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Features

- 10/100Mbps Ethernet port, support Auto-MDI/MDIX.
- Support TCP Server, TCP Client, UDP Client, UDP Server, HTTPD Client.
- Support 4 serial ports and 4 serial ports can work independently.
- 4 serial ports all support two sockets.
- Support Modbus Gateway.
- Support serial port baud rate 600bps~230.4K bps, support None, Odd, Even, Mark, Space parity way.
- Support Static IP or DHCP.
- Support web server configuration.
- Support serial port 1 websocket function.
- Support hardware Reload.
- Support Keep-alive.
- 4 serial ports LED(TX/RX).
- 4 serial ports all support RS232/RS485/RS422.



1. Get Start

Product link:

http://www.usriot.com/p/4-ports-serial-ethernet-converter/ Setup software: http://www.usriot.com/usr-tcp232-m4k3-setup-software



Figure 1 Download Page

If you have any question, please submit it back to customer center: http://h.usriot.com

1.1. Application Diagram



Figure 2 Application diagram



1.2. Hardware Design

1.2.1. Hardware Dimensions



Figure 3 Hardware dimensions

1.2.2. LED Indicator

On: Power on
Off: Power off
On: Working
Off: Not working
On: Serial port 1 sending data
Off: Serial port 1 no data sending
On: Serial port 1 receiving data
Off: Serial port 1 no data receiving
On: Serial port 2 sending data
Off: Serial port 2 no data sending
On: Serial port 2 receiving data
Off: Serial port 2 no data receiving
On: Serial port 3 sending data
Off: Serial port 3 no data sending
On: Serial port 3 receiving data
Off: Serial port 3 no data receiving
On: Serial port 4 sending data
Off: Serial port 4 no data sending
On: Serial port 4 receiving data
Off: Serial port 4 no data receiving



1.2.3. DB9 Pin definition



Pin Number	RS232	RS422	RS485	
1				
2	RXD	RX+		
3	3 TXD TX-		B-	
4				
5		GND		
6				
7	RTS	TX+	A+	
8	СТЅ	RX-		
9				

Figure 5 DB9 Pin definition

1.2.4. DB9 Pinboard

We provide DB9 pinboard for user to use terminal connection.



Туре	1	2	3	4	5
RS232		ТХ	RX		GND
RS485	A+	В-			GND
RS422	T+	T-	R+	R-	GND

Figure 6 DB9 pinboard



2. Product Functions

This chapter introduces the functions of USR-N540 as the following diagram shown, you can get an overall knowledge of it.



Figure 7 Product Functions diagram

2.1. Basic Functions

2.1.1. Static IP/DHCP

There are two ways for module to get IP address: Static IP and DHCP.

Static IP: Default setting of module is Static IP and default IP is 192.168.0.7. When user set module in Static IP mode, user need set IP, subnet mask and gateway and must pay attention to the relation among IP, subnet mask and gateway.

DHCP: Module in DHCP mode can dynamically get IP, Gateway, and DNS server address from Gateway Host. When user connect directly to PC, module can't be set in DHCP mode. Because common computer does not have the ability to assign IP addresses.

User can change Static IP/DHCP by setup software. Setting diagram as follow:



vice(<u>D)</u> 中文(<u>L</u>) <u>H</u> elp				
Search List [Click a device to read parameter:	s in the Search List]	Port1		
Device IP Device Name MAC	Version	10111		
192.168.5.7 USR-N510 D8 B0 4C BE	0E DC 3031			
		Baudrate:	115200 🔻	(?)
		Parity/Data/Stop:	NONE - 8 - 1 -	(?)
		FlowControl:	None 🔹	(?)
		Work Mode:	TCP Server 💌	(?)
L		RemoteIP:	192. 168. 0. 201	(?)
🔍 Search Device	Clear ARP table Compatible with	Remote Port:	8899	(?)
		Local Port:	8899	(?)
📄 Open Device 💫 Device Restart	Factory Reset	TCP Server style:	Transparent transmi 💌	(?)
Base Save		ModbusTCP:	None 💌	(?)
Websocket Port: 6432 (?) Device Name:	USR-N510 (?)	PackTime:	0 ms (0~255)	(?)
Web Port: 80 (?) User MAC:	D8 B0 4C BE 0E (?)	PackLen:	0 byte (0~1460)	(?)
Device ID: 1 (?) IP Type:	Static IP 🔹 (?)	👽 Synchronize ba	ıdrate (RFC2217	(?)
Device ID Type: Disa 🗸 (?) ModuleStaticIP	192.168.5.7 (?)	Enable USR Clo	1d	(?)
User Name: admin (?) SubnetMask:	255. 255. 255. 0 (?)	Device I	D	
Password: admin (?) Gateway:	192.168.0.1 (?)	Communication Cod	e	
				-

Figure 8 Static IP/DHCP

2.1.2. Hardware Restore default settings

User can press Reload over 5 seconds then release to restore default settings.

2.1.3. Upgrade Firmware Version

User can contact to salespersons for needed firmware version and upgrade by setup software as follow:

) read parameter	s in the Search	List] P	ort1			
Firmware u	ograde		ΜΔΓ	Version					
Exit			D8 B0 4C BE	0E DC 3031					(=)
						Baudrate:	115200	•	(7)
						Parity/Data/St	top: NONE	▼ 8 ▼ 1 ▼	(?)
						FlowControl:	None	•	(?)
						Work Mode:	TCP Ser	rver 🔻	(?)
						RemoteIP:	192.168	8. 0. 201	(?)
G	👆 Search 🛛	Device		Clear ARP te	with	Remote Port:	8899		(?)
						Local Port:	8899		(?)
📄 Open Dev	ice	😋 Dev	vice Restart	🥥 Factory Re	set	TCP Server sty	yle: Transp	arent transmi 💌	(?)
ase Save						ModbusTCP:	None	•	(?)
ebsocket Por	t:6432	(?)	Device Name:	USR-N510	(?)	PackTime:	0	ms (0~255)	(?)
eb Port:	80	(?)	User MAC:	D8 B0 4C BE OE	(?)	PackLen:	0	byte (0~1460)	(?)
evice ID:	1	(?)	IP Type:	Static IP 🗸 🔻) (?) 	📝 Synchronize	e baudrate(R	FC2217	(?)
	e: Disa' 🗸	(?)	ModuleStaticIF	192.168.5.7	(?)	📃 Enable USR	Cloud		(?)
evice ID Typ	admin	(?)	SubnetMask:	255. 255. 255. 0	(?)	Devi	ce ID		
evice ID Typ ser Name:		(?)	Gateway:	192.168.0.1	(?)	Communication	Code		
evice ID Typ ser Name: assword:	admin								



Honest, Do Best !	USR-N540 User Manual	Technical Support: h.usriot.com
	Firmware Upgrade	
	Select Client	
	Client IP Address: 192.168.5.7	
	Client MAC Address: D8 B0 4C BE 0E DC	
	Select .bin file F:\\试用期产品熟悉\USR-N510\USR-N510_FW	
	Program Exit	
	Upgrade successful.please restore factory de	

Figure 9 Upgrade firmware version

2.2. Socket functions

N540 support dual sockets mode. Socket A supports TCP Server, TCP Client, UDP Server, UDP Client and HTTPD Client. Socket B supports TCP Client and UDP Client.

