

File Version: V1.0.1



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# **1. Introduction**

#### **1.1 Overview**

USR-N580 device is designed to realize bidirectional data transparent transmission between the Serial port and the Ethernet port. User does not need to care about the specific details, the device completes the protocol conversion internally. The Serial port side is the RS485 level data, and the Ethernet port side is the network data packet. The USR-N580 device server is rugged, user-friendly, making simple and reliable Serial to Ethernet solutions possible. There are two ways to access the configuration settings: web page, Windows utility.

#### **1.2 Features**







- > New ARM kernel, reliable TCP/IP protocol stack, industrial working temperature range
- > Auto-MDI/MDIX, RJ45 port with 10/100Mbps
- Support TCP Server, TCP Client, UDP Client, UDP Server, HTTPD Client working modes
- > One serial port supports two socket connections
- Support network printing function
- Modbus gateway function, Modbus RTU to Modbus TCP, Modbus polling.
- > Eight serial ports can work independently at the same time
- > Distinguish which serial port connected via port number
- Support virtual serial port and provide corresponding software USR-VCOM
- Serial baud rate from 600bps to 921.6K bps; Parity of None, Odd, Even
- Support static IP, DHCP, and searching devices within the network through UDP broadcast
- > Provide serial and network setting protocol, TCP/IP socket example code
- > Built-in web page, configuring the parameters via the web page
- > Reload button, one key to restore default settings.
- > RJ45 with Link/Data indicator light, built-in isolation transformer and 2 KV electromagnetic isolation
- > The global unique MAC address bought from IEEE
- Upgrade firmware via network
- Support DNS function
- Support web port revise (80 by default)
- > Keepalive, detect dead links and reconnect rapidly
- > Custom username and password, used to page log in and network settings
- Support Websocket, realize bidirectional transparent transmission between web page and any one serial port
- > 8 serial ports support RS485 communication, indicator lights (TX/RX)
- > Power supply in two mode, DC adapter or 5.08-2 terminal pin
- > UDP broadcast function, can broadcast data to all the IP in the same network



# 2. Get started

# 2.1 Specifications

Classify	Parameter	Value
Hardware	Operating Voltage	DC 9.0~36.0V
Parameters	Operating Current	120mA@12V
	Net interface format	RJ45,10/100Mbps
	Serial baud rate	600~921.6K(bps)
	No. of serial ports	RS485*8
Software	Net protocol	IPV4, TCP/UDP, HTTP
parameters	IP mode	Static IP, DHCP
	DDNS	supports
	User Configuring	Software/Webpage configuring, serial/network AT commands
	Operation mode	TCP server, TCP client, UDP server, UDP client Support two-way socket
	Similar RFC2217	support
	HTTPD client	support
	TCP server	Support up to 8 TCP Clients (user-defined)
	Net buffer	48Kbyte
	Serial buffer	Dynamic packet buffer
		E.g: When the packet length is 10Byte, can buffer 200 packets (2KB).
		When the packet length is 1460Byte, can buffer 5 packets (7.3KB).
	Average delay	<10ms
	Related software	USR-VCOM, set-up software
	485_EN switching speed	<100us
	Flow control	XON/XOFF
	Registration packet	User-defined, MAC, USR Cloud
	Web to serial	Websocket function
	Heartbeat packet	UART, NET
Others	Hardware protection	Electrostatic protection ESD: level 3;Anti-surge: level 3;Pulse group: level 3
	Dimension	222*122*35mm(L*W*H With terminal, ears)
	Operating temperature	-40~+85°C
	Storage temperature	-40~105°C
	Operating humidity	-40 $\sim$ +85°C (Industrial)
	Storage humidity	-45 $\sim$ 105°C, 5 $\sim$ 95%RH (non-condensing)
	Accessories	Power adaptor, Ethernet cable
	Packaging	Electrostatic bubble



### 2.2 Hardware

### 2.2.1 Dimensions











### 2.2.2 Indicators



Indicator	Description
Power	Indicates power. It is on when power is supplied
Monly	Indicates working status. It twinkles when N580 works well. If it is on or off for
WOIK	a period, N580 works improperly, you should disconnect the power and restart.
TX n	It twinkles when port n sends data.
RX n	It twinkles when port n receive data.
Status	Error indicator.
Link	Always on when establish a socket connection.

### 2.3 Connecting Hardware

### 2.3.1 Serial Connecting

Connect a serial data cable between the N580 and the serial device. And the pin wiring should be: A to A, B to B, GND to GND. Please set the serial parameters of N580 to be consistent with RS485 serial device. Serial parameters of N580 default to 115200, NONE, 8, 1.



### 2.3.2 Network Connecting

Connect one of the Ethernet cable to the N580's 10/100M Ethernet port and the other end of the cable to the Ethernet network. The green indicator light will always be on and the orange light will be twinkling. USR-N580 has two Ethernet ports that can be used to cascade other devices like a switch.

# 2.3.3 Power Supply

Connect the power adaptor with the N580's power input. If the power is properly supplied, the "Power" LED will show a solid red color and the "Work" LED will show a twinkling green color.

# **3. Utility Configuration**

### 3.1 Download the Utility

Be sure you have administrative privileges and disable any firewall/anti-virus software when installing software. **Configuration utility download address:** 

#### 3.2 Starting the Configuration Utility

#### 3.2.1 Discovering Your Device Server

USR-N580 defaults to a static IP address 192.168.0.7, you can set the computer to a static IP address that in the same network segment with N580, like 192.168.1.201. Then directly connect the Ethernet port of N580 to the computer via a Ethernet cable.



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brganize • Disable this network device     Ethernet Disabled   Bable di B	🚽 🔹 🛧 👰 > Control Panel > Network an	d Internet → Network Connections 🗸 🗸 🗸	Search Netwo	rk Conne	ections	Q
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General         You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.         Obtain an IP address automatically         Image: Setting Settings         Image: Setting Setting Settings         Image: Setting Setting Setting Settings         Image: Setting Seting Seting Setting Setting Seting Setting Setting Seti	Ethernet Disabled Realtek PCIe GBE Family Controller	Networking Contract Protocol Version 4 (TCP/IPv4) Properties X				
OK Cancel		General         The rous can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.         Obtain an IP address automatically         IP address:       192.168.0.201         Submet mask:       255.255.0         Default gateway:       192.168.0.1         Obtain DNS server address automatically         IP address:       192.168.0.1         Default gateway:       192.168.0.1         Obtain DNS server address automatically         IP use the following DNS server addresses:         Preferred DNS server:         Atternate DNS server:            Atternate DNS server:				

In Ethernet Tool, click **Search** to search your LAN for N580 device servers. The configuration screen will show the N580 devices that were found on the LAN.

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1. Double-click the device name field, enter the default username (admin) and password (admin) to log in to the device's web page.

EthernetTool		- D X
Device 中文		
DeviceIP DeviceMane MAC Ver Web		
192.168.0.7 VEE-MERI 90 A5 25 18 A5 73 7008		
	Please enter usemame and password X	
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	PWD: *****	
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C Dericel? DeviceMane NAC Ver Neb 192:168.0.7 US2-250 0C 45 25 D3 45 73 7005 Bazio Set If Type: statio IF Nedal disticIF: 192:168.0.7 SubmetKach: 255.255.255.0 Geterne: 192:188.0.1 Save Search	Vorsion:V1.0.10 Type:H7	Be Honest, Do Best! help • Ru time means the minutes since latest roboot • IX/RX count: TX/RX count give us a calculation of the total bytes we have been received or send.
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2. Or you can right click the device name to directly log in to its webpage.



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IP Bevicel	Kane XXX	Ver Neb	Version:V1.0.10 Typ	5e:H7		主义
188 0 7 VEB	-8680 9C A6 26 3	Reboot External web config Restore/Factory	<del>ب</del> ر ا	USR IOT -10T Experts-	Be Hones	t, Do Best!
	<i>l</i> ] <del>,</del>	opgrade	Current Status	parameter		help
			Local IP Config	Module Name: USR-N580 Firmware Revision: V1.0.10		Run time:
			Port1	Current IP Address: 192.168.0.7		run time means
			Port2	Preferred DNS Server: 114.114.114.114 Standby DNS Server: 223.5.5.5		latest reboot
			Port3	MAC Address: 9C-A5-25-DB-A5-F3		TX/RX Count:
			Port4	Run Time: Oday: Ohour: 13min PORT Status: port1 *		us a calculation of
			Port5	Conn Status A(ETH): LISTEN		have been
			Port6	TX Count A(ETH): 0 bytes RX Count A(ETH): 0 bytes		received of send.
			Port7	Conn Status B(ETH): IDLE		
			Port8	TX Count B(ETH): 0 bytes RX Count B(ETH): 0 bytes		
Set			Web to Serial			
IP Туре	static IP		Misc Config			
MeduleStaticIP:	192, 168. 0, 7		Module Mange			
SubnetNask	255.255.255.0					
Gateway	192.168.0.1					
	Same					
	uave					
	Search					
			Copyright © Jinan L	JSR IOT Technology Limited. All Rights Reserved	we	bsite: www.usriot.com



### 3.2.2 Network Settings

The device server must be assigned a unique IP address that is valid for your network. Both fixed and dynamic IP addresses are supported.

IP DeviceRane MAC Ver Veb	Version:V1.0.10 Type	::H7					虫文
148,0.7   11518-147590   90° A57 25° DB 145° F3   7008   √		USR IOT 101 Experts				Be Hones	st, Do Best!
	Current Status		param	eter			help
	Local IP Config	IP Type: Static	IP 1				. TB type:
	Port1	DNS type: Auto	T	0	1/4	1	StaticIP or DHCP
	Port2	Static IP: 192	168	U			<ul> <li>StaticIP Module's static ip</li> </ul>
	Port3	Submask: 255	255	255	0	1	<ul> <li>Submask</li> <li>usually</li> </ul>
	Port4	Gateway: 192	168	0	1	]	255.255.255.0
	Port5	Dns Server: 114	114	114	114		<ul> <li>Gateway Usually router's ip</li> </ul>
	Port6	Spare Dns Server: 223	5	5	5		address
	Port7		Save (	Cancel			
	Ports						
Set	Web to Secol						
IF Type. static IP	Misc Config						
MobileStatioIF 192.168.0.7	Module Manne						
SubnetWask: 255, 255, 0							
Gateway: 192.168.0.1							
Seve							
Search							

#### > Static IP address

To assign a fixed IP address, the **IP Type** must be set to **Static IP**. You also need to modify the **Static IP** address, **Submask**, **Gateway** and **DNS** parameters. Make sure that the IP address is different from other network devices in the LAN.

