

Wireless Modem

User Manual



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1. Introduction

NA611-S/NA611-SA is a high-performance and highly reliable WiFi serial server (RS485 \ddagger WiFi). Works in the 2.4G frequency band, realizes RS485 data to realize device networking data exchange through WiFi, supports IEEE802.11 b/g/n standard, supports 4-way Socket connection; supports Alibaba Cloud, Baidu Cloud, OneNet, standard MQTT protocol; supports TCP/ UDP/HTTP/MQTT multiple network communication protocols.



1.1. Features

- Support simultaneous TCP/UDP/HTTP/MQTT multiple network communication protocol communication;
- Support up to 4 channels of Socket communication at the same time;
- Support Alibaba Cloud, Baidu Cloud, OneNet, standard MQTT protocol;
- Support Modbus protocol conversion (RTU and TCP);
- Support modbus storage gateway / configuration gateway / multi-host gateway;
- Support transparent transmission multiplex protocol transmission and broadcast transmission;
- Support custom registration package, custom heartbeat package function;
- Support host computer configuration (download from official website), support direct A interactive configuration, support network interactive configuration;
- Support disconnection and automatic reconnection;
- High-speed continuous transmission
- Support WIFI idle restart;
- Support IEEE802.11 b/g/n standard;
- Support 2.4G frequency band;
- Support AP, STA working mode;
- Support WPA2 WIFI security authentication method;
- Support 3-way STA device connection (AP access point);
- Support dynamic DNS, DHCP network service package;
- Flexible power supply mode (DC/AC optional);
- Support static IP address allocation;

2. QuickStart

2.1. Ready to use

Before using the WiFi serial server (hereinafter referred to as "device"), you need to prepare the computer, converter, power supply, screwdriver and other related accessories details as follows: List

NA611-S	USB to RS485	Computer
Power adapter (12V1A) (SA is the		
AC version, prepare an AC power	WiFi antenna (2.4G)	Screwdriver (slotted SL2)
cord)		

2.2. Wiring

2.2.1. Power

Power supply, use DC 8~28V power supply, or DC 12V or 24V power supply, pay attention to the positive and negative of the DC power supply (the device has anti-reverse connection). If it is SA AC version, connect to 220V AC power supply.



2.2.2. Communication RS485



2.2.3. Schematic diagram of the whole equipment



2.3. Host computer configuration

First, get to know the functions of each area of the host computer. All function settings are based on the

understanding of the host computer. The host computer uses AT to quickly interact with the device. Users can configure the device directly through AT, and the effect is the same as that of the host computer. machine is consistent.

((①)) * C佰特・物联网应用专家 IOT APPLICATION EXPERT Port Communication serial port Dynn essential information Socket 1 Socket 3 Socket 4 ・ Bevice parameters ・ HORE - 1 - Dynn ・ HORE - 1	し 文
Port COML Baud 115200 Communication serial port Comm	
essential information Socket 1 Socket 2 Socket 3 Socket 4 — Device parameters	eboot
蹈,并且大闭兵他二宗链路,日削又持1CF3/TCFC 模式,详细使用力法见于	讯链 手册
Version HAC Local IP Docal IP	
bead 115200 Fran 8 Pack time Pack len Serial port keepalive Serial information keep alive cycle Image: Serial port leader of the series of the s	
• BIFI paras WIFI Mode AP SSID Password	

Basic Information Area-----Product Parameters

Version information/MAC address are inherent parameters of the device, users can only read

The local IP is a parameter that will be valid only for the query after the device is connected to wifi, reflecting the ip of the device itself.

Idle restart If it is checked, it means idle restart is enabled. If the device does not perform any network information interaction and 485 information interaction within the idle restart time, the software will restart the device. Idle restart time in minutes.

Network AT header configuration The default network AT header of the device is NETEbyte, that is to say, the data sent on the network, if it has this header, it will be regarded as an AT command and will not be regarded as information. This header can be configured by the user. Yes, not Chinese, and the length is between 3-23 English characters and numbers. For example, after setting up network communication, send NETEbyteAT+VER\r\n The device will reply to your relevant device information through the network (\r\n is carriage return, line feed, not string), for more AT commands, see the device's AT manual.

Basic information area----- serial port parameters (configured to take effect after restarting)

Multilink Protocol Distribution Mode If checked, for example, you have created two links to connect to two TCPS servers respectively, then the information sent by the TCPS server will be sent out through 485 with a specific header, the header length is 5 bits, and the distance For the content of the header, check the content of the following protocol transmission. At the same time, whether you check this option or not, send information to 485 and upload it to the network. The information can have a header, such as the header designation is to link 1. If it is

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sent, then only link 1 will send this piece of information. For the specific rules of the header, see the protocol transmission part that follows.

Baud Rate/Data/Parity/Stop Bits It represents the properties of the 485 serial port of the device. If it is changed, after restarting the device, the host computer must change the topmost serial port property to the content you changed, and then open the serial port to conduct normal communication.

Packing time/packet length The default value is 50/1024, which means that 50ms is the minimum interval between two packets of data. For example, if the time interval between sending two packets of data to 485 is very small, only 30ms (less than 50ms), then the two packets of data will be combined into one packet of data. It will be distinguished. The packet length of 1024 means that if a packet of data is very long, up to 1300 bytes (greater than 1024), it will be divided into two packets of data to send.

Serial Heartbeat Packet/Serial Heartbeat Packet Time/Serial Heartbeat Packet Content This function is disabled by default. Users need to open it by themselves (check the serial port heartbeat package option), the serial port heartbeat package time unit is seconds, the heartbeat content is the content that will be sent through 485, and the hex check on the right means that The heartbeat content will be converted into hex format (hex format is rarely used, if checked, the content in hex format will be sent). After opening, the device will send serial heartbeat information through 485 every other serial heartbeat time.

Basic information area ------ WiFi parameter area (configured to take effect after restarting)

— WIFI parm	s		
WIFI Mode	Station	•	
SSID	test	∼ Search	Configure the router information
Password	123456		to connect to
DHCP	Using DHCP、dynamic I	P Mode 👻	to connect to.
static IP			
subnet mask			
gateway IP			
DNS Address	8.8.8.8		

WIFI Mode/SSID/Password Parameters representing wifi, such as AP mode, ssid is test, password is 12345678(When entering a password, you can enter a lowercase "x" to set it as open WiFi), then the device is a hotspot, which can be connected through wifi, the hotspot name is test, and the password is 12345678. If the STA mode is set, the ssid is test, and the password is 9876543210, then the device will use the password of 9876543210 to connect to a router (hotspot) named test after restarting.

DHCP/Static IP/Subnet Mask/Routed Address The DHCP selection part can choose dynamic IP and static IP mode (it works in STA mode). If it is dynamic IP, it is easy to understand, that is, after the device is connected to the router (hotspot), the IP of the device is dynamically assigned to the device by the router (hotspot). Yes, so every time you restart the device or reconnect to wifi, the address of the device may change. If it is static IP mode, you can fill in the IP address you want to fix in the static IP below, but note that this cannot be filled in randomly, it must be kept on the same network segment and this address is not assigned to other devices, for example, your router is 192.168 .3.XXX network segment, your static IP can only be filled in such as 192.168.3.52. It cannot be filled in across network segments. Generally, the following subnet masks do not need to be changed. The routing address is the IP address of the router. In the correct case, every time the device is powered on and connected to the

router, it will be this static IP.