2.2.1. TCP Client

TCP Client provides Client connections for TCP network services. TCP Client device will connect to server to realize data transmission between the serial port and server. According to the TCP protocol, TCP Client has connection/disconnection status differences to ensure reliable data transmission.

N540 work in TCP Client mode need connect to TCP Server and need set the parameter: Remote IP/Port. N540 work in TCP Client won't accept other connection request except target server and will access server with random local port.

User can set N540 in TCP Client mode and related parameters by setup software or web server as follows:

192 168 5 7	Domoorramo	MAC	Version				
102.100.0.1	USR-N510	D8 B0 4C BE OE	DC 3031		Baudrate: Parity/Data/Stop:	115200 V NONE V 8 V 1 V	(?) (?)
					FlowControl: Work Mode:	None TCP Client	(?) (?)
					RemoteIP:	192. 168. 0. 201	(?)
Q	Search Device		Clear ARP tabl Compatible wit	.e :h	Remote Port:	8899	(?)
				_	Local Port:	8899	(?)
Dpen Dev:	i ce 🔕 De	vice Restart 🧣	Factory Rese	t	TCP Server style:	Transparent transmi 👻	(?)
Base Save					ModbusTCP:	None 🔻	(?)
	6432 (2)	Device Name: USF	R-N510	(?)	PackTime:	0 ms (0~255)	(?)
febsocket Port							<i>(</i> -)
″ebsocket Port ″eb Port:	80 (?)	User MAC: D8	BO 4C BE OE	(?)	PackLen:	0 byte (0~1460)	(?)
″ebsocket Port ″eb Port: Device ID:	80 (?) 1 (?)	User MAC: D8 IP Type: Sta	BO 4C BE OE atic IP 💌	(?) (?)	PackLen:	0 byte (0~1460) udrate(RFC2217	(?) (?)
Websocket Port Web Port: Device ID: Device ID Type	80 (?) 1 (?) Disa v (?)	User MAC: D8 IP Type: Sta ModuleStaticIP 192	BO 4C BE OE atic IP - 2.168.5.7	(?) (?) (?)	PackLen: Synchronize bar Enable USR Clou	o byte (0°1460) udrate (RFC2217 ud	(?) (?) (?)
Websocket Port Web Port: Device ID: Device ID Type User Name:	80 (?) 1 (?) 1 (?) admin (?)	User MAC: D8 IP Type: Sta ModuleStaticIP 192 SubnetMask: 255	BO 4C BE OE atic IP - 2. 168.5.7 5.255.255.0	(?) (?) (?) (?)	PackLen: Synchronize bas Enable USR Clou Device I	0 byte (0°1460) adrate(RFC2217 ad	(?) (?) (?)



	USR IOT Be Honest	t, Do Best!
Current Status	UART Packet Length: 0 (0~1460)chars	time/length
Local IP Config	Sync Baudrate(RF2217 Similar): 🗷	means automatic
PORT1	Enable Uart Heartbeat Packet: 🔲	mechanism; you can modify it as a
Web to Serial	Socket A Parameters	none-zero value
Misc Config	Remote Server Addr: 192.168.0.201	
Reboot	Local/Remote Port Number: 8899 8899 (1~65535)	
	Timeout Reconnection : 86400 (1~99999)s PRINT: ModbusTCP Poll: Poll Timeout : 200 (200~9999) ms Enable Net Heartbeat Packet: Registry Type: None Location Connect With Socket B Parameters Work Mode: NONE Save Cancel	
Copyright © 2009 ·	2015 · JiNan Usr IOT Technology Limited w	ebsite: <u>www.usriot.com</u>

Figure 10 TCP Client

2.2.2. TCP Server

TCP Server will listen network connections and build network connections, commonly used for communication with TCP clients on a LAN. According to the TCP protocol, TCP Server has connection/disconnection status differences to ensure reliable data transmission.

N540 work in TCP Server mode will listen local port which user set and build connection after receiving connection request. Serial data will be sent to all TCP Client devices connected to N540 in TCP Server mode simultaneously.

N540 work in TCP Server support 8 client connections at most and will kick off oldest connection beyond maximum connections.

User can set N540 in TCP Server mode and related parameters by setup software or web server as follows:



Technical Support: h.usriot.com

e(D) 中文(L)	Help						
earch List [Cli	ick a device to	read parameter:	s in the Search 1	List] Po	rtl		
Device IP D	evice Name	MAC	Version				
192.168.5.7 L	JSR-N510	D8 B0 4C BE	0E DC 3031		Baudrate	115200	(?)
					Panita (Data (Star)		(C)
					rarity/Data/Stop.		0
					FlowControl:	None 🔻	(?)
					Work Mode:	TCP Server 🔻	(?)
					RemoteIP:	192.168.0.201	(?)
Q	Search Device		Clear ARP tab	ole ith	Remote Port:	8899	(?)
				_	Local Port:	8899	(?)
📄 Open Devic	e 💽 💽 Dev	ice Restart	Factory Res	et	TCP Server style:	Transparent transmi 🔻	(?)
Base Save					ModbusTCP:	None 🔻	(?)
febsocket Port:	6432 (?)	Device Name:	USR-N510	(?)	PackTime:	0 ms (0~255)	(?)
feb Port:	80 (?)	User MAC:	D8 B0 4C BE OE	(?)	PackLen:	0 byte (0~1460)	(?)
Device ID:	1 (?)	IP Type:	Static IP 🔻	(?)	📝 Synchronize ba	udrate (RFC2217	(?)
Device ID Type:	Disa 🗸 (?)	ModuleStaticIP	192.168.5.7	(?)	📃 Enable USR Clo	ud	(?)
User Name:	admin (?)	SubnetMask:	255. 255. 255. 0	(?)	Device I	D	
Password:	admin (?)	Gateway:	192.168.0.1	(?)	Communication Cod	le	
Ti dy Sh	ow -	V	Base Save			V Save COM1	
			On-line Device	• NUM:1	Search Port:	1901	