#### > DHCP

Instead of assigning N580 device's IP address, you will need to configure the device to get its IP address from the appropriate server. Set the **IP Type** to **DHCP**, then the IP address and other parameters will be assigned automatically. In this mode, cannot directly connect the device to the computer.

If the device has been configured correctly, you should be able to ping its IP address form the PC.



### 3.2.3 Serial Port Settings

The following serial port parameters need to be set correctly according to your serial device to ensure proper communication.

Parameter	Setting	Default	Description
Baud rate	$600 \sim 921600 { m bps}$ (User defined)	115200bp s	Data transmission rate.
Data bits	7, 8	8	The size of each data character.
Stop bits	1, 2	1	The size of the stop character.
Parity	NONE, EVEN, ODD	NONE	Even and Odd parity provide rudimentary error checking.
Flow control	NFC, FCR (Software flow control)	NFC	Suspend and resume data transmission to ensure that data is not lost.

Serial parameters can be set in **Port** interface:

icalP DeviceNess NAC Ver Neb	Version:V1.0.10 T	ype:H7			中文
2.109 U.T. VSETTOOL (0. 10 09 15 AS 33, 7006, 4)	25	USR IOT -10T Experts-		Be Hones	st, Do Best!
	Current Status	R.	Parameter		Help
	Local IP Config	Baud Rate:	115200 bps(600~100000	0)	to diama
	Porti	Data bit:	8 v bit		1~65535, when
	Port2	Parity:	None T		this to 0 means
	Port3	Stop bit:	1 V bit		use random local port
	Port4	HOW CIT:	0 (0~255)ms		Remote Port     Le65535
	Dourt 5	UART Packet Length:	0 (0~1460)chars		Packet
	Ports	Sync Baudrate(RF2217 Similar):	2		time/length default 0/0,
	Ports	Enable Uart Heartbeat Packet:			means automatic packet
	PortZ	Socket A	Parameters		mechanism; you can modify it as a
	PortB	Work Mode:	TCP Server V None	•	none-zero value
	Web to Serial	Local Fort Number:	23 (1~65535)		
>	Misc Config	PRINT:			
Set	Module Mange	Modbus Poll:	Response Timeout: 200	(10~9999)ms	
IP Type static IP v		Modbus TCP Exception:	( D)	_	
Wodul =StaticIP: 192.168.0.7		Enable Net Heartbeat Packet:			
Subnet/Wask: 255.255.255.0		Registry Type:	None   Location C	onnect With *	
Gateway: 192,168.0.1		Socket B	Parameters		
		WorkMode;	NONE		
Bave	Copyright @ Jinan	USR IOT Technology Limited. All Righ	nts Reserved		ebsite: <u>www.uariot.com</u>
Search					

About how to select the most appropriate **Operation Mode** and the additional information on each operation mode, please refer to **chapter 4**.



#### **3.2.4 Miscellaneous Settings**

You can change some basic parameters like Module name, Username and Password in this interface.

Devisation: V1.0.10 Type	a:H7		中文
0.7 NSE-HERO 90 X6 25 UB A5 73 7008 4	USR IOT 10T Experts	Be F	lonest, Do Best!
Current Status	param	eter	help
Local IP Config	Module Name:	USR-N5B0	
Port1	Websocket Port :	6432	<ul> <li>Module Name max length is 32</li> </ul>
Bort?	Websocket Direction :	UART1 •	char • Webcocket Port
1012	Webserver Port:	80	default 6432
PORT3	User Name:	admin	Websocket     Direction
Port4	Pass Word:	sdain	default UART1
Port5	Uart Cache:	0	<ul> <li>Web port default 80</li> </ul>
Port6	Reset Timeout:	0 (60~65535)	• User Name
Port7	Save	Cancel	default admin
Port8			<ul> <li>Pass word default admin</li> </ul>
Web to Serial			Uart Cache     Whather caching
Mise Config			serial data when
Notule Maga			connection, default
Russ statis TP			Boset Timeout
			default 0, 0-60
dulestaticif: 182.105.0.7			>60 mean when
bne (Wask			received during
teray: 192.168.0.1			this time, the device will restart
5			
Copyright @ Jinan U	SR IOT Technology Limited. All Rights Reserv	ed	website: www.usriot.com
Frind			

#### 3.2.5 Restore to Factory Default Settings

There are three ways to restore the device to factory settings.

1. There is a "Reload" button in the device. After power on, press and hold the "Reload" button for 3~15s to restore the N580 device to factory settings.





#### 2. Restore via web page or configuration utility:

Version:V1.0.10 T	ýpe:H7		空
ess.	USR IOT -IOT Experts-	Be Hon	est, Do Best!
Current Status	Firmware	upgrade	help
Local IP Config	Firmware file: Please select firmware file	Select the file Flashing the firmware	• Firmware
Port1	Restore f	actory	upgrade: Flash the device's
Port2	Bestore factory	Restore factory	firmware to the version you
Port3			uploaded
Port4	Restart Module	Restart Module	Restore factory:
Port5			factory and
Portó			Restart:
Port7			Click to make your config take
Port8			effect
Web to Serial			
Misc Config			
Module Mange			
1			

#### 0r

eIP DeviceN	ne NAC Ver Neb	Version:V1.0.10 Ty	pe:H7	世文
165 D. 7 USR-	F60 cer 45 cer me ver en 1 2000 / Reboot External web config Restore Factory	<del>ا</del>	USR IOT -TOT Experts-	Be Honest, Do Best!
	Upgrade	Current Status	parameter	help
		Local IP Config	Module Name: USR-N580	. Qun time:
		Port1	Current IP Address; 192.168.0.7	run time means
		Port2	Preferred DNS Server: 114.114.114.114	the minutes since latest reboot
		Port2	MAC Address: 9C-A5-25-DB-A5-F3	• TX/RX Count:
		POILS	Run Time: Oday: Ohour: Omin	TX/RX count give
		Port4	PORT Status: port1 V	the total byte we
		Port5	Conn Status A(ETH): LISTEN	have been
		Dette	TX Count A(ETH): 0 bytes	TELEVEN OF SERIO
		Porte	Conn Status B(ETH): 1DLE	
		Port7	TX Count B(ETH): 0 bytes	
	3	Port8	RX Count B(ETH): 0 bytes	
lat		Web to Serial		
IP Тура: [	tatic IP u	Misc Config		
Modul «Stati alf:	92. 168. 0. 7	Module Mange		
SubnotNesk:	65.256.255.D			
Gataway:	92. 168. 0. 1			
	Save			
	Saurah			

**3.** Enter AT command mode, send "AT+RELD" from the serial port. For details, please refer to the document: **AT Command Set.** 



#### 3.2.6 Update Firmware

Firmware updates can be made via webpage or configuration utility. Users can consult with sales or technical support about the firmware. It is best to connect the device directly to the computer when upgrading.

1. After searching the device, right click the device name and select the **Upgrade** to start upgrading the firmware.

rvice 中文				
self DeviseHase	MAC	Ver Neb		
92, 160, U. 7 UCN, 10500	Reboot	and the second division of the second divisio		
	External web	config		
	Restore Fact	огу		
	Upgrade			
- 5.4				
c Sat				
is Sat IP Type:tabi	• IF	>		
is Sat IP 1920:	9. IF ∽ 58. 0. T			
is Set IP 1990-: stori Medul StatisT: [152 h Subseffack 255 2	9. 17 v 99. 0. 7 55 255 D			
ic Sot IP Type: story Nodell Stariell: SubcoHalo Getway: 192.1	9.17 → 58.0.7 55.255.0 58.0,1			
ie Sae IP Type: Rodal.Stati.dIP: SabaseMad: Gatevay:	2. 17 ~ ~ ; 38. 0. 7			
z Sat IP 1999- Etel Rodul aStati eIP: 1922 h SubaseSade Gatevay: 1952 h	9. IF ~ ] 60. 0. 7 55. 555. 0 88. 0, J Surv			
is Sat IP 199+: <u>stati</u> Woodal AStatialT: 1992 P Sahara Mada Gatevay: 1922 P	5 17 ~ ) 51 0. 7	>		

2. Make sure the device and computer are in the same network segment. Select the correct bin file to download.





Local IP Config       Firmware file: Please select firmware file       Select the file       Flashing the firmware       Firm upp         Port1       Restore factory       Restore factory       Flashing the firmware       Flashing the firmware         Port2       Restore factory       Restore factory       Flashing the firmware       Flashing the firmware         Port3       Restore factory       Restore factory       Restore factory       Versi         Port4       Restart Module       Restart Module       Rest       Rest         Port5       Restore factory       Rest       Rest       Rest         Port6       Port7       Port8       Rest       Rest       Rest	Iware rade: h the device': ware to the ion you aded tore factory ore your meters to ory and art
Port1     Restore factory     upg       Port2     Restore factory     Flass       Port3     Restore factory     uplo       Port4     Restart     • Rest       Port5     • Rest     • Rest       Port6     • Port7     • Rest       Port8     • Otta     • Rest	rade: h the device' ware to the ion you aded tore factory ore your meters to ory and art
Port2     Restore factory     Restore factory     firm versuplo       Port3     Restore factory     Restore factory     uplo       Port4     Restart Module     Restart Module     Rest       Port5     Restart Module     Restart Module     Rest       Port6     Rest     Rest     Rest       Port7     Port8     Rest     Rest	ware to the ion you aded to <b>re factory</b> ore your meters to ory and art
Port3     Restart     Restart       Port4     Restart Module     Restart Module       Port5     Restart Module     Restart Module       Port6     Restart     Restart Module       Port7     Port8     Restart Module	aded tore factory ore your meters to ory and art
Port4     Restart     • Restart       Port4     Restart Module     Restart Module       Port5     Port6       Port7     Port8	tore factory ore your meters to ory and art
Port5 Port6 Port7 Port8 Port8 Port6 Port8 Port8 Port6 Port7 Port8 Port8 Port7 Port8 Port8 Port7 Port8	meters to ory and art
Port6 Port7 Port8	art
Port7 Click Your Port8 effec	4
Port8 effec	to make
	t t
Log	
Misc Config	
Module Mange	

# 4. Selecting an Operating Mode

#### 4.1 Overview

This chapter covers configuration of a device port's operation mode. Configuring the operation mode for the two sockets via the webpage or AT command.

Socket A: TCP Client, TCP Server, UDP Client, UDP Server, Httpd Client

Socket B: TCP Client, UDP Client

Which operation mode you select will depend on your specific application. For the detailed information of each operation mode, please check below instructions.