DNS address The resolution address generally does not need to be changed

Basic information area-----modbus parameter area (the configuration will take effect after restarting)

— Mosbus params		Select modbus gateway
Work Mode	None	working mode
Response timeout		Working mode.
polling interval		
storage time		working parameters of
Mosbus instructions	cmd setting	modbus gateway

Modbus working mode The five types of simple protocol conversion/multi-host/storage type/configuration type/active upload type can be set respectively. The default is disabled, that is, the modbus functional area is not enabled. Change the option to any type, which is enabled. Note: enable After that, the modbus gateway will work on link one, only support TCP interaction, and will actively close the other three links, please do not use the other three links. The following briefly introduces several gateway modes:

Simple protocol conversion: the most commonly used, simple TCP-RTU conversion

Multi-host mode: that is, for example, both hosts A/B will access device information through modbus. If A/B initiates an access request at the same time, for example, A has accessed, modbus will enter the busy state, and the access information of B will be stored. Down, wait for the end of the interaction of host A, and then execute the interaction of host B, thus avoiding the information conflict of multiple host modbus buses

Storage gateway: Since the interaction speed of the 485 interactive terminal is slower than that of the network terminal, many bus waits originate from the slow side, and a storage gateway, such as the host accesses an instruction, then the device as a modbus gateway will "remember" "This command, and keep polling, and save the polling result in the device, then next time the host accesses this data again, the device as a modbus gateway will not go to 485 to send the inquiry information, wait for the content to return, and then return the content. Instead, it directly returns the polling content stored in the device to the host, making the interaction speed smoother.

Configuration gateway: Similar to storage gateway, but you can configure common query commands into the device in advance, which means that the device does not need to be issued by the host, and directly remembers these commands. The subsequent workflow is the same as the storage gateway.

Active upload: You can configure the command in the modbus command configuration (this command configuration area is the configuration used by the configuration gateway and the active upload uniformly). After the configuration, just like the configuration gateway, the device as a modbus gateway will send a query through 485 information, but after the query result is obtained here, it will be directly returned to the host through the network.

Server Hex: not support

TCP Modbus: It is supported to not check this item when selecting multiple hosts, and check it at other times. This is a common usage, which means that the default network terminal runs TCP type data, and then the device acts as a modbus gateway to the RTU data run by the slave terminal.

Link configuration area

Pran 8 v 8082 v 1 essential information Socket 1 Socket 2 Socket 3 - Vermode	• Open Al mode Re Socket 4
Forbacia TEF/UR	Connection information If it is TCPC, the short link time is to create a link
Connect type UNC Target IP Target part Short link time Target station prace	when sending a message, and then close it after the arrival time. If it is 0, it means that the short connection is not used.
Enable registration Begistration sethed 法所所答 Mac Jata contant	registration information
	keep_alive information

Working mode: When none is selected, it means the link is closed. When TCP/UDP transparent transmission is selected, the above interface is used. At the same time, HTTP mode or a different MQTT mode can also be selected.

When in TCP/UDP transparent transmission:

Connection type: TCPS/TCPC/UDPC/UDPS can be selected, representing the different roles of the device in network communication. When in TCPS/UDPS, when the client connects, the device will remember the client socket (records up to eight A), you can query the information of the currently connected client through the AT command, see the AT manual for specific commands, and the interactive communication with the client also supports protocol transmission. You can specify to send information to a certain client, or Can choose to broadcast

Server address/target address: When in TCPS/UDPS, fill in 192.168.1.1 uniformly (cannot fill in the blanks, in fact, this parameter does not work in server mode, the device uses its own IP to open the server by default), when in client mode (TCPC/ UDPC), this is the target IP address that the client wants to connect to

Server port/target port: When in server mode, this is the open port of the server, when in client mode, this is the port opened by the target server.

Short connection time: This parameter does not matter, it is only useful in TCPC mode. The default value is 0, which means the short connection is closed by default. For example, if you are in TCPS mode and set the short connection time to 5, then this TCPC link After the connection with the server is obtained, the data is exchanged, the link will be closed after 5S, and the connection with the server will be disconnected (if the interaction is performed again within 5S, the time will be re-timed in 5S)

Registration package parameters (only useful for clients): Checking to enable the registration package means that the registration package function is enabled. There are two registration methods. There is another registration package to send. The other is that all the data sent later will have this registration package as the header. The following data content is the content of the registration package. The Hex mode on the right is generally unchecked, if checked That is, the data content is to be converted into hex mode.

Heartbeat packet parameters (only useful for clients): Check the heartbeat switch to enable the heartbeat packet function, the heartbeat content is the content of the heartbeat packet sent, and the heartbeat time is the heartbeat sending interval, such as 60, then this link is every 60S A heartbeat packet will be sent to the server (if there is normal data interaction during this period, the heartbeat time will be reset). When in HTTP mode

Workmode HTTP	choose HTTP ı	mode
- HTTP prams		
HTTP transport mode HTTP URL HTTP domain name	€T	
HTTP port HTTP header content	C Retu	rn with header
HTTP co	onfiguration paramete	rs
230.40.33/80 HTTP server info	prmation	Test HTTP informa
230.40.33/80 HTTP server info T /devices/505619290/datapoints H key:SixhH3MCLvuuvXJ0N=a14Yo6E/ api.heclouds.com tent-Length: 66 tastreams":[("id":"test_stream","data	Primation TTP/1.1 NQ= Post method data	Test HTTP informa

HTTP transmission mode: It is divided into POST and GET methods. When the HTTP information is set, the information in the information area is directly written, and the device will automatically seal the data packet before uploading to the network.

HTTP URL content: represents the URL part of the HTTP message body, such as the HTTP content part of the test above.

(POST method URL) /devices/505619290/datapoints (GET method URL)

http://api.heclouds.com/devices/505619290/datapoints?datastream_id=test_stream

HTTP domain name: represents the IP address of the target HTTP server, such as 183.230.33.80 in the above test content

HTTP port: represents the port number of the target HTTP server, such as the appeal 80, the general HTTP port number is port 80

HTTP header content: represents the header part of HTTP, such as the appealed

api-key:SlxhH3MCLvuuvXJ0N=a14Yo6EAQ=\r\nHost:api.heclouds.com

AfterconfiguringtheHTTPinformation,send{"datastreams":[{"id":"test_stream","datapoints":[{"value":28}]}](post message)You can POST information tothe HTTP server, and send datastream _id=test stream to GET information from the HTTP server.

When in MQTT mode:

Support the connection of MQTT servers such as Alibaba Cloud, Baidu Cloud, ONENET and custom private clouds

The following is an example of how to use Alibaba Cloud

Workmode							
orkmode Alicl	oud MQTT 🔻	PI	ease se	elect t	his mo	ode	
		<u></u>					
— MQTT pram	IS						
Productkey			Dev	vicename			
Devicekey							
IP							
Port							QOS:
🗌 sub							
()h							

First, create products and devices on the Alibaba Cloud IoT platform. If not, you can view the operation method on the official website or Baidu, there are many tutorials on the Internet, the operation is simple, and then find the device you created on the device, click View on the right, and then click MQTT Link the parameter item to get the following interface.