	USR IOT Be Honest	t, Do Best!
Current Status	UART Packet Length: 0 (0~1460)chars	time/length
Local IP Config	Sync Baudrate(RF2217 Similar): 🖉	means automatic
PORT1	Enable Uart Heartbeat Packet: 📃	mechanism; you
Web to Serial	Socket A Parameters Work Mode: TCP Server V None V	none-zero value
Misc Config	Local/Remote Port Number: 8899 8899 (1~65535)	
Reboot	PRINT:	
	ModbusTCP Poll: Poll Timeout : 200 (200~9999) ms Enable Net Heartbeat Packet: Registry Type: None V Location Connect With V Socket B Parameters Work Mode: NONE V Save Cancel	
Copyright © 2009 -	2015 · JiNan Usr IOT Technology Limited w	ebsite: <u>www.usriot.com</u>

Figure 11 TCP Server

2.2.3. UDP Client

UDP transport protocol provides simple and unreliable communication services. No connection connected /disconnected.

In UDP Client mode, N540 will only communicate with target IP/Port. If data not from target IP/Port, it won't be



received by N540.

User can set N540 in UDP Client mode and related parameters by setup software or web server as follows:

💮 USR-TCP232-M4,E4	45 V2.3.0.78		lane a			l	- • ×
Device(D) 中文(L) H	Help						
Search List [Click	a device to rea	d parameters	in the Search 1	List] Po	art1		
Device IP Devi	ice Name	MAC	Version				
192.168.5.7 USR	}-N510	D8 B0 4C BE (DE DC 3031		Productor	115000	
					baudrate.	113200	
					Parity/Data/Stop:	NONE - 8 - 1 -	• (?)
					FlowControl:	None	• (?)
					Work Mode:	UDP .	• (?)
					RemoteIP:	192.168.0.201	(?)
🔍 Se	arch Device	[📄 Clear ARP tal	ole	Remote Port:	8899	(?)
ų			Compatible wi	i ch	Local Port:	8899	(?)
Dpen Device	💽 Device :	Restart	🥥 Factory Res	et	TCP Server stule:	Transporant transmi	ര
					HodburTCP:	an ansparence or alismi	
Base Save					modDuSILF:	None	
Websocket Port:643	2 (?) Dev	vice Name:	USR-N510	(?)	PackTime:	0 ms (0~255)	(?)
Web Port: 80	(?) Vse	er MAC: 1	D8 BO 4C BE OE	(?)	PackLen:	0 byte (0~146))) (?)
Device ID: 1	(?) IP	Туре:	Static IP 🔻	(?)	👽 Synchronize ba	udrate (RFC2217	(?)
Device ID Type: Dis	sa' ↓ (?) Mod	huleStaticIP	192. 168. 5. 7	(?)	Enable USR Clo	ud	(?)
User Name: adm	in (?) Sub	netMask: 3	255.255.255.0	(?)	Device I		
Password: adm	in (?) Gat	eway:	192.168.0.1	(7)	Communication Cod	le	
Tidy Show	-	🗸 в	ase Save			✓ Save COM1	
			On-line Device	NUM:1	Search Port	:1901	
	USR IO	T			Be	Honest, Do	Best!
· کم	-IOT Experts-					,	
Current Statue			an athu	(0~14)	50)chars	time	/lenath
	Sync Baudrai	te/RE2017 C	imilar): 🖉	(0-140	oo janaro	defau	ilt 0/0, is automatic
Local IP Config	Enable Llart	Heartheat	Packet:			packe	et anism: vou
PORT1	Lindble odire	S	ocket A Parame	eters		can n	odify it as a
Web to Serial		Work	Mode: UDP C	lient 🔻 No	one 🔻		
Misc Config	Re	emote Serve	r Addr: 192.16	3.0.201	[N/	A]	
Reboot	Local/Re	mote Port N	umber: 8899	8899	(1~65535)		
	UDP Not Ch	heck Remote	PORT:				
			PRINT:				
		Modbust	P Poll: 🔲 Pol	l Timeout :	200 (200~99	999) ms	

Figure 12 UDP Client

٠

Save Cancel

▼ Location Connect With ▼

website: <u>www.usriot.com</u>

Enable Net Heartbeat Packet:

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Registry Type: None

Socket B Paramete Work Mode: NONE

2.2.4. UDP Server

In UDP Server mode, N540 will change target IP every time after receiving UDP data from a new IP/Port and will



send data to latest communication IP/Port.

User can set N540 in UDP Server mode and related parameters by setup software or web server as follows:

