1	
	Over Time (s) 5		2,Open the s	erial p	port;		
E Frahla NotE			3,Get All Pa	ram;			
Enable weth	1	Ξ	4, Choose wor	s mode	and configure rela	ted parameters;	
	•		5,Set and Sa ——船榀作运程	ve All	Param.		
	7		1、模块ifFillif至	: Сп. н	±.		
Enable NetC			2、打开串口;	,	<u>.</u>		
			3、获取当前参	数;			
			4、选择工作制	「武及配	2置相关参数;		E
			5、 () Comonal on on	~所有多	5 2 χ₀		
Enable NetD			1. Module con	nect tr	process. PC serial port		
			2,0pen the s	erial p	port;		
			3,Get All Pa	ram;			
			4, Choose wor	k mode	and configure rela	ted parameters;	
Base Param			5,Set and Sa	ve All	Param.		
Serial param	Seviel BendRate 9600 - Flow NFC -					•	
	Parity/Data/Ston EVEN 7 1	• 0					
	Pack period (ms) 50 Pack length (Byte) 1024	9					
Hore	······································		Send via Seria	. Port -			🧶 Send 🗸

🙀 CX-4G V1.0.0.75	
File Language Help	
ComName COM5 - BaudRate 9600 - Parity/Data/Stop EVEN - 7	▼ 1 ▼ Flow NONE ▼ ● Open Serial
Choose Work Mode	Operation and Hints
● Network Transmission ● HTFED Mode TCP/UDP 网络 TCP/UDP	G Get All Param
	Help message Restart Query version Query KSSI
Param of Network Transmission	Save as default Restore default Restore factory
Enable NetD Enable heartbeat Enable register package Reg package send type Reg package data type ID (for D2D function) Enable	 C QL最大环(F/T)[19支3A² General operation process: Module connect to PC serial port; Open the serial port; Get All Param; Choose work mode and configure related parameters; Set and Save All Param. 一般操作流程: 大概共连PC串口,上电; T打串口; T打串口; T打开串口; TTT=
Indication of socket	 4, Choose work mode and configure related parameters; 5. Set and Second Barrow
Base Param	b, set and save All Faram.
Serial param Serial BaudRate 9600 - Flow NFC - Parity/Data/Stop EVEN - 7 - 1 - Pack period(ms) 50 Pack length(Byte) 1024	
More	- Send via Serial Port - 🔍 Send -



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



A CY 46 VI 0.0 75	
File Language Help	
Convers COUS - BandPote 9600 - Parity/Data (Stan EVEN - 7 - 1	
	6 2
Lhoose more mode	Uperation and mints
	3 🔶 💽 Get All Param 🛛 🙀 Set Save All Param Enter cfg status Exit cfg status
HTTP server wurking 数据 DTU 中口数据 中口终端	Help message Restart Query version Query KSSI
Param of HITPD Mode 4	Save as default Restore default Restore factory
	veneral operation process.
	1,Module connect to PC serial port;/
	2,Open the serial port;
	3,Get All Param;
HIIP request type GET	4, Choose work mode and configure related parameters;
NTTP IDI (L.) CORI	5, Set and Save All Param.
All one /I. php[3r]	
HTTP server address 120 76 116 193	1、煤状汪凡中山, 二电;
10.10.10.10	2、灯开中口; 2、荻丽业益会逝
HTTP server port 80	3、次收当期多数; 4 进场工作描式吸配署相关参数;
	5、应注工FI供认及配量加大多数; 5、设置并但在低方条数
Over Time (s) 10	Ceneral operation process:
	1 Madule connect to PC serial port:
HTTP request head Connection: close[OD][OA]	2 Onen the serial nort:
Filter HTTP head	3. Get All Param
	4. Choose work mode and configure related parameters:
	5, Set and Save All Param.
Press Press	Serial Open Success
base raram 5	
Serial param Serial BaudRate 9600 - Flow NFC -	▼ (1)100000000000000000000000000000000000
Parity/Data/Stop EVEN - 7 - 1 -	
Pack period(ms) 50 Pack length(Byte) 1024	
More	Send via Serial Port - 🧶 Send -

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.



Ξ . Virtual serial port software settings

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

				-
🔍 Add Virtual Seria	l Port			×
Virtual COM:	COM2		-	
Net Protocol:	TCP Client		•	
Remote IP/addr:	120.76.116.193			
Remote Port:	25565			
Local Port:	8233			
Remarks:				
🕑 ОК	🔀 Cancel	Advan	ced	
🔽 Use D2D				
Register ID 4	3589		(?)	
🔲 Use USR CLOUD)			
Cloud ID				
Communication Code				

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.