Alibaba Cloud	🛱 Workbench China	a (Shanghai) 👻							Q Search			
← Public Instance	ķ	oT Platform / Devices /	Devices / Device Details									
Devices ^	F	CX-TEST	Offline choose j /-TEST View WmzhN Copy	our equ	lipment			DeviceSec	rret	Vi	iew	
Groups		Device Information	Topic List TSL Data D	Device Shadow	Manage Files	Device Log	Online Debug	Groups	Task			
Jobs	C	Device Information		۱.	AQTT Connectio	n Parameters					×	
CA Certificate		Product Name	E870-W-TEST		clientId	a1CtLgWmzhN.C	K-TEST securemode	=2,signmetho	d=hmacsl	na256,time:	s	Region
Rules Engine 🛛 🗸 🗸		Node Type	Devices			tamp=105720501						Authentication M
Maintenance 🗸 🗸		Alias 🔘	E870W连接阿里云平台测试机 Ed	it	usemame	CX-TEST&a1CtLg	WmzhN				- 1	Firmware Version
Resource Allocation V		Created At	Jun 28, 2022, 18:18:29		passwd	3ca091b0905d670 1c81	60cd084a3e790c1d	5e5bcabf7c1d	99ddcd1c	1deb7fb64	a	Last Online
Link Analytics La		Current Status	Offline		mqttHostUrl	a1CtLgWmzhN.io	t-as-mqtt.cn-shang	hai.aliyuncs.co	om			Device local log reporting
Documentation and Tools		MQTT Connection Param eters	Here		port	1883				_		
	r	More Device Information	n						Сору	Close	e	
		SDK Language	JSjBrowser			Version	1.2.7					Module Manufac
		Module Information										

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Fill the above mqttHostUrl into the above address bar and post in the above port bar. However, the above three columns such as clientID are ignored, because this is a packaged parameter, and our device will automatically package it for you, so fill in the following content in the three columns of product key, device name, and device key, and fill in the product to the device Name column, Productkey is filled in the product key column, DeviceSecret is filled in the device secret column.

E C-J Alibaba	Cloud	d 🛱 Workbench China (Shanghai) 🗸							Q	Q Search				
← Public Instance			IoT Platform / Devices /	Devices / D	levice Details									
Devices	^	١,	← CX-TEST	Offline										
Products		L	Products E870-	-W-TEST View	1					DeviceS	ecret	******* View		
Devices		L	ProductKey a1CtL	_gWmzhN Copy										
Groups			Device Information	Topic List	TSL Data	Device Shadow	Manage Files	Device Log	Online Debug	Groups	Task			
Jobs			Device Information											
CA Certificate			Product Name	E870-W-TES	т			ProductKey	a1CtLgWmz	hN Copy				
Rules Engine	\sim		Node Type	Devices				DeviceName	CX-TEST Co	CX-TEST Copy				
Maintenance	\sim		Alias 🔘	E870W连接网	E870W连接阿里云平台测试机 Edit				112.54.89.22	112.54.89.224				
Resource Allocation	\sim													
Link Analytics 🖾		<	Created At	Jun 28, 2022	, 18:18:29			Activated At	Jun 28, 2022	, 18:38:54./3/				
Link Visual	\sim		Current Status	Offline				Real-time Delay 🌘	Test					
D			MQTT Connection Param	1000										

Then check the subscribe/publish option below, fill in the topic of subscription and publishing, select your item in the product column, click View, and then find the content you want to subscribe and publish in the Topic category list and fill it in.

E C-) Alibaba Cloud	A Workbench China (Shanghai) v Q Search Expenses							
← Public Instance	IoT Platform / Devices /	Products / Product Details						
Devices ^	← E870-W-T	EST						
Products	ProductKey a1CtLg	WmzhN Copy	ProductSecret ******* View					
Devices	Product Information	Topic Categories Define Feature Data Parsing Server-side Subscription Device	e Provisioning File Uploading Configurations					
Groups								
Jobs	Topics for Basic Commu	Inications Topics for TSL Communications Topic Category						
CA Certificate	Topics for TSL Communi	sations						
Rules Engine 🗸 🗸	Feature	Topic Category	Allowed Operations	Description				
Maintenance \lor		/sys/a1CtLgWmzhN/\$(deviceName)/thing/event/property/post	Publish	Report Device Properties				
Resource Allocation V	Properties	/sys/a1CtLgWmzhN/\$(deviceName)/thing/event/property/post_reply	Subscribe	loT Platform publishes to this				
Link Analytics 🖸	Property Settings	/sys/a1CtLgWmzhN/\$[deviceName]/thing/service/property/set	Subscribe	Set Device Properties				
Documentation and Tools		/sys/a1CtLgWmzhN/\$(deviceName)/thing/event/\$(tsl.event.identifier)/post	Publish	Report Device Events				
	Events.	/sys/a1CtLgWmzhN/\$(deviceName)/thing/event/\$(tsl.event.identifier}/post_reply	Subscribe	IoT Platform publishes to this				
	Northern Victory	/sys/a1CtLgWmzhN/\${deviceName}/thing/service/\${tsLservice.identifier}	Subscribe	Invoke Device Service				
	invoke Service	/sys/a1CtLqWmzhN/\${deviceName}/thing/service/\${tsl.service.identifier} reply	Publish	A device publishes to this top				

Simple configuration of the device

1. Select the corresponding serial port and configure the baud rate parameters correctly. The factory default baud rate is 115200, 8 data bits, 1 stop bit, and no parity bit (NONE);

- 2. Select the working mode of the device, the factory default AP mode, the following tests are carried out with the factory parameters, if the factory parameters are not, it is recommended to restore the factory (after the device enters the configuration according to the previous three steps and connects with the host computer, click on the upper right to restore the factory settings) and then carry out;
- 3. Configure the SSID of the device (factory default: NA611-S) and Password (factory default: 88888888), here do not modify the parameters that only query WiFi;

— WIFI parm:				
WIFI Mode	AP	•		
SSID		~	Search]
Password				
DHCP	NO DHCP v static IP 1	Mode	•	0
static IP				
subnet mask				
gateway IP				
DNS Address				

- 4. Configure the link parameters, the factory default is server mode (TCPS), the default IP (192.168.1.1), and the port is 8888;
- 5. Turn off other advanced modes, the factory default is turned off.

2.4. AP mode communication test

1. Configure the computer Ethernet in the following ways, modify IPv4 to obtain IP automatically and obtain DNS server address automatically;

	♀ WLAN 属性	× Internet 协议版本 4 (TCP/IPv4) 属性 ×
制面板项 > 网络连接	网络 共享	常规 备用配置
诊断这个连接 重命名此连接 查看此连 WLAN TXSYB-PD_5G Intel(R) Dual Band Wireless-A	连接时便用: Intel(R) Dual Band Wireless-AC 3165	如果网络支持此功能,则可以获取自动指派的 IP 设置。否则,你需要从网 维系统管理员处获得适当的 IP 设置。
	配置(C) 此连接使用下列项目(O):	● 自动获得 IP 地址(O) ○ 使用下面的 IP 地址(S):
	 ☑ 型Microsoft 网络客户端 ☑ 型 Microsoft 网络的文件和打印机共享 ☑ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	IP 地山):
	 ✓ 愛Npcap Packet Driver (NPCAP) ✓ 愛QoS 数据包计划程序 ✓ ▲ Internet 协议版本 4 (TCP/IPv4) 	子问题吗(U): · · · · · · · · · · · · · · · · · · ·
	Microsoft 网络造鼠器多路传送器协议 PROFINET IO protocol (DCCP/LDP) Microsoft LLDP 协议驱动程序 ✓	 ● 自动获得 DNS 服务器地址(8) ○ 使用下面的 DNS 服务器地址(E):
	安装(N) 卸载(U) 属性(R)	首选 DNS 服务器(P):
	描述 传输控制协议/Internet 协议。该协议是默认的广域网络协议,用	简用 DNS 服务器(A):
	于在不同的相互连接的网络上通信。	□ 退出时验证设置(L)
	确定 取消	确定 取消