10311-1CF232-1014,L-	45 V2.3.0.78				
Device(D) 中文(L)	Help				
Search List [Click	a device to read parameter	rs in the Search List]	Port1		
Device IP Dev	ice Name MAC	Version			
192.168.5.7 USF	-N510 D8 B0 4C B	E 0E DC 3031	Baudrate:	115200	• (?)
			Parity/Data/Stop:	NONE - 8	• 1 • (?)
			FlowControl:	None	• (?)
			Work Mode:	UDP Server	• (?)
			RemoteIP:	192.168.0.201	1 (?)
🔍 Se	arch Device	Clear ARP table	Remote Port:	8899	(?)
			Local Port:	8899	(?)
Dpen Device	😋 Device Restart	Factory Reset	TCP Server style:	Transparent	transmi - (?)
Baza Sava			ModbusTCP:	None	- (?)
Websocket Port: 643	(?) Device Name:	USR-N510 (?)	PackTime:	0 ms	(0~255) (?)
Web Port: 80	(?) User MAC:	D8 B0 4C BE OE (?)	PackLen:	0 byt	e (0~1460) (?)
Device ID: 1	(?) IP Type:	Static IP 🔹 (?)	📝 Synchronize ba	udrate (RFC2217	(?)
Device ID Type: Dis	sa 🗸 (?) ModuleStaticI	P 192.168.5.7 (?)	Enable USR Clo	ud	(?)
User Name: adm	in (?) SubnetMask:	255. 255. 255. 0 (?)	Device I	.D	
Password: adm	in (?) Gateway:	192.168.0.1 (?)	Communication Cod	le [
Tidy Show	-	Base Save		🗸 Save COM1	
		On-line Device NUM	4·1 Search Port	1901	
	USR IOT				
	-IOT Experts-		Be .	Honest,	, Do Best!
Current Status	-IOT Experts-	: Length: 0 (1	<i>Be</i> 1	Honest,	, Do Best!
Current Status	-IOT Experts- UART Packet Sync Baudrate(RF2217	: Length: 0 (1 Similar): 🕑	Be 1	Honest,	, Do Best! time/length default 0/0, means automatic packet
Current Status Local IP Config PORT1	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat	: Length: 0 (Similar): @ t Packet: 📄	<i>Be</i> 1	Honest,	, Do Best! time/length default 0/0, means automatic packet mechanism; you can modifix it as a
Current Status Local IP Config PORT1 Web to Serial	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat	: Length: 0 (1 Similar): Ø t Packet: Socket A Parameters	D~1460)chars	Honest,	, Do Best! time/length default 0/0, means automatic packet mechanism; you can modify it as a none-zero value
Current Status Local IP Config PORT1 Web to Serial Misc Config	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat Wor	: Length: 0 (1 Similar): ♥ t Packet: ■ Socket A Parameters rk Mode: UDP Server	Be	Honest	, Do Best! time/length default 0/0, means automatic packet mechanism; you can modify it as a none-zero value
Current Status Local IP Config PORT1 Web to Serial Misc Config Reboot	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat Wor Remote Serv	: Length: 0 (1 Similar): t Packet: Socket A Parameters rk Mode: UDP Server ver Addr: 192.168.0.201 Number: 8899	Be 1 0~1460)chars ▼ None ▼ 1 [N/A 8899 (1~65535)	Honest,	, Do Best!
Current Status Local IP Config PORT1 Web to Serial Misc Config Reboot	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat Woo Remote Serv Local/Remote Port	: Length: 0 (1 Similar): t Packet: Socket A Parameters rk Mode: UDP Server ver Addr: 192.168.0.207 Number: 8899 i PRINT:	Be 1 0~1460)chars ▼ None ▼ 1 1 [N/4 8899 (1~65535)	Honest,	, Do Best! time/length default 0/0, means automatic packet mechanism; you can modify it as a none-zero value
Current Status Local IP Config PORT1 Web to Serial Misc Config Reboot	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat Wor Remote Serv Local/Remote Port Modbus	: Length: 0 (1 Similar): Ø t Packet: Socket A Parameters rk Mode: UDP Server ver Addr: 192.168.0.201 Number: 8899 (1 PRINT: Poll Time	Be 1 0~1460)chars ▼ None ▼ 1 1 [N/4 8899 (1~65535) out : 200 (200~99	4] 199) ms	, Do Best!
Current Status Local IP Config PORT1 Web to Serial Misc Config Reboot	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat Woi Remote Serv Local/Remote Port Modbus ⁻ Enable Net Heartbeat	: Length: 0 (1 Similar): ♥ t Packet: ■ Socket A Parameters rk Mode: UDP Server ver Addr: 192.168.0.201 Number: 8899 i PRINT: ■ TCP Poll: ■ Poll Times t Packet: ■	Be 1 0~1460)chars ▼ None ▼ 1 [N// 8899 (1~65535) out : 200 (200~99)	4]	, Do Best!
Current Status Local IP Config PORT1 Web to Serial Misc Config Reboot	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat Wor Remote Serv Local/Remote Port Modbus' Enable Net Heartbeat Regist	: Length: 0 (1 Similar): t Packet: Socket A Parameters rk Mode: UDP Server /er Addr: 192.168.0.201 Number: 8899 PRINT: TCP Poll: Poll Timer t Packet: try Type: None	Be 1 0~1460)chars ▼ None ▼ 1 1 [N/4 8899 (1~65535) out : 200 (200~99 ▼ Location Connect	Honest A] With ▼	, Do Best!
Current Status Local IP Config PORT1 Web to Serial Misc Config Reboot	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat Remote Serv Local/Remote Port Modbus' Enable Net Heartbeat Regist	: Length: 0 (1 Similar): ♥ t Packet: ■ Socket A Parameters rk Mode: UDP Server ver Addr: 192.168.0.201 Number: 8899 [PRINT: ■ TCP POII: ■ Poll Times t Packet: ■ try Type: None Socket B Parameters	Be 1 0~1460)chars ▼ None ▼ 1 1 [N/4 8899 (1~65535) out : 200 (200~99 ▼ Location Connect	4] 999) ms With ▼	, Do Best!
Current Status Local IP Config PORT1 Web to Serial Misc Config Reboot	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat Woo Remote Serv Local/Remote Port Modbus ⁻ Enable Net Heartbeat Regist	: Length: 0 (1 Similar): ♥ t Packet: ■ Socket A Parameters rk Mode: UDP Server ver Addr: 192.168.0.201 Number: 8899 i PRINT: ■ TCP Poll: ■ Poll Timer t Packet: ■ try Type: None Socket B Parameters rk Mode: NONE	Be 1 0~1460)chars ▼ None ▼ 1 1 [N/2 8899 (1~65535) out : 200 (200~95 ▼ LocationConnect	4] 999) ms With ▼	, Do Best!
Current Status Local IP Config PORT1 Web to Serial Misc Config Reboot	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat Wor Remote Serv Local/Remote Port Modbus Enable Net Heartbeat Regist	: Length: 0 (1 Similar): ♥ t Packet: ■ Socket A Parameters rk Mode: UDP Server ver Addr: 192.168.0.207 Number: 8899 i PRINT: ■ TCP Poll: ■ Poll Timee t Packet: ■ try Type: None Socket B Parameters rk Mode: NONE ▼	Be 0~1460)chars • • None • 1 0. 1 0. 1 0. 1 0. 1 0. 1 0. 1 0. 1 0. 1 0. 1 0. 1 1 1.	A] 199) ms With V	, Do Best!
Current Status Local IP Config PORT1 Web to Serial Misc Config Reboot	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat Wor Remote Serv Local/Remote Port Modbus' Enable Net Heartbeat Regist	: Length: 0 (1 Similar): 0 t Packet: Socket A Parameters rk Mode: UDP Server ver Addr: 192.168.0.201 Number: 8899 PRINT: TCP Poll: Poll Timet t Packet: try Type: None Socket B Parameters rk Mode: NONE Save Canc	Be 1 0~1460)chars ▼ None ▼ 1 [N/4 8899 (1~65535) out : 200 (200~99 ▼ Location Connect P rel	A] 999) ms With v	, Do Best!
Current Status Local IP Config PORT1 Web to Serial Misc Config Reboot	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat Woi Remote Serv Local/Remote Port Cocal/Remote Port Enable Net Heartbeat Regist	: Length: 0 (1 Similar): t Packet: Socket A Parameters rk Mode: UDP Server ver Addr: 192.168.0.201 Number: 8899 PRINT: TCP Poll: Poll Times t Packet: Socket B Parameters rk Mode: NONE Save Cancer	Be 1 0~1460)chars ▼ None ▼ 1 1 [N/4 8899 (1~65535) out : 200 (200~95 ▼ Location Connect 2el	4] 999) ms With ▼	, Do Best!
Current Status Local IP Config PORT1 Web to Serial Misc Config Reboot	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat Remote Serv Local/Remote Port Modbus' Enable Net Heartbeat Regist	: Length: 0 (1 Similar): t Packet: Socket A Parameters rk Mode: UDP Server ver Addr: 192.168.0.201 Number: 8899 PRINT: TCP Poll: Poll Timer t Packet: Socket B Parameters rk Mode: NONE (Cancel)	Be 1 0~1460)chars ▼ None ▼ 1 1 [N/4 8899 (1~65535) out : 200 (200~99 ▼ Location Connect 2 2 2 2 2 2 2 2 2 2 2 2 2	A] Výth V	, Do Best!
Current Status Local IP Config PORT1 Web to Serial Misc Config Reboot	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat Remote Serv Local/Remote Port Enable Net Heartbeat Regist Wor	: Length: 0 (1 Similar): ♥ t Packet: ■ Socket A Parameters rk Mode: UDP Server ver Addr: 192.168.0.201 Number: 8899 i PRINT: ■ TCP Poll: ■ Poll Timer t Packet: ■ try Type: None Socket B Parameters rk Mode: NONE Save Canc	<i>Be</i> 1 0~1460)chars ▼ None ▼ 1 1 [N/4 8899 (1~65535) out : 200 (200~99 ▼ Location Connect :el	A] With V	, Do Best!
Current Status Local IP Config PORT1 Web to Serial Misc Config Reboot	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat Wor Remote Serv Local/Remote Port Enable Net Heartbeat Regist Wor	: Length: 0 (1 Similar): ♥ t Packet: ■ Socket A Parameters rk Mode: UDP Server ver Addr: 192.168.0.207 Number: 8899 i PRINT: ■ TCP Poll: ■ Poll Times t Packet: ■ try Type: None Socket B Parameters rk Mode: NONE	V None ▼ 1 [N/4 8899 (1~65535) out : 200 (200~95) ▼ Location Connect ? :el	A] 199) ms With v	, Do Best!
Current Status Local IP Config PORT1 Web to Serial Misc Config Reboot	-IOT Experts- UART Packet Sync Baudrate(RF2217 Enable Uart Heartbeat Wor Remote Serv Local/Remote Port Modbus ⁻ Enable Net Heartbeat Regist Wor	: Length: 0 (1 Similar): ♥ t Packet: ■ Socket A Parameters rk Mode: UDP Server ver Addr: 192.168.0.201 Number: 8899 [PRINT: ■ TCP Poll: ■ Poll Timer t Packet: ■ try Type: None Socket B Parameters rk Mode: NONE Save Canc	<i>Be</i> 1 0~1460)chars ▼ None ▼ 1 1 [N/4 8899 (1~65535) out : 200 (200~99 ▼ Location Connect ? :el	A] Vith •	, Do Best!