### 4.2 TCP Client mode



- 1. In TCP Client mode, USR-N580 can actively establish a TCP connection with a server computer. Once the connection is established, data can be transmitted in both directions between the serial device and the server.
- Identify disconnects. After connection established, it sends keepalive searching packet every 15 seconds. Once there is an interrupt, it can be detected rapidly then make USR-N540 disconnect from former connection and reconnect.
- 3. TCP Client mode supports RFC2217, USR Cloud and short connection function.
- 4. Under the same LAN, please ensure the IP address and gateway are in the same network segment if the N580 is set to a static IP address.
- 5. In this mode, N580 can connect to the same LAN's IP address or a public IP and domain name.
- 6. It is recommended to set the local port of N580 to 0 to avoid reconnection failures caused by server determination of connection status anomalies.
- 7. Test example:
- Set the N580 to TCP Client, Remote server address: 192.168.0.201, Remote port: 8234. Save and Restart the device.



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CeLE Uersiedisne KAU Yer Yeb 2.168.0.77 1055-4580 9C 145.25 105-145.75 100.6 √	25	USR IOT -IOT Experts-		Be Hones	t, Do Best!
	Current Status	11	Parameter		Help
	Local IP Config	Baud Rate:	115200 bps(600~1000	000)	I would Dead
	Port1	Data bit:	8 v bit		1~65535, when
	Port2	Parity:	None T		this to 0 means
	Port3	Flow ctrl:	NONE •		port
	Port4	UART Packet Time:	0 (0~255)ms		<ul> <li>Remote Port 1~65535</li> </ul>
	Port5	UART Packet Length:	0 (0~1460)chars		Packet     time/length
	Port6	Sync Baudrate(RF2217 Similar):	N		default 0/0, means automatic
	Port7	Enable Uart Heartbeat Packet:	Darameters		packet mechanism: you
	Port8	Work Mode:	TCP Client V None	•	can modify it as a
	Web to Serial	Remote Server Addr:	192.168.0.201		
# Set	Misc Config	Local/RemotePort Number;	0 8899 (1^	65535)	
IP Type:	Module Mange	Timeout Reconnection :	0 (0~99999)s		
Modul =StaticIP: 192.168.0.7		PRINT:	8		
SubnetMask: 255.255.0		Modbus Poil:	Response Timeout: 200	(10~9999)ms	
Gateway: 192.168.0.1		Modbus TCP Exception:			
		Enable Net Heartbeat Packet:	6		
Save	<u>.                                    </u>	Registry Type:	None   Location	Connect With *	-
Search	Copyright © Jina	n USR IOT Technology Limited. All Righ	hts Reserved	we	bsite: <u>www.usriot.com</u>

Open USR-TCP232-Test software, set it to TCP server. Local IP is the PC's IP 192.168.0.201, set the local port to 8234. Then click Listening. Set the serial parameters same with N580 device.

COMSettings	COM port data receive		Network data receive		NetSettings
PortNum COM15 BaudR 115200 DPaity NONE DataB 8 bit StopB 1 bit Close Recv Options Receive to file Add line return Receive As HEX Receive Pause Sere Clear					(1) Protocol TCP Server (2) Local host IP [192.168.0.201] (3) Local host port [8899] Disconnect Recv Options Receive to file Add line return Receive As HEX Receive Pause Same Clear
Send Options Data from file Auto Checksum Auto Clear Input Send As Hex Send Recycle Interval 12000 ms Lud	Jinan USR Technology Co., Ltd.	Send	Peers: 192.168.0.7:23399 <b>v</b> http://en.usr.on	Send	Send Options Data from file Auto Checksum Auto Clear Input Send As Hex Send Recycle Interval 1000 ms Load Clear



#### Data transmission





#### 4.3 TCP Server mode



- 1. In TCP server mode, there is also Keepalive function for real-time monitoring of the integrity of the connection.
- 2. It is usually used to communicate with TCP clients within the LAN. It is suitable for the scene where there is no server in the LAN and there are multiple computers or mobile phones requesting data from the server.
- 3. Supports USR similar RFC2217 function.
- 4. In this mode, N580 actively listens to the set local port, responds to the connection request and creates a TCP connection. When the N580 serial port receives the data, it sends it to all the clients that have established the connection. If access the N580 TCP Server across the public network, you need to do port mapping on the router.
- 5. TCP server mode also supports up to 8 simultaneous client connections. The local port is a fixed value and cannot be 0.
- 6. When the number of connected clients exceeds the set maximum, defaults to kick out the old connection from the new connection. You can change this function through the web page.
- 7. Test example:
- Set the N580 to **TCP server**, local port to **23**, **Save** and **Restart** the device.



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165.0,7 U	eNane HAC IX-JI560 90 A5 25 DE A5 5	Ver Web 3 7008 -/	25	USR IOT -TOT Experts-		Be Hone	st, Do Best!
			Current Status		Parameter		Help
			Local IP Config	Baud Rate:	115200 bps(600~10000	00)	Local Deat
			Port1	Data bit:	8 V bit		1~65535. when TCP Client, set
			Port2	Stop bit:	1 • bit		this to 0 means use random local
			Port3	Flow ctrl:	NONE T		port
			Port4	UART Packet Time:	0 (0~255)ms		1~65535
			Port5	UART Packet Length:	0 (0~1460)chars		<ul> <li>Packet time/length</li> </ul>
			Port6	Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet:	2		default 0/0, means automatic
			Port7	Socket A	Parameters		mechanism; you
			Port8	Work Mode:	TCP Server  None		none-zero value
		>	Web to Serial	TCP Server MAX Sockets:	8 V Up to MAX KICK V		
Set			Misc Config	Local Port Number:	23 (1~65535)		
IF Туре:	static IF		Module Mange	PRINT: Modbus Poll:	Response Timeout: 200	(10~9999)ms	
ModuleStatioL	192.168.0.7			Modbus TCP Exception:	8	1	
SubnetRask:	255. 255. 256. D			Enable Net Heartbeat Packet:	0		
Gateway:	192.168.0.1			Registry Type:	None   Location	Connect With *	
	1			Socket B	Parameters	Ξ	
	Save			WorkMode:	NONE •		
	Search		Copyright @ linar	n USR IOT Technology Limited. All Righ	nts Reserved	v	vebsite: <u>www.usriot.com</u>

#### > Open **USR-TCP232-Test** software, set it to **TCP Client**, connect to the IP and port of N580. Click **Connect**.





### 4.4 UDP Client Mode



- 1. In UDP Client mode, N580 will only communicate with the destination IP and port.
- 2. It is usually used in data transmission scenarios where the packet loss rate is low, the packet is small and the transmission frequency is fast, and the data should be transmitted to the specified IP.
- 3. Test example:

Set the N580 to UDP Client, Remote server address is the computer's IP, set the Remote Port to 8234. Click Save then Restart the device.

.10 Type:H7	虹
USR IOT Be Horn	est, Do Best!
Parameter	Help
Baud Rate: 115200 bps(600~1000000)	
Data bit: 8 ▼ bit	1~65535. when TCP Client set
Parity: None  Stop bit: 1  hit	this to 0 means use random local
Flow ctri: NONE	port
UART Packet Time: 0 (0~255)ms	<ul> <li>Remote Port 1~65535</li> </ul>
UART Packet Length: 0 (0~1460)chars	Packet     time (locath
Sync Baudrate(RF2217 Similar):	default 0/0, means automatic
Socket A Parameters	packet mechanism; you
Work Mode: UDP Client 🔻 None 🔻	can modify it as a none-zero value
Remote Server Addr: 192.168.0.201 [N/A]	
Local/RemotePort Number: 0 8234 (1~65535)	
UDP Not Check Remote PORT;	
Timeout Reconnection : 0 (0~99999)s	
PRINT:	
Modbus Poll: Kesponse Timeout: 200 (10×9999)m	15
Enable Net Heartheat Parket:	
	Stop       Discrete         Baud Rate:       115200       bos(600~1000000)         Data bit:       8 • bit         Parity:       None ▼         Stop bit:       1 • bit         Flow crdi:       NONE ▼         UART Packet Lingth:       0         Enable Uart Heartbeat Packet:       0         Work Mode:       UDP Client.         None       ▼         Remote Server Addr:       192.168.0.201         UDP Not Check Remote PORT:       110.0.499999)s         PRINT:       Response Timeout:       200         Modbus Poll:       Response Timeout:       200         Modbus Poll:       0       10.49999)n <td< td=""></td<>



Open USR-TCP232-Test, set it to UDP mode, Local host IP is the PC's IP, Local host port is the Remote



≻ Click to open the serial port, first send data from the serial port. After receiving the data, the **Remote IP** and Port number of the test software becomes the Local IP and Port of N580. Then can also send data from network side to the serial port.



🙀 USR-TCP232-Test RS232 to Ethernet Convert tester



#### 4.5 UDP Server Mode



In UDP Server mode, the source IP address is not verified. After receiving a UDP packet, the destination IP is changed to the source IP and port number of the data. When sending data, it is sent to the last IP and port number that have communicated.

Test example:

- Set the N580 to **UDP server**, **Local port** to 20108. **Save** and **Restart** the device.
- Open two USR-TCP232-Test software, set to UDP mode, Local host IP is the PC's IP, set two different Local host port. Click Connect. In network side, Remote IP is the N580's IP address, Port is 20108.
- Data from two network ports all can be sent to the serial side, but when serial data will only be sent to the last IP and port that have communicated.