2. Use the SSID obtained from the computer connection query, here is NA611-S, enter the wifi password, and connect the device (the device LINKA is always on when the connection is successful);



- 3. Through the host computer configuration, open link 1, open the TCPS mode, the default (192.168.1.1, 8888 port), save the parameters and exit the configuration, LINKB is always on.
- 4. Open the network assistant and connect to the device server (192.168.1.1:8888). If you cannot connect according to the above configuration, it is recommended to turn off the computer firewall;

	Netwo	rk Assistant	7	₩ - □ ×
Settings 11 Protocol TCP Server (2) Local Host Addr 192 168 1.182 (3) Local Host Port 19388 (3) Dpen	Data log		<u>NetAssist V</u>	<u>5.0.2</u>
Recv Options C ASCII C HEX C Log Display Mode Auto Linefeed Hide Received Data Save Recv to File <u>AutoScroll</u> Clear	Data Send		Fa	ear 🛧 Clear
Send Options C ASCII C HEX Use Escape Chars() Auto Append Bytes Send from File Cycle 50 ms Shorteut Kistory				Send
🕼 Ready! 0/	0	RX:0	TX:0	Reset

5. The communication test uses the serial assistant to send "EBYTE_NA6111_S_TEST_UART", the network assistant receives "EBYTE_NA6111_S_TEST_UART", the network assistant sends "EBYTE_NA6111_S_TEST_NET", and the serial assistant receives "EBYTE_NA6111_S_TEST_NET";

	Network Assistant	百 - □ ×	XCOM V2.6	– 🗆 X
Settings (1) Protocol TCP Server • (2) Local Host Addr 192.168.1.182 • (3) Local Host Port 8888	Data log	NetAssist V5.0.2 @ 🗘	IDN ACOM V2.6	Port COM2->COM1:ELTIMA Vir ~ Baud rate 115200 ~ Stop bits 1 ~ Data bits 8 ~ Parity None ~
Recv Options ASCII C HEX Log Display Mode Auto Linefeed Hide Received Data Save Recv to File AutoSoroll Clear	Data Send 5565	Clear 🟠 Clear	Single Send #141 G 1 R + 1 R + 1 R + 1 R + 1	Operation ⑧ Open Save Data Clear Data Hex DTR RTS 自助保存 TimeStamp 500 ms
Send Options C ASCII C HEX Use Escape Chars (i) Auto Append Bytes Send from File Cycle 50 ms Shortout <u>History</u>		Send	NA611-S TEST] □ Timing Cycle:100 ms □ 0pen File □ Hex Send	Send Clear Send Send File Stop Send 正点原子DS100手持示波器上市

2.5. Host computer configuration (used in STA mode)

1. Select the corresponding serial port, and configure the baud rate parameters correctly, the factory default baud rate is 115200, 8 data bits, 1 stop bit, no parity bit (NONE);

EBY	») [®] 1	乙佰	i特・	物	联网	应月	目 专家	IOT APP	PLICATIO	ON EXPI	ERT				史』 中文
Port	COM1	•	Baud		115200	•		\$	[]	↓	\ominus	▣	9	Ę	2)3
Pram	8	•	NONE	•	1	•	Open	AT mode	Read Prams	Save config	Exit AT mode	Load ini	Save ini	Recover	Reboot
essential	information	Sock	et 1 So	ocket 2	Socket	3 S	ocket 4		1 2. #						

2. Click to enter the configuration and read the parameters to obtain the current configuration parameters of the device;

⁽⁽⁽ ・ ^{)))®} EBYTE 亿佰特・物联网应用专家	IoT APPLICATI	ON EXPE	RT				史記中文
Port COMI - Baud 115200 -	© []		\ominus			F	**
Pram 8 • NONE • 1 • Open	AT mode Read Frams	Save config	Exit AT mode	Load ini	Save ini	Recover	Keboot
essential information Socket 1 Socket 2 Socket 3 Socket 4	注意:						
- Device parameters	modb	ous功能开启后	。重启设备,	设备将只运行	行第一条链路	客作为modb	us通讯链
Vania	16, 1	+且大闭具他=	=余谜路,日月	则文持ICPS/	ICPC 模式,	详细使用力	法见于册
Version							
Viela II							
Free Reset							
NETAT Header							
- Suid and summe							
Seriar port params							
Multi link protocol distribution							
baud 115200 •							
	ł.						
Pack len							
a serial port veeparive							
Heartheat content							
- WIFI parms							
WIFI Mode AP -							
SSID V Search							
Password							
דאות האות אין	Clear	recv Send:	Recv:	🗌 Witi	√r/n Cl	ear send	Send

- 3. Select the WIFI working mode, turn on the STA mode, and the device automatically enables dynamic IP (DHCP) when the STA mode is turned on for the first time;
- 4. Configure the WiFi name and password for the device to connect to;

	APPLICAT	ION EXP	ERT				史記中文
Port COMI - Baud 115200		.↓	\ominus	J		Ę	22
Pram 8 VONE V 1 VDen Almo	ode Kead Fra	is Save config	Exit Al mode	Load ini	Save ini	Kecover	Keboot
essential information Socket 1 Socket 2 Socket 3 Socket 4	注意	t.					
Multi link protocol distribution	moi	dbus功能开启》	后,重启设备	, 设备将只运	行第一条链	啓作为modb	ws通讯链
baud 115200 -	<i>此合,</i>	升且大团县他.	二宗琎哈,日	制又持12P3/	TCPC 倶北,	详细使用力	法见于册
Pram 8 • NOHE • 1 •							
Pack time Pack len							
Serial port keepalive							
keep alive cycle	Ê						
Heartbeat content							
- WIFI parms							
WTFT Wode AP							
SSTD Y Search							
Pareverd							
DHCP NO DHCP, static TP Mode							
static IP							
subnet mask							
gateway IP							
DNS Address							
	L						
- Mosbus params							
Work Mode None 🔻							
Response timeout							
				— •••	1// 1		

5. Save the parameters, restart the device, wait for the device to restart, read the parameters to obtain the IP address of the device;

EBYTE	101010	10747103						L A LA			中文
ort COM1	▼ Baud	115200	• @	୍ବ	nı	,↓,	\vdash	Ð	四	F	-13
an 8	• NONE	▼][1		AT mode	Read Prams	Save config	Exit AT mode	Load ini	Save ini	Recover	Reboo
sential informatio	n Socket 1	Socket 2 Socket	3 Socket 4		NL 17						
					modb	us功能开启版	后, 重启设备,	设备将只运	行第一条链路	路作为modb	us通讯和
- Device paramete	ir s				路, 方	且关闭其他	三条链路,目	前支持TCPS	TCPC 模式,	详细使用方	法见手册
Version											
MAC											
local IP											
🗹 Enable Free re	set										
Free Reset											
NETAT Header			_								
— Serial port par	rans										
🗌 Multi link pro	tocol distributio	n									
baud	115200										
Pran	8	• NONE	• 1 •								
Pack time		Fack len			*						
🔽 serial port ke	epalive										
keep alive cycle											
Heartbeat content			hex								
— WIFI parms											
UTET N. J. AD		-									
STT MODE AF											
2210		Search									