Figure 13 UDP Server

2.2.5. HTTPD Client

In HTTPD Client mode, N540 can achieve data transmission between serial port device and HTTP server. User just need set N540 in HTTPD Client and set the HTTPD header, URL and some other related parameters, then can



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achieve data transmission between serial port device and HTTP server and don't need care about the HTTP format of data.User can set N540 in HTTPD Client mode and related parameters by web server as follow:

	USR IOT Be Honest	, Do Best!
Current Status	Enable Uart Heartbeat Packet:	mechanism; you
Local IP Config	Socket A Parameters	none-zero value
	Work Mode: Httpd Client 🔻 None 🔻	
PORT1	Httpd Type: GET 🔻 Remove Httpd Head 🖉	
Web to Serial	/1. php?	
Misc Config	Httpd URL(<100byte):	
Reboot		
	Httpd Client Header(<180byte):	
	Remote Server Addr: [test.usr.cn [IV]AJ Local/Remote Port Number: 8899 80 (1~65535)	
	Server Response Time : 10 (2~255)s	
	PRINT:	
	ModbusTCP Poll: Doll Timeout : 200 (200~9999) ms	
	Enable Net Heartbeat Packet:	
	Registry Type: None ▼ Location Connect With ▼	
	Socket B Parameters	
	Work Mode: NONE 🔻	-
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Figure 14 HTTPD Client

2.2.6. WebSocket

WebSocket function can achieve real-time interaction between serial port and webpage and display user data on webpage. User can set N540 with WebSocket function by web server as follow:

۲	USR IOT Be Honest	t, Do Best!
Current Status	parameter	help
Local IP Config	Websocket connection: 0	 web to serial
PORT1	Receive hex data	this page use websocket to
Web to Serial		transmit data between
Misc Config		uart
Reboot		
	send ascii data send hex data clear 192.168.5.7 上的网页显示: × connect success! 确定	
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Figure 15 WebSocket



2.3. Serial port

2.3.1. VCOM Application

User can download VCOM software from http://www.usriot.com/usr-vcom-virtual-serial-software/. Through this software user can set up connection between N540 and virtual serial to solve the problem that traditional equipment PC software used in serial port communication way.

2.3.2. Flow Control

N540 support hardware flow control way (RTS/CTS, only take effect in RS232 mode) and software flow control way Xon/Xoff. User can select Flow Control method by setup software or web server as follows:

	ck a device to read parameters in the 3	Search List]	Port1		
Device IP D	evice Name MAC V	/ersion			
192.168.5.7 U	SR-N510 D8 B0 4C BE 0E DC 3	031			
			Baudrate:	115200	• (?)
			Parity/Data/Stop:	NONE - 8 -	1 • (?)
			FlowControl:	None	• (?)
			Work Mode:	None Hardware	(?)
			Report oTP:	RS485	
	Clear	ARP table		152.100.0.201	
<u> </u>	Search Device Compa	tible with	Remote Port:	8899	(9)
			Local Port:	8899	(?)
📄 Open Device	Device Restart 🖓 Fact	tory Reset	TCP Server style:	Transparent tra	msmi - (?)
Roze Save			ModbusTCP:	None	
Wahracket Port-6	432 (2) Derrige Name: USR-N510	(2)	PackTime:	0 ns (0*	255) (?)
Web Port: 0	0 (2) Mare Mane. USA-NSIU	BR OF (2)	Poold on:	a hert	(0~1460) (2)
Device TD: 1	(2) TP Type' Static T	P v (?)	rackLen.	U byte	(0 1400) (1)
Device 1D. I	(7) ModuleStaticIP 192.168.	5.7 (?)	V Synchronize ba	udrate (RFC2217	(?)
Maar Nama'	(2) Subnetllask; 255.255.	255.0 (?)	Enable USE Clo Device I	ua	(?)
Promoval	amin (2) Gateway; 192.168.0	0.1 (?)	Communication Coi	de	
rassword.	dmin (7) terres.		communicación cou	A.C.	
Tidy Sho	w - 🗸 Base Save			V Save COM1	
	On-line	e Device NUM:1	Search Port	:1901	
	On-line	e Device NUM:1	Search Port	:1901	
ant Chabaa	On-line	e Device NUM:1	Search Port	:1901	-
ent Status	On-line	e Device NUM:1	Search Port	:1901	help
ent Status I IP Config	On-line Baud Rate:	e Device NUM:1 parameter 115200 br	Search Port	:1901	help local port
ent Status I IP Config F1	On-line Baud Rate: Data Size:	parameter 115200 br 8 • bit	Search Port	:1901	help • local port 1~65535. who TCP Client, set
ent Status I IP Config F1 to Serial	On-line Baud Rate: Data Size: Panity:	e Device NUM:1 parameter 115200 bp 8 bit None	Search Port	:1901	help • local port 1~65535. wha TCP Client, set this to 0 mear use random lo
ent Status I IP Config F1 to Serial Config	On-line Baud Rate: Data Size: Parity: Stop Bits:	e Device NUM:1 parameter 115200 bp 8 v bit None v 1 v bit	Search Port	:1901	help • local port 1~65535. whe TCP Client, set this to 0 mear use random loo port
ent Status I IP Config I I to Serial Config	On-line Baud Rate: Data Size: Parity: Stop Bits: Flow Control:	e Device NUM:1 parameter 115200 br 8 • bit None • 1 • bit None • None •	Search Port	.1901	help local port 1~65535. who TCP Client, set this to 0 mear use random port • remote port 1~65535
ent Status I IP Config I I D Config to Serial Config Dot	On-line Baud Rate: Data Size: Parity: Stop Bits: Flow Control: UART Packet Time:	e Device NUM:1 parameter 115200 br 8 • bit None • 1 • bit None • RTS/CTS ~	Search Port ps(600~230400)bps 255)ms	.1901	help local port 1-65535 whith TCP Client, set this to 0 mear use random lo port remote port 1-65535 packet
ent Status I IP Config I I to Serial Config sot	On-line Baud Rate: Data Size: Parity: Stop Bits: Flow Control: UART Packet Time: UART Packet Length:	e Device NUM:1 parameter 115200 bp 8 • bit None • 1 • bit None RTS/CTS Xon/Xoff ~	Search Port 0s(600~230400)bps 255)ms 1460)chars	-1901	help • local port 1~65535, who TCP Clent, self this to 0 mear use random lo port • remote port 1~65535 • packet time/length default 0/0,
ent Status I IP Config I to Serial Config tot	On-line Baud Rate: Data Size: Parity: Stop Bits: Flow Control: UART Packet Time: UART Packet Length: Sync Baudrate(RF2217 Similar):	e Device NUM:1 parameter 115200 bp 8 • bit None • 1 • bit None • RTS/CTS ~ Xon/Xoff ~	Search Port bs(600~230400)bps 255)ms 1460)chars	-1901	help local port 1-65535. whit TCP Citent, set this to 0 mean yout ver andom lo port 1-65535 packet time/length default 0/0, means automs packet
ent Status I IP Config I I to Serial Config Dot	On-line Baud Rate: Data Size: Parity: Stop Bits: Flow Control: UART Packet Time: UART Packet Length: Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet:	e Device NUK1 parameter 115200 bp 8 v bit None v 1 v bit None v RTS/CTS 2000 200	Search Port ps(600~230400)bps 255)ms 1460)chars	:1901	help • local port 1-65335. white this to 0 mean vise random lo port - remote port 1-65335 • packet time/length default 0/0, medhenism; yu can modifut a
ent Status I IP Config F1 to Serial Config oot	On-line Baud Rate: Data Size: Parity: Stop Bits: Flow Control: UART Packet Length: UART Packet Length: Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet: Socket A	e Device NUM:1 parameter 115200 br 8 • bit None • None • None • None • None • Parameters	Search Port 0s(600~230400)bps 255)ms 1460)chars	:1901	help • local port 1-65535. whith CTC Client, set this to 0 mear use random lo pot 1-65535 • packet time/length default 0/0, means autom: packet mechanism; yy can modify it a none-zero vala
ent Status I IP Config F1 to Serial Config oot	On-line Baud Rate: Data Size: Parity: Stop Bits: Flow Control; UART Packet Time: UART Packet Length: Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet: Socket A Work Mode:	e Device NUM:1 parameter 115200 bp 8 • bit None • 1 • bit None • RTS/CTS Xon/Xoff Parameters TCP Server •	Search Port ps(600~230400)bps 255)ms 1460)chars	:1901	help • local port 1~65535. whith TCP Cifent, set this to 0 mean use random lo port • remote port 1~65535 • packet time/length default 0/0, means autom. packet mechanism; yu can modify it a none-zero vali
ent Status I IP Config r1 to Serial Config oot	On-line Baud Rate: Data Size: Parity: Stop Bits: Flow Control: UART Packet Time: UART Packet Time: UART Packet Time: Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet: Socket A Work Mode: Local/Remote Port Number:	e Device NUM:1 parameter 115200 bp 8 v bit None v 1 v bit None v RTS/CTS Xon/Xoff v Parameters TCP Server v 8899 085	Search Port (600~230400)bps 255)ms 1460)chars None 19 (1~65535)	:1901	help • local port 1-65535. whith TCP Client, set this to 0 mean use random lo port • remote port 1-65535 • packet time/length default 0/0, means autom. packet mechanism; yy can modify it a none-zero vali
ent Status I IP Config r1 to Serial Config tot	On-line Baud Rate: Data Size: Parity: Stop Bits: Flow Control: UART Packet Time: UART Packet Length: Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet: Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet: Socket A Work Mode: Local/Remote Port Number: PRINT:	e Device NUM:1 parameter 115200 bp 8 v bit None v 1 v bit None v RTS/CTS RTS/CTS Parameters TCP Server v 8899 885	Search Port (600~230400)bps 255)ms 1460)chars None • (1~65535)	:1901	help • local port 1-65535. whith TCP Client, set this to 0 mear use random lo port • remote port 1-65535 • packet ime/length default 0/0, means autom packet mechanism; yu can modify it a none-zero vali
ent Status I IP Config C1 to Serial Config tot	On-line Baud Rate: Data Size: Parity: Stop Bits: Flow Control: UART Packet Length: UART Packet Length: Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet: Socket A Work Mode: Local/Remote Port Number: PRINT: ModbusTCP Poll:	e Device NUK1 parameter 115200 bp 8 v bit None v 1 v bit None v None v 1 v bit None v T v bit None v 2 v 2 v 2 v 2 v 2 v 2 v 2 v 2	Search Port (\$600~230400)bps (\$55)ms (\$600chars (\$1460)chars (\$1460)chars (\$1465535) (\$1465535) (\$1465535) (\$200(\$200(\$5535)) (\$200(\$1200(\$5535))) (\$200(\$1200(\$5535))) (\$200(\$1200(\$5535))) (\$200(\$1200(\$5535))) (\$200(\$1200(\$5535))] (\$200(\$1200(\$1200(\$5535))] (\$200(\$1200(:1901	help • local port 1-65335, whit TCP Citent, set this to 0 mean port • remote port 1-65535 • packet time/length default 0/0, means automs packet mechanism; yt can modify it a none-zero vali
ent Status I IP Config I to Serial Config Dot	On-line Baud Rate: Data Size: Parity: Stop Bits: Flow Control: UART Packet Length: UART Packet Length: UART Packet Length: Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet: Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet: Sync Baudrate(RF2217 Similar): Enable Vart Heartbeat Packet:	e Device NUK1 parameter 115200 bp 8 v bit None v 1 v bit None v RTS/CTS v Parameters TCP Server v 8899 085 Poll Timeout	Search Port ps(600~230400)bps 255)ms 1460)chars 19 (1~65535) t: 200 (200~5)	:1901	help • local port 1-65535. white this to 0 mean port - remote port 1-65535 • packet ime/Length default 0/0, means autom packet none-zero vali
ent Status I IP Config I to Serial Config oot	On-line Baud Rate: Data Size: Parity: Stop Bits: Flow Control: UART Packet Length: UART Packet Length: Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet: Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet: Cocal/Remote Port Number: PRINT: ModbusTCP Poll: Enable Net Heartbeat Packet: Registry Type:	e Device NUM:1 parameter 115200 bp 8 • bit None • 1 • bit None RTS/CTS Aon/Xoff Parameters TCP Server • 8899 885 Poll Timeout None None	Search Port ps(600~230400)bps 255)ms 1460)chars igg (1~65535) :: 200 (200~s) • Location Connect • Location Connect	:1901 29999) ms ct With •	help • local port 1-65335. whith CTP Client, set this to 0 mean use random lo port 1-65535 • packet time/length default 0/0, means automs packet means automs means auto
ent Status I IP Config f1 to Serial Config oot	On-line Baud Rate: Data Size: Parity: Stop Bits: Flow Control: UART Packet Iength: UART Packet Length: Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet: Socket A Work Mode: Local/Remote Port Number: PRINT: ModbusTCP Poll: Enable Net Heartbeat Packet: Registry Type: Socket B	e Device NUM:1 parameter 115200 br 8 • bit None • 1 • bit None • None • None • RTS/CTS An/Xoff • Parameters TCP Server • 8899 885 Poll Timeout Poll Timeout None Parameters	Search Port 0s(600~230400)bps 255)ms 1460)chars 19 (1~65535) :: 200 (200~5) : v Location Connect	1901 1999) ms ct With V	help • local port 1-65535, whith CCP Client, set this to 0 mear use random lo pot 1-65535 • packet time/length default 0/0, means autom: packet mechanism; yy can modify it a none-zero vali
ent Status I IP Config F1 to Serial Config oot	On-line Baud Rate: Data Size: Parity: Stop Bits: Flow Control; UART Packet Length: UART Packet Length: Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet: Socket A Work Mode: Local/Remote Port Number; PRINT: ModbusTCP Poll: Enable Net Heartbeat Packet: Registry Type: Socket B Work Mode:	e Device NUM:1 parameter 115200 bp 8 • bit None • 1 • bit None • RTS/CTS An/Xoff • Parameters TCP Server • 8899 885 • Poll Timeout None Parameters None Parameters	Search Port 0s(600~230400)bps 255)ms 1460)chars 19 (1~65535) 1: 200 (200~5) • Location Connect • Location Connect	2999) ms	help • local port 1~65535, whith TCP Client, set this to 0 mears use random lo port • remote port 1~65535 • packet time/length default 0/0, means autom, packet mechanism; yu can modify it a none-zero vali