### 4.6 Httpd Client Mode



- 1. In this mode, the user's terminal device can send request data to the specified HTTP server through N580, and then N580 receives and parses the data from the HTTP server and sends to the serial device.
- 2. When N580 sends data to HTTP server via serial port, the required URL and header, destination domain name /IP, port and other information can be set by N580. All you need to do is send the request data, then N580 will automatically add URLs and headers. You can also choose whether to remove the header of the returned data.
- 3. Test example:
- Connect the device to a router that can access the Internet.
- Set the Work mode to httpd client, set the Remote server address, port, URL, Header and other information of the server. Save and Restart the device.

al? De	viceNane	RAC .	Ver 1	чb	Version:V1.0.10 T	ype:H7			主主
16 11 30	USE-NEED	9C AG 25 US AS 3	3 7008	1	Ŕ	USR IOT -IOT Experts-		Be Hone	st, Do Best!
					Current Status	Socket A	Parameters		mechanism; you
					Local IP Config	Work Mode:	Httpd Client V None	•	none-zero value
					Port1	Httpd Type:	GET  Remove Httpd Head	2	
					Port2		/1.php?		
					Bort 2	Httpd URL(<100byte):			
					Ports				
					Porte		User_Agent: Mozilla/4.0		
					Ports	Httpd Client Header(<180byte):			
					Port6				
					Port7				
					Port8	Remote Server Addr:	[118.190.93.84]		
Se +				>	Web to Serial	Local/RemotePort Number:	20108 80 (1~6)	5535)	
		121 11			Misc Config	Server Response Time :	10 (3~255)s		
IF Туре	DHCP/Aut	:0 If 🗸			Module Mange	PRINT:	0		
We dul eStati	eIF: 172.16.1	1.30				Modbus Poli:	Response Timeout: 200	(10~9999)ms	
SubnetWark	255, 255	255.0				Modbus TCP Exception:			
Gs tev ay	172.16.1	1.1				Registry Type:	None I location C	onnect With *	
		Save				Socket B	Parameters		
	-			_		WorkMode:	NONE T		-
	S	e ar ch			Copyright © Jinari	USR IOT Technology Limited. All Righ	its Reserved		ebsite: <u>www.usriot.com</u>

When send "data=1234" from the serial port, will receive "1234" returned from the HTTP test server.



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![](_page_28_Picture_2.jpeg)

# **5. General Functions**

### 5.1 Serial Packaging Mechanism

USR-N580 can configure serial port packaging time and serial port packaging length. USR-N580 will make packaging for the data of serial port according to the packaging length and packaging time in the transparent transmission mode.

Example for judgment of packaging time and packaging length:

- Set packaging time as 10ms, packaging length as 512 bytes. When serial port received data, USR-N580 will package and send it to network if the interval time of receiving data is over than 10ms or data length is more than 512.
- 2. If the value of packaging time or packaging length is 0, the packaging rule is effective for non-zero one.
- 3. Set packaging time and length as 0.

USR-N580 will conduct default packaging time when packaging time is set as 0ms. When serial port receiving data, USR-N580 will package and send the data to network if interval time more than packaging time of sending 4 bytes. For example, baud rate 115200, packaging time for 4 bytes is T=0.4ms, when the calculated value is smaller than 0.1ms, packaging time can be calculated as 0.1ms.

#### T= 1/baud rate\*10\*4

When USR-N580 receives data from network and then send to serial port, as the limit of serial port speed, user have to control the flow, if not the problem of data overflow on serial port side will occur. So data flow is required to calculated when sending data from network to serial port.

Example:

Network sends data in m bytes every n seconds. Method of checking if there is overflow: ( Supposed network condition is good and network data transmission time is negligible)

If there is no overflow, m bytes data must be transmitted within n seconds, then the transmitting time of M bytes data:

$$T = \frac{\mathbf{1}}{\mathsf{Baud Rate}} * 10 * \mathsf{m}$$

If n >2T, then data will not overflow, USR-N580 can work normally. Just need keep n>T under baud rate 9600.

### 5.2 Flow Control

- 1. NONE: No flow control.
- 2. Xon/Xoff: Software flow control function. It is disabled by default. In this mode, the command character of serial port sends data is 0x11. 0X13 is not allowed.

![](_page_29_Picture_0.jpeg)

### 5.3 RFC2217

Version:V1.0.10 h	VDE:H7 USR IOT -IOT Experts-	Be Hone	±±
Current Status		Parameter	Help
Local IP Config	Baud Rate:	115200 bps(600~1000000)	
Derti	Data bit:	8 v bit	<ul> <li>Local Port 1~65535. when</li> </ul>
POTEI	Parity:	None •	TCP Client, set
Port2	Stop bit:	1 V bit	use random local
Port3	Flow ctrl:	NONE	port
Port4	UART Packet Time:	0 (0~255)ms	<ul> <li>Remote Port 1~65535</li> </ul>
Port5	UART Packet Length:	0 (0~1460)chars	Packet
Roito	Sync Baudrate(RF2217 Similar):		time/length default 0/0,
Port6	Enable Uart Heartbeat Packet:		means automatic
Port7	Socket A	Parameters	mechanism; you
Port8	Work Mode:	TCP Client V None V	can modify it as a none-zero value
Web to Serial	Remote Server Addr:	test.usr.cn [118.190.93.84]	
Misc Config	Local/RemotePort Number:	20108 80 (1~65535)	
Module Mange	Timeout Reconnection :	0 (0~99999)s	
	PRINT:		
	Modbus Poll:	Response Timeout: 200 (10~9999)ms	
	Modbus TCP Exception:		
	Enable Net Heartbeat Packet:		
	Registry Type:	None    Location Connect With	

During the operation of USR-N580-H7, the serial port parameters of N580 can be dynamically changed from the network side through the similar RFC2217 function. Default is enabled. **TCP Client**, **TCP Server**, **UDP Client**, **UDP Server**, and **Multicast** mode all support RFC2217.

This command is effective immediately and no need to restart.

1. This function is modified on the basis of RFC2217 protocol to improve the accuracy of transmission. Protocol length is 8 bytes, values take for example is in HEX:

![](_page_30_Picture_0.jpeg)

Name	Packet Header	Baud Rate	Bytes parameter	Parity
Bytes	3	3	1	1
Explanation	reduce misjudgment	High is in front, smallest is 600(00 02 58)	data bit/stop bit/parity	Sum of 4 bits without the header, ignore the high bit
(115200, N,8,1)	55 AA 55	01 C2 00	03	C6
(9600, N,8,1)	55 AA 55	00 25 80	03	A8

Serial parameter bit:

Bit	Explanation	Value	Description
		00	5 bits
1.0	Data hit	01	6 bits
1:0	Data Dit	10	7 bits
		11	8bits
2	Stop Dit	00	1 bit
2	зтор ви	01	2bits
2	Darity Enable	00	Disable Parity
5		01	Enable Parity
		00	ODD
E.4	Darity Tyma	01	EVEN
5:4	Pailty Type	10	Mark
		11	Clear
8:6	NC	00	0

- 2. Enable **Sync Baudrate(RF2217 Similar)** function when needed; send RFC2217 data package from the network side to N580 to change the corresponding serial parameters.
- 3. Test example:

Protocol command: 55AA5501C2008346 set the serial parameters to 115200,N, 8, 1 55AA550025808328 set the serial parameters to 9600, N, 8, 1

![](_page_31_Picture_0.jpeg)

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![](_page_31_Figure_3.jpeg)

#### 5.4 Modbus

Modbus RTU to Modbus TCP protocol conversion

![](_page_31_Picture_6.jpeg)

- 1. Open the webpage of N580, set it to **TCP client** or **TCP server**.
- 2. Select Modbus TCP.
- 3. Save the parameters.

![](_page_32_Picture_0.jpeg)

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![](_page_32_Picture_3.jpeg)

4. Query and verify Modbus TCP to Modbus RTU through Modbus Poll and Modbus Slave software.

🖬 Modbus Slave - Mbslav1 🛛 — 🗆 🗙	Modbus Poll - Mbpoll1 - □ ×
File Edit Connection Setup Display View Window Help	File Edit Connection Setup Functions Display View Window Connection Setup X
Connection Setup	Connection CK 2 Modbus TCP/IP
Service Serial Port	Cancel Cancel Commentation
Port 3 Cancel Port 3 Flow Control Flow Control B Data bit:	9600 Baud     Response Timeout       8 Data bits     1000 [ms]       Even Parity     Delay Between Pols
None Parity     TCP/IP       1 Stop Bit     Port   Port 502 Ignore Unit ID	1 Stop Bit Advanced 20 [ms] Remote Modbus Server IP Address or Node Name
	- 192.168.07 -
7 0	Server Port Connect Timeout  IFv4
8 0	23 3000 [ms] O IPv6
0	

5. Click OK to update Modbus Slave data.

![](_page_33_Picture_0.jpeg)

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xi Modbus Slave - Mbslav1 → □ × File Edit Connection Setup Display View Window Help		Help	11 Setup Functions Displ	ay View	□ Windov	N	
0 🗳 🛛	<b>- 6</b>   🗖   🖳 1	à   🤋 😽	🗋 🗅 🛎 🖬 🎒 🗙 🗂 🗒 🚊 🕮 🕮 105 06 15 16 17 2		22 23	2 23   TC 🗵	
🕎 Mbsl	av1		Mbpoll1				
ID = 1: I	F = 03		Tx = 199: Err = 22: ID	= 1: F = 03: SR = 1000r	ms		
	Alias	00000	Alias	00000			
0		2	0	2			
1		5	1	5			
2		Ō	2	0			
3		0	3	0			
4		0	4	0			
5		0	5	0			
6		0	6	0			
7		0	7	0			
8		0	8	0			
9		.0	0	0			

Modbus active polling:

Through the serial port heartbeat packet function of N580, can realize Modbus active polling.

1. Enable **Uart Heartbeat Packet** in the webpage. **Heartbeat Packet** content is the query command.

₹ <sup>®</sup>	USR IOT -IOT Experts-	Be Hone	st, Do Best!
Current Status		Parameter	Help
Local IP Config	Baud Rate:	115200 bps(600~1000000)	Local Port
Port1	Data bit:	8 v bit	1~65535. when TCP Client, set
Port2	Stop bit:		this to 0 means use random local
Port3	Flow ctrl:	NONE V	port Romoto Port
Port4	UART Packet Time:	0 (0~255)ms	1~65535
Port5	UART Packet Length:	0 (0~1460)chars	<ul> <li>Packet time/length</li> </ul>
Port6	Sync Baudrate(RF2217 Similar):		default 0/0, means automatic
Port7	Enable Uart Heartbeat Packet:		packet mechanism: you
Port8	Uart Heartbeat Packet:	HEX: ASCII:	can modify it as a none-zero value
Web to Serial	Beat Time:	30 (1~65535)s	
Misc Config	Socket A	Parameters	
Module Mange	Work Mode: TCP Server MAX Sockets:	TCP Server ▼     ModbusTCP ▼       8 ▼     Up to MAX       73     (1):(55535)	
	PRINT:		
	Modbus Poll:	Response Timeout: 200 (10~9999)ms	
	Modbus TCP Exception:		
	Enable Net Heartbeat Packet:		*
Copyright © Jinan (	JSR IOT Technology Limited. All Righ	nts Reserved v	vebsite: <u>www.usriot.com</u>

![](_page_34_Picture_0.jpeg)