Configure the link parameters, the factory default is server mode (TCPS), the IP is dynamically obtained by 6. the device, here is 192.168.10.152, and the local port is modified to 8888;

(((・))) [®] 亿佰特・物联网应用专家 EBYTE	IOT APP	PLICATIO	ON EXPI	ERT				史記
Port COM1 Baud 115200 Pran 8 NOME 1 Open	() AT mode	Read Frans	↓ Save config	$\underset{\text{Exit AT node}}{\longmapsto}$	E Load ini	📳 Save ini	Recover	Reboot
essential information Socket 2 Socket 3 Socket 4 Vorknode Vorknode Target server pran Connact type TCPC • Target FP TCPC • Target FP TCPC • Target FP TCPC • Short link time 0		注意: modb 路,并	us功能开启危 目关闭其他:	后,重启设备, 三条链路,目	设备将只运 前支持TCPS,	行第一条链 TCPC 模式,	略作为modl 详细使用力	bus通讯链 方法见手册
— Begistration press □ Enable registration Begistration method Upload only when connected 注册内容 Nuc → Reartheat press □ Enable heartheat 心跳典型 Nuc Hartbeat content								

7. Click Save to restart the device;

2.6. STA mode communication test

Keep the computer and the device connected to the same router (the connection is successful and LINKA is always on), the computer uses a dynamic IP (for the configuration method, refer to 2.4 AP mode communication test), open the network assistant, and connect to the device server (192.168.10.152:8888, obtain the IP according to the actual device) If the connection is successful, LINKB is always on), if you cannot connect according to the above configuration, it is recommended to turn off the computer firewall;

The communication test uses the serial assistant to send "EBYTE NA6111 S TEST UART", the network assistant receives "EBYTE NA6111 S TEST UART", the network assistant sends "EBYTE_NA6111_S_TEST_NET", and the serial assistant receives "EBYTE_NA6111_S_TEST_NET";



3. Introduction

3.1. Specification

Model	WiFi version	Power	Frequency	Ports	Temperature	
NA611-S	802.11 h/s/m	DC 8~28V	2 412CHz ~ 2 472CHz	RS485	$40^{\circ}C \sim \pm 70^{\circ}C$	
NA611-SA	AC 85~265V		2.4120HZ ~ 2.4/20HZ	RS485	-40 C / ~ +/0 C	

3.2. Technical specification

Item	Parameter
Operating	$DC \approx 28 M / AC \approx 265 M$
Voltage	DC 8' 28 V / AC 85' 205 V
Communication	DS 495
Interface	K5485
Working	2 412CH 2 472CH-
frequency	$2.412GHZ \sim 2.472GHZ$
Maximum	$16 dDm \sim 19.5 dDm @2.412CHz$
transmit power	
Emission current	90mA@12V 瞬时功耗(2.412GHz)
receive current	30mA@12V 接收的平均功耗(2.412GHz)
WiFi version	802.11 b/g/n
Operating	10°C ~ 170°C
temperature	-40°C /~ +/0°C
Product Size	92 * 66 * 30 mm (长*宽*高)
Weight	95 g ± 5 g

3.3. Port Description



No.	Name	Function	Explain
1	Pastara	Restart/factory	Short press to restart, long press 5S device to
1	Restore	reset button	restore factory
2	ANT	RF interface	SMA-K, male thread inner hole, characteristic impedance 50Ω
3	DC/AC	Power interface	DC/AC power input port, crimped port
4	RS485	RS485 communication port	Standard RS485 interface
5	PWR	Power Indicator	Lights up when the power is turned on
6	STATE	Fault indicator	Steady on: Device failure
7	DATA	Data transceiver indicator	Always off: no data is sent or received
8	LINKA	WIFI connection indicator	Flashing: WIFI or serial port receives data
9	LINKB	data link indicator	Steady on: WIFI connection is successful

3.4. Size



3.5. Installation method

The equipment adopts the rail installation method.



3.6. Default parameters

Category	Name		Value			
	baud rate	;	115200			
	digit		8			
G 1 4	stop bit		1			
Serial port	parity		无			
Category Serial port RF parameters AP role SSID parameter Operating mode STA connection parameters Heartbeat parameters	serial por	t timeout	50 (ms)			
	Serial fra	me length	1024			
	working	frequency	2.4G			
RF	channel		1			
parameters	transmit	power level	0			
	Country	Code	CN			
A.D	SSID		NA611-S			
AP role	Whether	to hide SSID	0 (no)			
SSID	encryptic	on type	2 (WPA2)			
parameter	password	1	8888888			
Onentine	job role		AP			
Operating	transfer r	node	透传			
mode	service mode		TCP Server			
STA connection parameters	target SS	ID	NA611-S			
	encryption type		2 (WPA2)			
	password		88888888			
	Connection Type		1			
		Heartbeat	0 (turn off)			
		type				
	4 way socket is the same	Heartbeat	5 (Unit. S)			
Heartbeat		timeout	5 (Onit. 57			
parameters		Heartbeat	1 (character string)			
		data type				
		Heartbeat	343536			
		data				
		Registration	0 (turn off)			
	4 wav	package type				
Registration	socket	Registration				
package	is the	package data	1 (character string)			
1 0	same	type				
		Registration	313233			
		package data				
Modbus	Modbus	enabled	0 (Turn off Modbus)			
	IP addres	S	192.168.8.46			
Static IP	subnet m	ask	255.255.255.0			
	routing a	ddress	192.168.202.197			



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DNS address	114.114.114.14
-------------	----------------

4. Function

4.1. Serial port configuration

4.1.1. Parameter setting

Baud rate configuration: 1200、2400、4800、9600、14400、19200、38400、57600、76800、115200、230400、460800bps;

Data bits: 7, 8 bits (Modbus and multi-link distribution modes do not support 7 data bits); Stop bit: 1, 2 bits;

Check digit: NONE (no check), ODD (odd check), EVEN (even check);

4.1.2. Cache function

The connection clears the serial port data, with a 15K (15*1024Bit) serial port cache. When the network is not connected, the data sent by the user will be recorded. After the network connection is successful, the data will be sent out normally.

4.2. Job role

4.2.1. AP mode (Access Point)

Access Point is referred to as AP mode, which is similar to a router, allowing wireless devices to connect and establish TCP/IP-based server, client, and UDP communications. In this mode, 3 stations are supported, and a maximum of 4 TCP sockets are supported.

4.2.2. STA mode (Station)

Station mode is abbreviated as STA. In this role, the device does not provide connection, but can only connect to an Access Point or a router. This device supports TCP server, TCP client, UDP in the Station role, and supports up to 4 sockets. The device works from other working roles. When switching to STA mode, the device will automatically enable DHCP to obtain IP, and automatically configure the subnet mask and DNS domain name server.

4.3. Transfer mode

Transmission mode refers to the number of sockets supported by the device under the TCP/IP protocol. When only

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one socket is supported, we define it as single-mode transparent transmission, and when multiple channels are supported, we define it as protocol transmission.