Figure 16 Flow Control



2.3.3. Serial Package Methods

For network speed is faster than serial. Module will put serial data in buffer before sending it to network. The data will be sent to Network as Package. There are 2 ways to end the package and send package to network - Time Trigger Mode and Length Trigger Mode.

For example, set package time 10ms and package length 512, after serial port receiving data, if receiving interval time beyond 10ms or data length beyond 512, data will be sent to network. One of package time or package length is 0, N540 will adopt the method which is not 0. User can set package time and package length by setup software or web server as follows:

USR-TCP232-M4,E4	15 V2.3.0.78				
Device(D) 中文(L) H	<u>l</u> elp				
- Search List [Click	a device to read paramete	rs in the Search List]	Port1		
Device IP Devic	ce Name MAC	Version	L		
192.168.5.7 USR-	-N510 D8 B0 4C B	E 0E DC 3031		45000	
			Baudrate:	115200	
			Parity/Data/Stop:	NONE - 8 - 1	(?)
			FlowControl:	None	• (?)
			Work Mode:	UDP Server	• (?)
			RemoteIP:	192. 168. 0. 201	
		Clear ARP table	Presta Presta	0000	
~ 265	arch bevice	Compatible with	Remote fort.	0093	
			Local Port:	8899	(?)
Upen Device	Si Device Kestart	Factory Keset	TCP Server style:	Transparent trans	mi - (?)
Base Save			ModbusTCP:	None	- (?)
Websacket Part 6432	2 (2) Derrice Nono:	USB-N510 (2)	PackTime:	0 ms (0~25	5) (?)
Web Port 80	(?) Hear Mac	D8 B0 4C BE OF (2)	PackLen	hvte (0~	(1460) (?)
Device TD: 1	(?) IP Twne	Static IP (?)	- acabeat.	0 0,000	
Device ID. Trme: Dis.	a = (2) ModuleStaticI	P 192, 168, 5, 7 (?)	V Synchronize ba	udrate (RFC2217	(?)
Unor Nono	(7) SubnetMask:	255. 255. 255. 0 (?)	Enable USK Clou Device I	ng	
Panamand:	(c) Gateway:	192.168.0.1 (?)	Communication Cod		_
rassword. admi					
Tidy Show	- 🗸	Base Save		V Save COM1	
				,	
		On-line Device NUM:1	Search Port	1901	
Current Status		parameter			help 🌰
Local IP Config	Ba	aud Rate: 115200 bp:	s(600~230400)bps		
	D	ata Size: 8 🔻 bit		• lo 1~	cal port 65535. when
PORT		Parity: None 🔻		TC th	IP Client, set is to 0 means
Web to Serial	s	Stop Bits: 1 🔻 bit		us	e random local
Misc Config	Flow	Control: None 🔻		• ге	mote port
Reboot	UART Pad	ket Time: 0 (0~2	:55)ms	1~	-65535
	UART Packet	t Length: 0 (0~1	460)chars	• pa tir	me/length
	Sync Baudrate(RF2217	Similar): 🖉		de	eans automatic
	Enable Uart Heartbea	t Packet:		pa m	icket echanism; you
		Socket A Parameters		ca	n modify it as a
	Wo	rk Mode: TCP Server 🔻	None 🔻		
	Local/Remote Port	Number: 8899 8899	(1~65535)		
		PRINT:			
	Modbus	TCP Poll: 🔲 Poll Timeout	: 200 (200~99	999) ms	
	Enable Net Heartbeat Packet:				
	Regis	try Type: None	Location Connect	With T	
		Socket B Parameters			
	Wo	rk Mode: NONE 🔻			
		Save Cancel			•
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Figure 17 Serial Package