#### 2. Set the Modbus slave software.

3. Check the returned Modbus TCP data.

	🗳 Modb	us Slave - Mbsla	ve1		×	
	Eile E c	onnection Setup		>	<	
		Connection			the second s	
	MI	Connection		ОК		
		Serial Port				
	No cc	Serial Settings		Lancel		
		USB-SERIAL CH3	40 (COM15)	~		
	0	115200 Baud 🖂	Mode	ASCIL		
	2	8 Data bits 🛛 🗸	Elow Contro	d		
	3	None Parity 🔍		″ ]CTS ☑ RTS Toggle		
	4	1 Stop Bit 🗸 🗸	1 [m:	s] RTS disable delay		
	5					
	6	IP Address		Port		
	7	172.16.14.48		5022		
		Any Address	(i) IPv	4		
		Ignore Unit ID	() IPvi	Б		
			_			
	For Help, p	oress F1.	Por	t 15: 115200-8-N-1	4	
Modbus Slave - Mbslave	e1		x c			- 0 X
<u>File Edit Connection Set</u>	tup <u>D</u> isplay \	liew Window	Halp			
			пер			
	1 ? N?		Telb	Network data receive		NetSettings
	1 8 K?		<u>Ti</u> eib	Network data receive	; 23];	NetSettings (1) Protocol
D 📽 🖬 🎒 🛅 🗏 🛱	- • • ×		Пеф	Network data receive <b>C</b> Receive from 192, 168, 0, 7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02	; 23 <b>]</b> ; 00 0C	NetSettings (1) Protocol TCP Client
D			Teh	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02	: 23]: 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client
D			Пер	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02	: 23]: 00 0C 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7
D				Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02	: 23]; 00 0C 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port
D			Пер	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02	: 23]; 00 0C 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23
D	00000 12		Teh	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02	: 23]; 00 0C 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23
□     □ </th <th></th> <th></th> <th>Teh</th> <th>Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02</th> <th>: 23<b>]</b> : 00 0C 00 0C 00 0C 00 0C</th> <th>NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23 - Disconnect</th>			Teh	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02	: 23 <b>]</b> : 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23 - Disconnect
□     □     □     □     □     □     □       □     Mbslave1     □     □     □     □       □     □     □     □     □       □     □     □     □     □       □     □     □     □			Teh	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02	: 23 <b>]</b> : 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23  Disconnect
□     □ </th <th></th> <th></th> <th>Teh</th> <th>Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02</th> <th>: 23<b>]</b> : 00 0C 00 0C 00 0C 00 0C</th> <th>NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23 </th>			Teh	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02	: 23 <b>]</b> : 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23 
Image: Second			Teh	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02	: 23 ] : 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23  Recev Options Receive to file
Image: Second			Teh	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02	: 23 ] : 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23 · . Disconnect Recev Options Receive to file ✓ Add line return
Image: Second state			Teh	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02	: 23 ] ; 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23  Pisconnect Receive to file Add line return Receive As HEX
Image: Constraint of the second se			<u>Teh</u>	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02	: 23 ] ; 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23 Disconnect Recev Options Receive to file Add line return Receive As HEX Receive Pause
Image: Constraint of the second state of the second sta			Teh	Network data receive Receive from 192, 168, 0, 7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02	: 23]; 00 0C 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23 © Disconnect Receive Poins Receive to file V Add line return V Receive As HEX Receive Pause Save Clear
Image: Constraint of the second se			Ţeh	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02	: 23]; 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23 © Disconnect Rece Options Receive to file V Add line return V Receive As HEX Receive Pause Save Clear Send Options
Image: Constraint of the second se			Ţeh	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02	: 23]; 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23 © Disconnect Rece Options Receive to file V Add line return V Receive As HEX Receive Pause Save Clear Send Options Data from file
Image: Constraint of the second se			Ţēh	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02	: 23]; 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23 © Disconnect Rece Options Receive to file V Add line return V Receive As HEX Receive Pause Save Clear Send Options Data from file Auto Chicker
Mbslave1       ID = 1: F = 03       Alias       0       1       2       3       4       5       6			Ţēh	Network data receive Receive from 192.166.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02	: 23]; 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23 © Disconnect Receive Post Receive to file ✓ Add line return ✓ Receive As HEX Receive Pause Save Clear Send Options Data from file Auto Checksum
Image: Constraint of the second state of the second sta			Ţeh	Network data receive Receive from 192.166.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02 00 00 00 00 00 00 05 01 03 02	: 23]; 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23 © Disconnect Receive Post Receive to file ✓ Add line return ✓ Receive As HEX Receive Pause Save Clear Send Options Data from file Auto Checksum Auto Clear Input
Mbslave1       ID = 1: F = 03       Alias       0       1       2       3       4       5       6			Ţeh	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 University of the second	: 23 ] : 00 0C 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23 © Disconnect Receive Post Receive to file Add line return Receive As HEX Receive As HEX Receive Pause Save Clear Send Options Data from file Auto Checksum Auto Clear Input Send As Hex Send Recycle
Mbslave1       ID = 1: F = 03       Alias       0       1       2       3       4       5       6			Ţeh	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 LocalHost 192.168.0 .20 http://en.usr.cn	: 23 ] : 00 0C 00 0C 00 0C 00 0C 00 0C	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Pott 23 Disconnect Receive Pott 23 NetSetive Fause Receive to file Add line return Receive As HEX Receive As HEX Receive Pause Save Send Options Data from file Auto Checksum Auto Clear Input Send As Hex Send Recycle Interval 225 me
Image: Constraint of the second se			Ţeh	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 LocalHost 192.168.0 .20 http://en.usr.cn	: 23]: 00 0C 00 0C 00 0C 00 0C 11 Port 64026 Send	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23 © Disconnect Recev Options Receive to file Add line return Receive As HEX Receive As HEX Receive Pause Save Clear Send Options Data from file Auto Checksum Auto Checksum Auto Clear Input Send As Hex Send Recycle Interval 225 ms Load Clear
Image: Constraint of the second se			Ţeh	Network data receive Receive from 192.168.0.7 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 00 00 00 00 00 05 01 03 02 LocalHost 192.168.0 .20 http://en.usr.on	: 23]: 00 0C 00 0C 00 0C 00 0C 00 0C 1] Port 64026 Send	NetSettings (1) Protocol TCP Client (2) Server IP 192.168.0.7 (2) Server Port 23 © Disconnect Receive Port 23 © Disconnect Receive to file V Add line return V Receive As HEX Receive Pause Save Clear Send Options Data from file Auto Checksum Auto Clear Input Send As Hex Send Recycle Interval 225 ms Load Clear

![](_page_35_Picture_0.jpeg)

![](_page_35_Figure_3.jpeg)

![](_page_35_Figure_4.jpeg)

USR-N580 supports Modbus poll function. Set the device to Modbus poll mode, support query parameters via multiple masters.

1. Enable **Modbus poll** function, set the **Response Timeout**.

Version:V1.0.10 Ty	уре:Н7	中文
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	USR IOT -IOT Experts-	Be Honest, Do Best!
Current Status	Stop bit: 1 V bit	use random local
Local IP Config	Flow ctrl: NONE	Remote Port
Porti	UART Packet Time: 0 (0~2	55)ms 1~65535
Port2	UART Packet Length: 0 (0~14	460)chars • Packet time/length
Port3	Sync Baudrate(RF2217 Similar):	default 0/0, means automatic
Porto.	Enable Uart Heartbeat Packet:	packet
Port4	Socket A Parameters	odbusTCP
Port5	TCP Server MAX Sockets: 8 V Up to MAX	KICK T
Port6	Local Port Number: 23 (1~65	535)
Port7	PRINT:	
Port8	Modbus Poll: 📝 Response Time	out: 200 (10~9999)ms
Web to Serial	Modbus TCP Exception:	
Misc Confia	Enable Net Heartbeat Packet: 📄	
Modulo Mango	Registry Type: None	Location Connect With
Produle Plange	Socket B Parameters	
	WorkMode: NONE •	
	Save Cancel	
Copyright © Jinan	USR IOT Technology Limited. All Rights Reserved	website: <u>www.usriot.com</u>

![](_page_36_Picture_0.jpeg)

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# 2. Open multiple **Modbus Poll** software to connect to N580 as TCP clients, all can get data from the serial Modbus slave side.

📅 Modbus Slave - Mbslave I	🖬 Modbus Poll - Mbpoll I	- Modbus Poll - Mbpoll1	- 😼 Madbus Poli - Mispol 1 -	් 🖞 Modbus Poll - Mbpoll 1 — 🗆 🗙
File Edit Connection Setup Display Help	File Edit Connection Setup Fund View Window Help	tion File Edit. Connection Setup Functi View Window Help	o File Edit Connection Setup Funct View Window Help	File Edit Connection Setup Functions Display View Window Help
06883188	00000×0321	. <b>D @ 8 @ × 17 1</b> ₽ ≙ 1		D 🗃 🖬 🗃 🗙 🗖 🛄 🏦 🕮 🕮 05 06 15 16 17
💭 Mbslave1 👘 🕞	Mopel a	🕞 💾 Mbpolli	Mbpellt	Mbpolt
ID = 1: F = 03	Tx = 135: Err = 0: ID = 1: F = 03:	SR Tx = 121: Err = 0. ID = 1: F = 03: S	F Tx = 107. Err = 1. ID = 1. F = 03. S	Tx = 98: Err = 0: ID = 1: F = 03: SR = 1000ms
Alias 00000	Alias 0000	0 Alias 00000	Alias 00000	Alias 00000
0 18	0	8 0 18	0 18	0 18
1 88	1	8 1 88	1 88	8 1 88
2 77	2	7 2 77	2 77	2 77
3 55	3	5 3 55	3 55	3 55
4 0	4	0 4 0	4	4 0
5 0	5	0 5 0	5 0	5 0
6 0	6	0 6 0	6	6 0
7 0	7	0 7 0	7	0 7 0
8 0	8	0 8 0	8	8 0
9 0	9	0 9 0	9 (	9 0
		1		
		5	For Help, press F1. [192	For Help, press F1. [192,168,0,7], 23

# 5.5 Heartbeat Packet

Heartbeat packet includes network heartbeat and serial port heartbeat. N580 device can send heartbeat packet to the serial port or network side.

Serial heartbeat packet can be sent to the serial port as a fixed query command.

Network heartbeat packet is used for maintaining connection. Only valid in TCP Client and UDP Client mode.