4.3.1. Transparent transmission

Transparent transmission means that the device works in TCP Server, TCP Client, UDP Server, and UDP Client mode without enabling MQTT, HTTP, Modbus gateway and other protocol functions.

1. TCP Server

Let the device work as a TCP server, and the network device and the computer connect to the NA611-S through the TCP client.

2. TCP Client

Make the device work as a TCP client, connecting to the configured server.

3. UDP Server/UDP Client

Select the IP and port sent by the fixed network of the UDP Client device, and automatically forward the data to the target IP and port configured by the device after the serial port receives the data. Select the UDP Server device to record the IP and port of the last communication, and automatically forward the data after the serial port receives data to the recorded IP and port.

4.3.2. MQTT Mode

In the MQTT mode, the device supports IoT platforms such as Alibaba Cloud, Baidu Cloud, and OneNet. The service parameters created on the platform can be entered into the device to communicate, and the QoS0, QoS1, and QoS2 service quality levels are supported, and the address can be configured with a maximum of 72 characters. Festival;

productKey: Ali product key, Baidu device key, ONENET device ID, the maximum configurable length is 64 bytes deviceName: Ali device name, Baidu user name, ONENET product ID, the maximum configurable length is 64 bytes

deviceSecret: Ali device key, Baidu password, ONENET authentication information, the maximum configurable length is 96 bytes;

Publish and subscribe topics up to 128 bytes.

1. Standard MQTT3.1.1 protocol

Based on the standard MQTT3.1.1 network communication, you need to fill in the relevant parameters (such as: Client ID, User Name, Password, etc.) to log in to the server, and support three service quality levels (QoS0, QoS1, QoS2).

2. Ali Cloud

For network communication based on Alibaba Cloud platform, you need to log in to Alibaba Cloud to obtain relevant parameters, including product secret key, device name, client ID and other information.

3. Baidu cloud

For network communication based on Baidu cloud platform, you need to log in to Baidu cloud to obtain relevant parameters, mainly including device name, user name, password and other information.

4. OneNET

For network communication based on the OneNet cloud platform, you need to log in to OneNet to obtain relevant parameters, including device ID, product ID, and authentication information.

When in MQTT mode:

Support the connection of MQTT servers such as Alibaba Cloud, Baidu Cloud, ONENET and custom private clouds

The following is an example of how to use Alibaba Cloud

T prams otkey Devicename
otkey Devicename
ekey
QOS

First, create products and devices on the Alibaba Cloud IoT platform. If not, you can view the operation method on the official website or Baidu, there are many tutorials on the Internet, the operation is simple, and then find the device you created on the device, click View on the right, and then click MQTT Link the parameter item to get the following interface.

E C-J Alibaba Cloud	A Workbench Chin	na (Shanghai) \vee					Q Search		Expenses Tickets
← Public Instance	IoT Platform / Devices /	Devices / Device Details							
Devices ^	← CX-TEST	Offline choose	vour eau	ipment					
Products	Products E870- ProductKey a1CtL	W-TEST View gWmzhN Copy					DeviceSecret	····· View	
Groups	Device Information	Topic List TSL Data I	Device Shadow	Manage Files	Device Log	Online Debug	Groups Task		
Jobs	Device Information		N	IQTT Connectio	n Parameters			×	
CA Certificate	Product Name	E870-W-TEST		clientId	a1CtLgWmzhN.C	X-TEST securemode	=2.signmethod=hma	csha256,times	Region
Rules Engine 🛛 🗸 🗸	Node Type	Devices		1150703000		WmthN			Authentication N
Maintenance 🗸 🗸	Alias 🔘	E870W连接阿里云平台观试机。Ed	lit	usemanie	2==0011=0005457	60-4094-2-700-14	Saflaab#7=1400ddaa	1-1-1	Firmware Version
Link Analytics 12	Created At	Jun 28, 2022, 18:18:29		passwd	1c81	0000004852750010.	Selocatine russuuce	ne rue o no o ta	Last Online
Link Visual	Current Status	Offline		mqttHostUrl	a1CtLgWmzhN.io	t-as-mqtt.cn-shang	hai.aliyuncs.com		Device local log reporting
Documentation and Tools	MQTT Connection Param eters	Here		port	1883				
	More Device Informatio	on					C	Close	
	SDK Language	JS Browser			Version	1.2.7			Module Manufac
	Module Information								

Fill the above mqttHostUrl into the above address bar and post in the above port bar. However, the above three columns such as clientID are ignored, because this is a packaged parameter, and our device will automatically package it for you, so fill in the following content in the three columns of product key, device name, and device key, and fill in the product to the device Name column, Productkey is filled in the product key column, DeviceSecret is

filled in the device secret column.

E C-J Alibaba C	loud		A Workbench Chi	na (Shanghai)	-					Q	Search	
← Public Instance			IoT Platform / Devices /	Devices / D	evice Details							
evices	^	-	← CX-TEST	Offline								
Products		ł	Products E870- ProductKey a1CtL	W-TEST View	{					Devices	ecret	***** View
Devices		L	Device Information	Topic List	TSL Data	Device Shadow	Manage Files	Device Log	Online Debug	Groups	Task	
Jobs			Device Information									
CA Certificate			Product Name	E870-W-TES	г			ProductKey	a1CtLgWmz	thN Copy		
ules Engine	\sim		Node Type	Devices				DeviceName	CX-TEST Co	CX-TEST Copy		
aintenance	\sim		Alias 🔘	E870W连接网	E870W连接阿里云平台测试机 Edit			IP Address	112.54.89.224			
source Allocation	\sim	<	Created At	Jun 28, 2022	Jun 28, 2022, 18:18:29			Activated At Jun 28, 202		D22, 18:38:54.737		
nk Visual	\sim		Current Status	Offline				Real-time Delay 🌘	Test			
			MOTT Connection Param									

Then check the subscribe/publish option below, fill in the topic of subscription and publishing, select your item in the product column, click View, and then find the content you want to subscribe and publish in the Topic category list and fill it in.

E C-) Alibaba Cloud	A Workbench Chi	ina (Shanghai) 🗸	Q Search	Expenses Tickets ICP							
← Public Instance	IoT Platform / Devices /	/ Products / Product Details									
Devices ^	← E870-W-	TEST									
Products	ProductKey a1CtL Total Devices 1	oduct/sey a1Clt.gWmthN Copy ProductSecret ******* View Atal Devices 1 panage									
Devices Groups	Product Information	Product Information Topic Categories Define Feature Data Parsing Server-side Subscription Device Provisioning File Uploading Configurations									
Jobs	Topics for Basic Comm	Topics for Basic Communications Topics for TSL Communications Opic Category									
CA Certificate	Topics for TSL Commu	nications									
Rules Engine V	Feature	Topic Category	Allowed Operations	Description							
Maintenance \lor		/sys/a1CtLgWmzhN/\$(deviceName)/thing/event/property/post	Publish	Report Device Properties							
Resource Allocation V	Properties	/sys/a1CtLgWmzhN/\$(deviceName)/thing/event/property/post_reply	Subscribe	IoT Platform publishes to thi							
Link Visual V	Property Settings	/sys/a1CtLgWmzhN/\$(deviceName)/thing/service/property/set	Subscribe	Set Device Properties							
Documentation and Tools		/sys/a1CitlgWmzhN/S(deviceName)/thing/event/S(tsleventidentifier)/post		Report Device Events							
	events	$/sys/a1CtLgWmzhN/$[deviceName]/thing/event/$[tsl.eventidentifier]/post_reply=0.00000000000000000000000000000000000$	Subscribe	loT Platform publishes to this							
		/sys/a1CtLgWmzhN/\$(deviceName)/thing/service/\$(tsLserviceidentifier)	Subscribe	Invoke Device Service							
	Invoke Service	/sys/a1CtLqWmzhN/\$(deviceName]/thinq/service/\$(tsLservice.identifier) reply	Publish	A device publishes to this tor							