Test example:

#### 1. Enable Serial heartbeat packet (UART heartbeat packet)

![](_page_37_Picture_0.jpeg)

technical support: h.usriot.com

![](_page_37_Figure_3.jpeg)

![](_page_38_Picture_0.jpeg)

#### 2. Enable **Net heartbeat packet**

		Be Hone	st. Do Best!
$\sim$	IOT Experts-	hand and the second	en nen eren er
Current Status	Socket A	Parameters	mechanism; you 🔺
	Work Mode:	TCP Client V None	can modify it as a none-zero value
Port1	Remote Server Addr:	172.16.11.21	
Port2	Local/RemotePort Number:	123 201 (1~65535)	
Port2	Timeout Reconnection :	0 (0~99999)s	
Ports	PRINT:		1. A
Port4	Modbus Poll:	Response Timeout: 200 (10~9999)ms	
Port5	Modbus TCP Exception:		
Port6	Enable Net Heartbeat Packet:		0
Port7	Net Heartbeat Packet:	www.usr.cn	
Port8		HEX: 🔲 ASCII: 🗹	
loa	Beat Time:	30 (1~65535) s	
	Registry Type:	None   Location Connect With	
Misc Config	Socket B	Parameters	
Module Mange	WorkMode:	NONE 🔻	
🔒 USR-TCP232-Test RS	232 to Ethernet Convert tester		
File(F) Options(O) Hel	p(H)		- L A
PortNum COM15 -	COM part data reasing	- Network data receive	
r orunum 1	COM port data receive	Network data receive	NetSettings (1) Protocol
BaudR 115200 -	COM port data receive	Network data receive [Receive from 172.16.14.40 : 23] : www.usr.on	NetSettings (1) Protocol TCP Server
BaudR 115200 V DPaity NONE V	COM port data receive	Network data receive [Receive from 172.16.14.40 : 23]: www.usr.on	NetSettings (1) Protocol TCP Server (2) Local host IP 172 16 14 48
BaudR 115200 V DPaity NONE V DataB 8 bit V	COM port data receive:	Network data receive [Receive from 172.16.14.40 : 23] : www.usr.on	NetSettings (1) Protocol TCP Server (2) Local host IP 172.16.14.48 (3) Local host port
BaudR 115200 V DPaity NONE V DataB 8 bit V StopB 1 bit V	COM port data receive:	Network data receive [Receive from 172.16.14.40 : 23] : www.usr.on	NetSettings (1) Protocol TCP Server (2) Local host IP 172 . 16 . 14 . 48 (3) Local host port 7788
BaudR 115200 V DPaity NONE V DataB 8 bit V StopB 1 bit V	COM port data receive:	Network data receive [Receive from 172.16.14.40 : 23] : www.usr.on	NetSettings (1) Protocol TCP Server (2) Local host IP 172, 16, 14, 48 (3) Local host port 17788 (3) Local host port (3) Local host port (4) Local host port (5) Local host port (5) Local host port (6) Local host port (7) Local h
BaudR 115200 V DPaity NONE V DataB 8 bit V StopB 1 bit V Close Recv Options	COM port data receive:	Network data receive [Receive from 172.16,14.40 : 23]: www.usr.on	NetSettings (1) Protocol TCP Server (2) Local host IP 172, 16, 14, 48 (3) Local host pot 7788 
BaudR 115200 V DPaity NONE V DataB 8 bit V StopB 1 bit V Close Recv Options Receive to file	COM port data receive:	Network data receive [Receive from 172.16.14.40 : 23]: www.usr.on	NetSettings (1) Protocol TCP Server (2) Local host IP 172.16.14.48 (3) Local host pot 7788 Disconnect Receive to file
BaudR 115200 V DPaity NONE V DataB 8 bit V StopB 1 bit V Close Recv Options Receive to file V Add line return Receive & HEY	COM port data receive:	Network data receive [Receive from 172.16.14.40 : 23]: www.usr.on	NetSettings (1) Protocol TCP Server (2) Local host IP 172.16.14.48 (3) Local host pot 7788 Disconnect Receive to file V Add line return Resive & HEX
BaudR 115200 V DPaity NONE V DataB 8 bit V StopB 1 bit V Close Record Options Receive to file V Add line return Receive As HEX Receive Pause	COM port data receive:	Network data receive [Receive from 172.16.14.40 : 23] : www.usr.on	NetSettings (1) Protocol TCP Server (2) Local host IP 172, 16, 14, 48 (3) Local host pot 7788 Disconnect Receive to file V Add line return Receive As MEX Receive Pause
BaudR 115200 V DPaity NONE V DataB 8 bit V StopB 1 bit V Close Recv Options Receive to file V Add line return Receive As HEX Receive Pause Save Clear	COM port data receive:	Network data receive [Receive from 172.16.14.40 : 23]: www.usr.on	NetSettings (1) Protocol TCP Server (2) Local host IP 172.16.14.48 (3) Local host pot 7788 Disconnect Receive to file Add line return Receive As HEX Receive Pause Save Clear
BaudR 115200 V DPaity NONE V DataB 8 bit V StopB 1 bit V Close Recv Options Receive to file V Receive As HEX Receive Pause Save Clear Send Options	COM port data receive:	Network data receive [Receive from 172.16.14.40 : 23]: www.usr.on	NetSettings (1) Protocol TCP Server * (2) Local host IP 172.16.14.48 (3) Local host pot 7788 Disconnect Receive to file V Add line return Receive Pause Save Clear Send Options
BaudR 115200 V DPaity NONE V DataB 8 bit V StopB 1 bit V Close Recov Options Receive to file V Add line return Receive As HEX Receive Pause Save Clear Send Options Data from file	COM port data receive:	Network data receive [Receive from 172.16.14.40 : 23]: www.usr.on	NetSettings (1) Protocol TCP Server (2) Local host IP 172.16.14.48 (3) Local host pot 7788 C Disconnect Receive to file Add line return Receive As HEX Receive Pause Save Clear Send Options Data from file
BaudR 115200 V DPaity NONE V DataB 8 bit V StopB 1 bit V Close Recv Options Receive to file V Add line return Receive As HEX Receive Pause Save Clear Send Options Data from file Auto Checksum Auto Clear Input	COM port data receive:	Receive from 172.16.14.40 : 23] : www.usr.on	NetSettings (1) Protocol TCP Server (2) Local host IP 172.16.14.48 (3) Local host pot 7788 Disconnect Receive to file Add line return Receive As HEX Receive Pause Save Clear Send Options Data from file Auto Checksum Auto Checksum
BaudR 115200 V DPaity NONE V DataB 8 bit V StopB 1 bit V Close Recor Options Receive to file V Add line return Receive As HEX Receive Pause Save Clear Send Options Data from file Auto Checksum Auto Clear Input Send As Hex	COM port data receive:	Network data receive           Receive from 172.16.14.40 : 23]:           www.usr.on	NetSettings (1) Protocol TCP Server (2) Local host IP 172.16.14.48 (3) Local host pot 7788 Disconnect Receive to file Add line return Receive As HEX Receive Pause Save Clear Send Options Data from file Auto Cheoksum Auto Clear Input Send As Hex
BaudR 115200 V DPaity NONE V DataB 8 bit V StopB 1 bit V Close Reco Options Receive to file V Add line return Receive As HEX Receive Pause Save Clear Send Options Data from file Auto Checksum Auto Checksum Auto Clear Input Send As Hex Send Recycle Interval 12000 ms	Jinan USR Technology Co.,	Network data receive           [Receive from 172.16.14.40 : 23]:           www.usr.on           Peers:           172.16.14.40.23           Peers:           172.16.14.40.23           Send	NetSettings (1) Protocol TCP Server (2) Local host IP 172.16.14.48 (3) Local host pot 7788 (3) Local host pot 7788 (4) Local host pot 7788 (5) Local host pot 7788 (5) Local host pot 788 (5) Local host pot
BaudR 115200 V DPaity NONE V DataB 8 bit V StopB 1 bit V Close Recv Options Receive to file V Add line return Receive As HEX Receive Pause SaveClear Send Options Data from file Auto Checksum Auto Clear Input Send As Hex Send Recycle Interval 12000 ms LoadClear	Jinan USR Technology Co., Ltd.	Network data receive           [Receive from 172.16.14.40 : 23]:           www.usr.on           Peers:           172.16.14.40:23           Peers:           172.16.14.40:23           Send	NetSettings (1) Protocol TCP Server (2) Local host IP 172. 16 . 14 . 48 (3) Local host pot 7788 Disconnect Receive to file Add line return Receive As HEX Receive Pause Save Clear Send Options Data from file Auto Checksum Auto Clear Input Send Recycle Interval 1000 ms Load Clear

![](_page_39_Picture_0.jpeg)

![](_page_39_Picture_1.jpeg)

![](_page_39_Picture_2.jpeg)

### 5.6 Registry Packet

There are three types of registry packets: USR Cloud, MAC, USER register(User-defined). MAC and USER register packet can be sent when establishing a TCP connection or carried before data or both. We will introduce USR Cloud in the next chapter.

USER Register packet is user-defined, maximum 40 bytes, supports hex data.

MAC defaults to HEX.

Connect with: sending register packet immediately when establish a connection. The main purpose is to allow the server to identify the data source device or to obtain a password for the server function authorization.

![](_page_39_Figure_8.jpeg)

Data with: The packet header is carried uniformly when sending data.

![](_page_39_Figure_10.jpeg)

Registry packet can be configured via webpage:

![](_page_40_Picture_0.jpeg)

	USR IOT -IOT Experts-	Be Hone	st, Do Best!
Current Status	Socket A	Parameters	mechanism; you
Local IP Config	Work Mode:	TCP Client V None V	none-zero value
Port1	Remote Server Addr:	172. 16. 11. 21 [172.16.11.21]	
Port2	Local/RemotePort Number:	123 201 (1~65535)	
Port3	Timeout Reconnection :	0 (0~99999)s	
Port4	PRINT: Modbus Poll:	Response Timeout: 200 (10~9999)ms	
Port5	Modbus TCP Exception:		
Port6	Enable Net Heartbeat Packet:	8	
Port7	Registry Type:	USER Register   Location Connect With  Connect With	
Port8	Net Registry Packet:	WWW. usr. cn Data With	
Log	Socket B	Parameters	
Misc Config	WorkMode:	NONE V	
Module Mange		Save Cancel	
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### 5.7 Short Connection

TCP short connections are used primarily to save server resources and are generally used in multi-point to point scenarios.Using short connections ensures that existing connections are useful connections and that no additional control is required to filter them.

TCP short connection function is applied in TCP Client mode. After the short connection function is enabled, if the serial port or network port does not receive data within the set time, the connection will be automatically disconnected.

The short connection function is disabled by default. The disconnect time can be set between  $2\sim 255s$ , default to 3s.