Simple configuration of the device

- Select the corresponding serial port and configure the baud rate parameters correctly. The factory default baud 1. rate is 115200, 8 data bits, 1 stop bit, and no parity bit (NONE);
- 2. Select the working mode of the device, the factory default AP mode, the following tests are carried out with the factory parameters, if the factory parameters are not, it is recommended to restore the factory (after the device enters the configuration according to the previous three steps and connects with the host computer, click on the upper right to restore the factory settings) and then carry out;
- 3. Configure the SSID of the device (factory default: NA611-S) and Password (factory default: 88888888), here do not modify the parameters that only query WiFi;



- WIFI parms				
IFI Mode	AP	•		
SID	1	~	Search	
assword	1			
HCP	NO DHCP、stati	c IP Mode	Ŧ	
tatic IP				
ubnet mask				
ateway IP				
NS address				

- 4. Configure the link parameters, the factory default is server mode (TCPS), the default IP (192.168.1.1), and the port is 8888;
- 5. Turn off other advanced modes, the factory default is turned off;

4.3.3. HTTP mode

When using this function, you only need to select and start a trigger request to get the resources responded by the server. You don't need to care about the complex HTTP protocol layer. You can choose whether to output the HTTP header. HTTP supports two common request methods: POST and GET;

Request path (HTTP URL): configurable up to 128 bytes;

Request header (HEADER): The maximum configuration is 128 bytes, and the supported data can contain escape characters such as "\r\n";

When in HTTP mode

	essential information Socket 1 Socket 2 Socket 3 Socket 4
	- Workmode
	Workmode HTTP -
	- HTTP prans
	HITP transport mode POST HITP URL
183.230.40.33/80 HTTP服务器信息	测试用HTTP信息
POST /devices/505619290/datapoints HTTP/1.1 api-key:SkMH3MCLvuuvXI0N=a14Yo6EAQ= Hostapi.heclouds.com Content-length: 66 {*datastreams*:{{"id*:*test_stream",*datapoints*:{{"value	POST方法数据 2*:28)]]])
GET http://api.heclouds.com/devices/505619290/datap api-key:StkhH3MCLvuuvXJ0N=a14Yo6EAQ= Host:api.heclouds.com	points?datastream_id=test_stream HTTP/1.1 GET方法数据

HTTP transmission mode: It is divided into POST and GET methods. When the HTTP information is set, the information in the information area is directly written, and the device will automatically seal the data packet before uploading to the network.

HTTP URL content: represents the URL part of the HTTP message body, such as the HTTP content part of the test above.

(POST method URL)
/devices/505619290/datapoints
(GET method URL)
http://api.heclouds.com/devices/505619290/datapoints?datastream_id=test_stream

HTTP domain name: represents the IP address of the target HTTP server, such as 183.230.33.80 in the above test content

HTTP port: Represents the port number of the target HTTP server, such as the appeal 80, the general HTTP port number is port 80

HTTP header content:Represents the HTTP header part, as appealed api-key:SlxhH3MCLvuuvXJ0N=a14Yo6EAQ=\r\nHost:api.heclouds.com

AfterconfiguringtheHTTPinformation,send{"datastreams":[{"id":"test_stream","datapoints":[{"value":28}]}](post message)You can POST information tothe HTTP server, and send datastream _id=test stream to GET information from the HTTP server.

4.3.4. Network receive cache

All links have a total of 15K (15*1024Bit) network cache to alleviate the impact of the network speed being greater than the serial port speed during continuous transmission.

4.4. Support DHCP and domain name resolution

4.4.1. DHCP

AP mode supports dynamic allocation of I P of connected devices;

STA mode device can automatically obtain IP through the router, and automatically configure the subnet mask and DNS server, support modifying the subnet mask and DNS server, modification error may cause the device to work abnormally. It is recommended that the subnet mask be modified with the DNS server when dynamically acquiring IP (when statically switching to dynamic, the device automatically synchronizes the subnet mask with the DNS server).

4.4.2. DNS

When the other modes are switched to STA mode, the device automatically follows the router to configure the DNS server, and the user can enter the configuration of the custom DNS server again to meet the needs of custom domain name resolution.

4.5. Disconnection reconnection and no data reboot

Disconnected reconnection: The device periodically requests a connection after the disconnection to ensure that the connection can be restored in the event of an accidental disconnection (note that the device is not restarted); No data restart: the user can customize the enable and disable the function (off by default), after opening the mode, if the device does not communicate data within the user configuration time (default: 120min, configurable 1-10080min), the device will automatically restart to prevent link blockage and cause non-functional operation.

4.6. Multilink distribution

When multiple sockets are supported, in order to distinguish the source and destination of the data, we define it as a protocol transmission, which contains a specified send and broadcast transmission, which requires the use of 1 hex (hex) transmission.

4.6.1. Protocol distribution specifies sending

1. Protocol Description

Send a description

```
[Protocol Distribution Header]+[Protocol Type]+[sockID]+[clientID]+ Data
```

Protocol distribution header: 0XAA + 0XFE

Protocol Type: 0X55 TCPS Communication 0X54 TCPC Communication 0X53UDPS Communication 0X52 UDPC Communication 0X51 HTTP Communication 0X50 MQTT Communication

SockID: 00, 01, 02, 03

ClientID: 01、02、03、04、05、06、07、08

If working in client mode, the clientID is invalid.

{Note: There is a hidden function here, the host computer supports HTTP configuration, but the configuration method can only select radio POST or GET, you can (on the host computer or through AT) respectively set POST and Get the parameter, because in the device this parameter is originally separated, and then transmitted directly through the protocol using the POST and GET methods, when the protocol type is in HTTP communication mode, ClientID Flag bit 0 for using THE POST method, followed by POST data, and 1 for the GET method, followed by it GET data}

Specifies that the packet entered into the serial port contains a unique socked ID number, according to which the device transmits data to the corresponding socket connection. For example:

Fixed head	Socket ID		ClientID	data
3 Byte	1 Byte		1 Byte(Only server/HTTP mode takes effect)	N Byte
0xAA 0xFE 0xXX	Socket 0 Link	0x00	0x01	N Byte

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NA611-S & NA611-SA User Manual

(The last bit	Socket 1 Link	0x01	 N Byte
protocol type)	Socket 2 Link	0x02	 N Byte
	Socket 3 Link	0x03	 N Byte

Note: If the send does not have a protocol distribution header, then the default is to broadcast to all connected links, and the ClientID in the protocol distribution header is sent 1-8 as A TCPS/UDPS to send information to a certain client (the device stores up to 8). Client Information), as for the client information that is currently connected, you can view the data through AT. If it is HTTP mode, a ClientID bit of 0 represents the use of the POST method and a 1 represents GET Method.