![](_page_41_Picture_0.jpeg)

Version:V1.0.10 Type:	H7		史文
	ISR IOT IOT Experts-	Be Hon	est, Do Best!
Current Status	Socket A	Parameters	mechanism; you can modify it as a
Local IP Config	Work Mode:	TCP Client V Short Connection V	none-zero value
Port1	Local/RemotePort Number:	20108 80 (1~65535)	
Port2	Timeout Reconnection :	0 (0~99999)s	
Port3	Disconnect Time :	3 (3~255)s	
Port4	PRINT:		
Port5	Modbus Poll:	✓ Response Timeout: 200 (10~9999)m	S
Port6	Modbus TCP Exception:		
Port7	Registry Type:	USER Register V Location Connect With V	
Port8	Net Registry Packet:	www.usr.cn	1
Web to Serial		HEX: 🔲 ASCII: 🕑	
Misc Config	Socket B	Parameters	
Module Mange	WorkMode:	NONE	
		Save Cancel	
			- 1
Copyright © Jinan USF	R IOT Technology Limited. All Righ	its Reserved	website: <u>www.usriot.com</u>

#### 5.8 Uart Cache

When the TCP connection is not established, the data received by the serial port will be placed in the cache. The serial cache is dynamic and cached according to the size of the packet. When the packet length is 10Byte, 200 packets (2KB) can be cached, and when the length is 1460Byte, 5 packets (7.3KB) can be cached. After the TCP connection is established, the cache data can be set whether to clean up or not according to the customer's requirements.

This function defaults to be disabled. And it will be invalid when enable short connection in TCP Client or HTTPD Client mode.

![](_page_42_Picture_0.jpeg)

technical support: h.usriot.com

![](_page_42_Figure_3.jpeg)

#### 5.9 UDP Multicast

Multicast can realize the one-to-many connection between data sender and receiver. Multiple receivers join the same multicast group and share the same IP address. At the same time, the members in the multicast group are dynamic, and the joining and quitting of a member do not affect the original multicast group. The valid address range for a multicast group is 224.0.0.2-239.255.255.255.

1. Webpage parameter settings

![](_page_43_Picture_0.jpeg)

(1)

**Current Status** Local IP Config

Web to Serial **Misc Config** Module Mange

Port2 Port3 Port4 Port5 Port6 Port7 Port8 USR-N580 User Manual

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U -10

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Socket A	Parameter	5		mechanism; you
Work Mode:	UDP Clier	nt 🔻 Multi	cast 🔹	none-zero value
Remote Server Addr:	224.0.0.2	2	[N/A]	
Local/RemotePort Number:	123	456	(1~65535)	
Timeout Reconnection :	0	(0~9999	9)s	
PRINT:				
Modbus Poll:	Respon	nse Timeout	: 200 (10~9999)m	s
Modbus TCP Exception:				
Enable Net Heartbeat Packet:				
Registry Type:	None	S <b>T</b> (	Location Connect With 💌	
Socket B	Parameter	5		
WorkModo:	NONE	¥ 1		

website: www.usriot.com

![](_page_44_Picture_0.jpeg)

#### 2. Create UDP (Group) connection

	Create Connection
	Type: UDP(Group)
	DestIP: 224.0.0.2 Port: 123
	Localfort ( Auto ( Specia 456
	T AutoCom. Zve 🛛 s
	Send When Conni. Eve na
	Create Cancal
Ţ.	Send Speed(B/S): 0 Receive Speed(B/S): 0
Operate(O) View(V) Wind	Send Speed(B/S): 0 Receive Speed(B/S): 0
Operate( <u>O</u> ) View( <u>V</u> ) Wind	Send Speed(B/S): 0     Receive Speed(B/S): 0       Hows(W)     Help(H)       Language       rver     38 StartServer       Receive Speed(B/S): 0
Operate(O) View(V) Wind CreateConnn C CreateSer Properties 4:	Send Speed(B/S): 0     Receive Speed(B/S): 0       dows(W)     Help(H)       Language       rver <sup>3</sup> / <sub>8</sub> StartServer <sup>3</sup> / <sub>8</sub> StartServer <sup>3</sup> / <sub>8</sub> Connect <sup>3</sup> / <sub>8</sub> DisconnAll <sup>3</sup> / <sub>8</sub> DeleteConn <sup>3</sup> / <sub>8</sub> 2240.0.2:123
Operate(O) View(V) Wind	Send Speed(B/S): 0     Receive Speed(B/S): 0       Rows(W)     Help(H)       Language       rver     38 StartServer       StartServer     30       StartServer     30       StartServer     30       StartServer     30       Receive Speed(B/S): 0     30       Receive Speed(B/S): 0     30
Operate(O) View(V) Wind ☐ CreateConnn S CreateSer Properties ∓ : ☐ ☐ Client Mode ↓ ● 224.0.0.2:123	Send Speed(B/S): 0     Receive Speed(B/S): 0       Hows(W)     Help(H)     Language       rver          StartServer          Second       StartServer          Second          Second       V          Z24.0.0.2:123           Send           DestIP:          Send          AtuoSend
Operate(O) View(V) Wind CreateConnn CreateSer Properties 4 : Client Mode Client Mode Client Mode Server Mode	Send Speed(B/S): 0     Receive Speed(B/S): 0       Rows(W)     Help(H)     Language       rver     StartServer     Second       StartServer     Second     Second       V     224.0.0.2:123       DestIP:     Send       Image:     Send       FaceBoard:     123         Send Hex     Send File       Send Received     Clear       Option     BroadOp
Operate(O) View(V) Wind CreateConnn CreateSer Properties 4 : Client Mode 224.0.0.2:123 Server Mode	Send Speed(B/S): 0     Receive Speed(B/S): 0       Hows(W)     Help(H)     Language       rver     StartServer     So       StartServer     So     Connect       W     Market     Send       DestIP:     Send     AtuoSend       DestIP:     Send     AtuoSend       DestFort:     123         Send Hex     Send File   Send Received Clear Option BroadOp
Operate(O) View(V) Wind CreateConnn CreateSer Properties 4 : Client Mode 224.0.0.2:123 Server Mode	Send Speed(B/S): 0     Receive Speed(B/S): 0       Hows(W)     Help(H)     Language       rver     B StartServer     StartServer       B StartServer     Send     Send       V     V     V       DestIP:     Send     AtuoSend       DestIP:     Send     Facever       DestIP:     Send     Facever       DestIP:     Send     Facever
Operate(O) View(V) Wind CreateConnn CreateSer Properties 4: Client Mode Client Mode Server Mode	Send Speed(B/S): 0     Receive Speed(B/S): 0       Hows(W)     Help(H)     Language       rver     StartServer     Image: StartServer       Image: StartServer     Image: StartServer     Image: StartServer       Im
Operate(O) View(V) Wind CreateConnn CreateSer Properties 4: Client Mode Client Mode Server Mode	Send Speed(B/S): 0     Receive Speed(B/S): 0       Hows(W)     Help(H)     Language       rver     StartServer     Image: StartServer       Image: StartServer     Image: StartServer     Image: StartServer       Im
Operate(O) View(V) Wind CreateConnn CreateSer Properties 4: Client Mode 224.0.0.2:123 Server Mode	Send Speed(B/S): 0     Receive Speed(B/S): 0       Hows(W)     Help(H)     Language       rver     StartServer     Image: StartServer       Image: StartServer     Image: StartServer     Image: StartServer       Im
Operate(O) View(V) Wind CreateConnn CreateSer Properties 4: Client Mode Client Mode Server Mode	Send Speed(B/S): 0     Receive Speed(B/S): 0       Hows(W)     Help(H)     Language       rver     StartServer     Image: StartServer       Image: StartServer     Image: StartServer     Image: StartServer       Im
Operate(O) View(V) Wind CreateConnn CreateSer Properties 4: Client Mode 224.0.0.2:123 Server Mode	Send Speed(B/S): 0 Receive Speed(B/S): 0   Help(H) Language rver StartServer So StartServer S
Operate(O) View(V) Wind CreateConnn CreateSer Properties 4: Client Mode 224.0.0.2:123 Server Mode	Send Speed(B/S): 0     Receive Speed(B/S): 0       Hows(W)     Help(H)     Language       rver     StartServer     Image: StartServer       Image: StartServer     Image: StartServer     Image: StartServer       Im
Operate(O) View(V) Wind CreateConnn CreateSer Properties 4: Client Mode 224.0.0.2:123 Server Mode	Send Speed(B/S): 0       Receive Speed(B/S): 0         Hows(W)       Help(H)       Language         rver       StartServer       Image: StartServer         Image: StartServer       Image: S
Operate(②) View(⊻) Wind ☐ CreateConnn S CreateSer Properties ₽: - Client Mode 224.0.0.2:123 Server Mode	Send Speed(B/S): 0       Receive Speed(B/S): 0         Hows(W)       Help(H)       Language         rver       StartServer       Image: StartServer         Image: StartServer       Image: S
Operate(O) View(V) Wind CreateConnn CreateSer Properties 7: Client Mode 0 224.0.0.2:123 Server Mode	Send Speed(B/S): 0 Receive Speed(B/S): 0   Hows(W) Help(H) Language rver S StartServer S S StartServer S Send Connect S DisconnAll DeleteConn S O F F Z 224.0.0.2:123 DestIP: Send AtuoSend Eve 100 ms Send Stop Send Hex Send File Send Received Clear Option BroadOp F LocalPort 456 Type UDP(Group), AtuoSend Eve 0 ms Rec StopShow Clear Save Option ShowHex Count Save(In Time)
Operate(O) View(V) Wind CreateConnn CreateSer Properties 4: Client Mode 224.0.0.2:123 Server Mode	Send Speed(B/S): 0       Receive Speed(B/S): 0         Hows(W)       Help(H)       Language         rver       StartServer       Image: Connect in the server in the ser
Operate(O) View(V) Wind CreateConnn CreateSer Properties 7: Client Mode 224.0.0.2:123 Server Mode	Send Speed(B/S): 0       Receive Speed(B/S): 0         Hows(W)       Help(H)       Language         rver       StartServer       Image: StartServer         Image: StartServer       Image: S
Operate(O) View(V) Wind CreateConnn CreateSer Properties P Client Mode 224.0.0.2:123 Server Mode	Send Speed(B/S): 0 Receive Speed(B/S): 0   Hows(W) Help(H) Language Inver StartServer Connect Connect Send File Send Received Clear Option BroadOp   Image: Send File Send File Send Received Clear Option BroadOp     Image: StartServer Send File Send Received Clear Option BroadOp     Image: Send File Send File Send Received Clear Option BroadOp     Image: StartServer Send File Send Received Clear Option BroadOp     Image: StartServer Send File Send Received Clear Option BroadOp     Image: StartServer Send File Send Received Clear Option BroadOp     Image: Send File Send File Send Received Clear Option BroadOp     Image: Send File Send Received Clear Seve Option ShowHex     Image: Send File Send File Send Received Clear Seve Option ShowHex     Image: Send File Se
Operate(O) View(V) Wind CreateConnn CreateSer Properties P Client Mode 224.0.0.2:123 Server Mode	Send Speed(B/S): 0 Receive Speed(B/S): 0   Hows(W) Help(H) Language Inver StartServer Connect Connect Clear Option BroadOp   Image: Send Hex Send File   Send Hex   Send File Send Received Clear Option   BroadOp   Image: StartServer Image: Send Hex   Send Hex   Send File Send Received Clear Option   BroadOp   Image: StartServer Image: Send Hex   Send File   Send Hex Send File   Send Received Clear Option   BroadOp   Image: Send File   Send Hex Send File   Send Send Hex   Send File Send Received   Clear   Image: Send File Send Send File   Send File   Send File Send File   Send Send File   Send File Send File   Send File   Send File Send File   Send File   Send File Send File   Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send File Send Fi
Operate(Q) View(V) Wind CreateConnn CreateSer Properties 7: Client Mode 224.0.0.2:123 Server Mode	Send Speed(B/S): 0 Receive Speed(B/S): 0   Help(H) Language   Inver StartServer Connect Connect Connect Connect Connect   Send AtuoSend Eve 100 ms     Send Mex     Send Mex     Send File     Send File     Send File     Send Mex     Send File     Send Mex     Send Mex     Send File     Send Mex     Send File     Send Mex     Send File     Send Mex     Send Mex     Send File     Send Mex     Send Mex     Send Mex     Send File     Send Mex     Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex   Send Mex <tr< td=""></tr<>

![](_page_45_Picture_0.jpeg)

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#### 3. UDP Group communication

![](_page_45_Figure_4.jpeg)

#### 5.10 Web Socket

Websocket function can achieve the data transmission between any one serial port and the webpage of N580. You can select the **Websocket Direction** from **UART 1~8** and **LOG**.

 Data transmission between serial port and webpage: Websocket Port defaults to 6432.

![](_page_46_Picture_0.jpeg)

technical support: h.usriot.com

![](_page_46_Figure_3.jpeg)

![](_page_47_Picture_0.jpeg)

technical support: h.usriot.com

![](_page_47_Figure_3.jpeg)

#### 2. LOG

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	USR IOT -IOT Experts-	Be Honest, Do Best!
Current Status	parameter	help
Local IP Config Port1 Port2 Port3 Port4 Port5 Port6 Port7 Port8 Web to Serial Misc Config Module Mange	Module Name: USR-N580 Websocket Port : 6432 Websocket Direction : LOG V Webserver Port: 80 User Name: admin Pass Word: admin Uart Cache: Reset Timeout: 0 (60~65535) Save Cancel	<ul> <li>Module Name max length is 32 char</li> <li>Websocket Port default 6432</li> <li>Websocket Direction default UART1</li> <li>Web port default 80</li> <li>User Name default admin</li> <li>Pass Word default admin</li> <li>Pass Word default admin</li> <li>Uart Cache Whether caching serial data when abnormal connection, default don't cache</li> <li>Reset Timeout default 0, 0-60 mean no timeout, &gt;60 mean when there is no data received during this time, the device will restart</li> </ul>
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![](_page_48_Picture_0.jpeg)

> Query the basic information of the device, there is a carriage return after the command:

Ŕ	USR IOT -IOT Experts-	Be Honest, Do Best!
Current Status	parameter	help
Local IP Config	Websocket connection: 0	web to serial
Port1	ip address: 172.16.11.30	this page use websocket to
Port2	gw address, 172, 10, 11, 1 net mask : 255, 255, 255, 0	transmit data between webpage
Port3	due centrer #0: 102 168 0 1	and uart
Port4	dns server #1: 223.5.5.5	-
Port5		
Port6	liconiig	
Port7		
Port8		
Web to Serial		
Misc Config	send ascii data send hex data clear	
Module Mange		

- Check the running condition of the device.
  - Set the serial port work mode to TCP Client, remote server address and port are the computer's IP and port.

				TOP/HOP Net Assiste	mt J¥(-□×
5	USR IOT	Be Honest. Do Best!	Selbings	Dato Receive	SAVAGE V4.1.0
<sup>v</sup>	-101 Experts-		TOP Server		
Current Status	parameter	help	(2) Local host add		
Local IP Config	Websocket connect	ion: D	Gi Localhost pot		
Port1	Receive hex data	this page use	201		
Port2	tep client0 connected	transmit data between webpage	- Disconnect		
Port8		and uart	Recy Options		
Port4			Eleveive to file		
Port5			🔽 Show timestamp		
Port6			F Reveive as her		
Port7			Save Clear		
Port8			Send Options		
Web to Serial	Loopd and it data	data data	🗖 Data from file		
Misc Config	Send ascindele Send nex		T Auto clear input		
Module Mange			Send as hax   Send syclic	Clients: All Connections	Disconect
			Interval 250 ns Load Elear	http://www.amsoff.am.00:10865600	Send
			le Bandy!	· ·	and 0 Reov 0 Reset

![](_page_49_Picture_0.jpeg)

#### WebSocket supports below browsers:

Browser	Version
Chrome	Supported in version 4+
Firefox	Supported in version 4+
Internet Explorer	Supported in version 10+
Opera	Supported in version 10+
Safari	Supported in version 5+

#### 5.11 Network Printing Function

Network printing function is similar to printer server, it can be realized by the previous serial printer through the existed printing driver.

Testing steps:

1. Configure the parameter, set work mode as "TCP Server", local port number "9100", and have to choose "Net Buffer" and "PRINT". Others do not need to be chosen.

	USR IOT Be Hone.	st, Do Best!
Current Status	Socket A Parameters	mechanism; you
Local IP Config	Work Mode: TCP Server V None V	none-zero value
Port1	Local Port Number: 9100 (1~65535)	
Port2	PRINT:	
Port3	Modbus Poll: 🔲 Response Timeout: 200 (10~9999)ms	
Port4	Modbus TCP Exception:	
Port5	Enable Net Heartbeat Packet:	
Port6	Socket B Parameters	
Port7	WorkMode: NONE	
Port8	Save Cancel	
Log		
Misc Config		
Module Mange		
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![](_page_50_Picture_0.jpeg)

2. Set Printer Driver

![](_page_50_Picture_4.jpeg)

eneral Sharing Ports Advanced Color Manag	M Add Standard TCP/IP Printer Port Wizard
	Welcome to the Add Standard CD/IP Printer Port Wizard         This wizard helps you add a port for a network printer.         Before continuing be sure that:         1. The device is turned on.         2. The network is connected and configured.
Add Port Delete Port Enable bidirectional support Enable printer pooling	To continue, click Next.

Click next and input the USR-N580's IP address, then keep clicking next till finished.

![](_page_51_Picture_0.jpeg)

technical support: h.usriot.com

#### 3. Serial port connects to the printer, open a word file to print.

d Standard TCP/IP Printer Port Wiza	rd	Detecting TCP/IP port Windows is detecting the TCP/IP part and will move i	Add Standard TCP/IP Printer Port	Vrizarit	÷
Add port For which device do you want to add a port?				Completing Printer Port	the Add Standard TCP/IP Wizard
Enter the Printer Name or IP ad	dress, and a port name for the d			Vou have selected a	pert with the following characteristics.
		Detecting the TCP/IP port		CAR	
Printer Name or IP Address:	192.168.0.7	windows will automatically move to the next p		Datasek	RAW Dust 9100
Bart Name	192 168 0 7 1			Device	192 68.0.10
For Name		5		PotName	192.168.0.10
		9		Adapte: Type:	Generic Network Card
		1 ~		Tac argilete Lis wi	rand, olick Frisolu
	-				< Ubili
	< Back	Next > Cancel	< Back Next >	Cancel	

# 6. Virtual Com Software

It solve the transmission problem of traditional device PC software working as COM. USR-VCOM (Virtual com software) support receiving data from set COM and send serial data out as network.

How to connect USR-N580 with Virtual COM:

- 1. Set USR-N580 as TCP server
- 2. Open USR-VCOM software, click "Add COM' and select COM2 (Avoid existed COM).
- Net Protocol: TCP Client

Remote IP and port are the local IP and port of N580.

Remarks: Can write the name of device

Click "OK' to check whether connection is built. "Connected" sow ready for data transmission.

Reveal USR-VCOM Virtual Serial Port Server V3.7.1.520	- 9 %
Device(D) Tcols(T) Options(O) Chinese Help(H)	
Add CDM DelCDM Connect Resist County Monitor Search Smart VCDM Quit	
Remarks COM Name Parameters COM State Net Protocol Remote IP. Remote Part Local Part COM Received Net Received	wed NetState RegID CloudD
Add Virtual Serial Port 83	
Vitual CDM : COM2 🖵	
Nel Prátocal: TCP Clent 💌	
Remote IP/audi: 192.198.0.7	
Remote Port 20108	
Local Port: 8234	
Remarks: Device 1	
📀 DK 🔯 Cancel Advanced +	

![](_page_52_Picture_0.jpeg)

# 7. USR Cloud Platform

USR CLOUD includes cloud configuration and cloud monitoring.

If your serial device supports standard MODBUS RTU data, the cloud platform can display serial device data by establishing a TCP connection with the N580 device.

USR Cloud address: https://mp.usriot.com After registering an account, log in.

Parameter settings in N580 device:

	JSR IOT Be Ho	onest, Do Best!
Current Status	Socket A Parameters	can modify it as a
Local IP Config	Work Mode: TCP Client V None V	none-zero value
Port1	Remote Server Addr: [tcp.mp.usrlot.com [172.16.11.21]	
Port2	Local/RemotePort Number: 0 [15000] (1~65535)	
Port3	Timeout Reconnection : 0 (0~99999)s PRINT:	
Port4	Madhua Ball. Response Timeout: 200	
Port5	(10~9999)ms	
Port6	Enable Net Heartbeat Packet:	
Port7	Registry Type: USR Cloud 🗸 Location Connect With 🗸	
Port8	Device ID: 01234567890123456789	
Web to Serial	Communications Code: 012345	
Misc Config	Socket B Parameters WorkMode: NONE	
Module Mange	Save Cancel	

# 8. AT Command Set

For details, please refer to the document: **AT command set**.

# 9. Disclaimer

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