Protocol receipt instructions

Fixed head	Socket ID		ClientID	length	data
3 Byte	1Byte		1Byte	2Byte	N Byte
0xAA 0xFE	Socket 0 Link	0x00	0x01	1 (5525	N Byte
0xXX	Socket 1 Link	0x01		1-00000 Apply the date	N Byte
(The last bit	Socket 2 Link	0x02		Apply the data	N Byte
protocol type)	Socket 3 Link	0x03		actual length value	N Byte

4.6.2. Broadcast sending

Protocol Description

When the device link works in server mode, when the Socket ID is 0x00 or there is no protocol header before the data, it means broadcasting, if a 4-way connection is established, the data is sent to the 4-way socket at the same time. Otherwise, the data is sent to the established connection, and the data reception format refers to "Specify Send-Protocol Receive Instructions".

4.7. Heartbeat pack with registration pack

Heartbeat packages or enrollment packages are features that are only available in client mode, and this device supports customized heartbeat package data and registration package data content.

4.7.1. Heartbeat pack

The heartbeat packet can be configured as serial and network heartbeats, and the content can be selected from MAC and user-defined (support A SCII or HEX data, configurable up to 72Bit.), HEX format halved).

4.7.2. Register the package

Registration package content selectable MAC and user definable (support A SCII or HEX data, configurable up to 72Bit, HEX format halved).

4.8. High-speed simulcasting (1M)

Support large file high-speed connection, the actual network reception of large files depends on the serial port baud rate, the larger the baud rate, the larger the support for large files, the network transmission is not affected. Regarding high-speed simulcasting, the following issues need to be noted:

- 1. Serial port chip must be able to support to 1M baud rate model, the company test backplane using CP2102 series;
- 2. Serial port assistant software must be able to support to 1M baud rate, the company test use software is XCOM2.6;
- 3. The connection between the device and the PC should try not to go through the USB converter and connect directly to the USB3.0 port of the PC, otherwise it is easy to lose packets;

4.9. Modbus gateway

4.9.1. Simple protocol conversion

Simple protocol conversion: Convert Modbus RTU data to Modbus TCP data, or convert Modbus TCP data to Modbus RTU data to achieve Ethernet Modbus data and serial port Modbus data is transferred interchangeably.

4.9.2. Multi-host gateway

For simple protocol conversion, there can only be one Modbus master, and the function upgrade is carried out, and when multiple hosts access the Modbus gateway at the same time, the bus occupancy scheduling will be carried out, thus solving the bus conflict problem (currently only 8 host connections are supported), and only support working in TCP Server mode.

4.9.3. Storage gateway

Based on the multi-host development to optimize the network side read speed of the gateway, storage network side issued by the read instructions, when the network side reads the stored instructions, the gateway will replace the RTU device to quickly reply to modBUS TCP instructions, the serial port side automatically polls the RTU device register during the instruction storage time to update the data.

As an upgraded version of the multi-host mode, the storage gateway can only work in tcp server mode, which improves the response speed of the network side.

Peculiarity:

- The gateway allocates a total of 3K space for storing instructions and returning results;
- RTU responds to timeout automatic deletion of storage instructions to ensure the real-time nature of data;
- The gateway polls the RTU device according to the instruction storage time used for configuration, the MODBUS host does not query the instruction again at the storage time, and the gateway automatically deletes the storage instruction to free up memory;
- The first instruction is transmitted directly to the RTU device;



• Only support 01, 02, 03, 04Modbus function code query result storage;

4.9.4. Configurable gateway

The serial port will automatically poll according to the configured Modbus instructions (only support 01, 02, 0 3, 04 instruction configuration). RTU device registers, unconfigured instructions and control instructions operate the RTU device directly. Frequently read instructions are stored in advance within the gateway, reducing response times throughout the process. Due to the above characteristics, the serial port side of the storage gateway can only be connected to the Modbus slave.

The device supports configuring 50 instructions via the host computer

🖪 Modb	us指令设置	– 🗆 X	一条链路
- WIFI parms 指令配罟		添加 清空 关闭	模式,
IFI Mode AP	指令		
SID	input your modbus ins	2001 F	
assword			
HCP NO DHCP, static IF			
tatic IP		* * *	
ubnet mask		add clear close	
ateway IP			
NS Address			
- Mosbus parans			
ork Mode Configurabl			
esponse timeout			
olling interval			
torage time			
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			

4.10. Serial port upgrade

The NA611-S can be upgraded and maintained via the serial port upgrade tool provided by us.

Step 1: Open the software, select the corresponding serial port, click to open the serial port;

yte boot upgrade		
Information box	Step 1: Open the downlo	oad serial po
	port: COM40 ~	Close seria
	Step 2: Select the firmwa	ire package.
		import file
	Step 3: Start automatic u	ipgrade.
	1: Click the Start Upgrade button. 2. Serial connection to upgrade equipment	Start upgrade
	3: Restart the device. 4: Start the upgrade 5: Upgrade is complete.	

- Step 2: Select the firmware that needs to be upgraded
- Step 3: Click Upgrade, disconnect the device power and restart the device;
- Step 4: Wait for the upgrade to complete, click Stop Upgrade;

5. Parameter configuration

There are two ways to configure the parameters: serial port-based AT instruction configuration, UDP-based remote AT configuration, and serial port-based host computer. For detailed operation, see "NA611-S Instruction Manual Usage".

5.1. Hardware factory restore

Hardware factory reset: long press the Restore button 5s (after the factory reset, all LED is on until the button is released), the device is restored to the factory; If you press 1.5S or above, below 5S, the device will restart but will not restore the factory settings.

5.2. Directive configuration

5.2.1. Serial port AT configuration

When you need to use the serial port AT command to configure the parameters, first send "+++", and send "AT" within 3s to enter the configuration mode, and the device will close the disconnection reconnection and restart without data in the configuration mode, and exit AT Restore the disconnected reconnection and dataless restart configuration after configuration. If the serial port does not receive "AT" or other non-"A T" data after 3s, the device resumes transmission.

For other directives, refer to "NA611-S Instruction Manual Use".

5.2.2. Network AT configuration

Same as serial port AT instruction, after connecting the link, refer to "NA611-S Instruction Manual Use". The above bit computer is configured with a network AT header as shown below

ort	COM1	•	Baud		115200	•		6
'r am	8	•	NONE	•	1	•	Open	AT m
essential	information	Sock	et 1 S	ocket 2	Socke	t 3 5	Socket 4	
- Devi	ce parameters	ġ.						
		<u>.</u>				_		
Version	n	-						
MAC		1						
local 3	IP							
🔽 Enal	ble Free reset							
Free R	eset							
NETAT I	Header	EBYT	E_HEAD					
- Sari	al port param					_		1
Jerr	ar port param	-						
🗌 Mul	ti link protoc	ol dis	tribution					
			115200				-	
baud			110200					

After the device is successfully connected, the network configuration can be performed by issuing a network AT command through the network assistant, as follows:

Note: The device must be in a communication state for this configuration method.

6. Revision History

version	Date of revision	Revision Notes	Maintainer
1.0	2022-04-19	Initial release	LM
1.1	2022-07-21	Content revision	LM
1.2	2022-09-13	Content revision	XXN
1.3	2023-01-31	Content revision	LT

7. About us

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