2.3.4. Baud Rate Synchronization

When module works with USR devices or software, serial parameter will change dynamically according to network protocol. Customer can modify serial parameter by sending data conformed to specific protocol via network. It is temporary, when restart DTU, the parameters back to original parameters.

User can adopt Baud Rate Synchronization function by setup software or web server as follows:

🙀 USR-TCP232-M4,E	45 V2.3.0.78	matters back to origin	al parameters.	
Device(<u>D</u>) 中文(<u>L</u>)	<u>H</u> elp			
Search List [Click	a device to read paramet	ers in the Search List]	Port1	
Device IP Dev	vice Name MAC	Version		
192.168.5.7 USF	R-N510 D8 B0 4C	BE 0E DC 3031	Baudrate:	115200 • (?)
			Parity/Data/Stop:	
			FlowControl	
			FlowControl.	inone (i)
			Work Mode:	UDP Server V (?)
]	Clear ARP table	RemoteIP:	192. 168. 0. 201 (?)
Q 5	earch Device	Compatible with	Remote Port:	8899 (?)
			Local Port:	8899 (?)
Open Device	S Device Restart	Factory Reset	TCP Server style:	Transparent transmi - (?)
Base Save			ModbusTCP:	None (?)
Websocket Port:643	32 (?) Device Name:	USR-N510 (?)	PackTime:	0 ms (0~255) (?)
Web Port: 80	(?) User MAC:	D8 B0 4C BE OE (?)	PackLen:	0 byte (0~1460) (?)
Device ID: 1	(?) IP Type	: Static IP 💌 (?)	V Synchronize b	audrate (RFC2217 (?)
Device ID Type: Di	sa 👻 (?) ModuleStatic	IP 192.168.5.7 (?)	Enable USR Clo	ud (?)
User Name: adr	nin (?) SubnetMask:	255.255.255.0 (?)	Device :	
Password: adv	nin (?) Gateway:	192.168.0.1 (?)	Communication Co	de
Tidy Show	-	Base Save		Save COM1
				• • • • • • • •
		On-line Device NUM:	1 Search Port	:1901
Current Status		parameter		help
Local IP Config	Ba	aud Rate: 115200 b	ps(600~230400)bps	local port
PORT1	D	ata Size: 8 🔻 bit		1~65535. when TCP Client, set
Web to Serial		Parity: None		this to 0 means use random local
Misc Config	Elow			port
Reboot	UART Pac	ket Time: 0 (0^	~255)ms	1~65535
	UART Packe	t Lenath: 0 (0^	~1460)chars	 packet time/length
	Sync Baudrate(RF2217	' Similar): 🖉		default 0/0, means automatic
	Enable Uart Heartbea	t Packet:		packet mechanism; you
		Socket A Parameters		can modify it as a none-zero value
	Wo	ork Mode: TCP Server 🔻	None •	
	Local/Remote Port	Number: 8899 88	99 (1~65535)	
		000) mc		
	Modbus	si CP Poll: 🔲 Poll Timeou	200 (200~9	222) IU2
	Enable Net Heartbea	с маскес:		t With 🔻
	Pogia	try Type: None		
	Regis	try Type: None Socket B Parameters	Location Connec	
	Regis Wo	try Type: None Socket B Parameters ork Mode: NONE	Location Connect	
	Regis Wo	try Type: None Socket B Parameters ork Mode: NONE Save Cancel		

Figure 18 Baud Rate Synchronization



2.4. Features

2.4.1. Identity Packet Function



Figure 19 Identity Packet application diagram

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

- Identity data will be sent when connection is established.
- Identity data will be add on the front of every data packet.

User can set N540 with Identity Packet function by web server as follow:

Current Status	parameter	help 🄶
Local IP Config	Baud Rate: 115200 bps(600~230400)bps	- local port
PORT1	Data Size: 8 🔻 bit	1~65535. when
Web to Serial	Parity: None 🔻	this to 0 means use random local
Misc Config	Stop Bits: 1 V bit Flow Control: None V	portremote port
Reboot	UART Packet Time: 0 (0~255)ms	1~65535
	UART Packet Length: 0 (0~1460)chars	time/length default 0/0,
	Sync Baudrate(RF2217 Similar): 🖉	means automatic
	Enable Uart Heartbeat Packet: 📃	mechanism; you
	Socket A Parameters	none-zero value
	Work Mode: TCP Server V None V	
	Local/Remote Port Number: 8899 8899 (1~65535)	
	PRINT:	
	ModbusTCP Poll: 📃 Poll Timeout : 200 (200~9999) ms	
	Enable Net Heartbeat Packet: 📃	
	Registry Type: USER Register Location Connect With	
	Net Registry Packet: www.usr.cn	
	HEX: 🗌 ASCII: 🖉	
	Socket B Parameters	
	Work Mode: NONE 🔻	·
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Figure 20 Identity Packet



2.4.2. Heartbeat Packet Function

Heartbeat packet: Module will output heartbeat data to serial or network periodic. User can configure the heartbeat data and time interval. Serial heartbeat data can be used for polling Modbus data. Network heartbeat data can be used for showing connection status and keep the connection (only take effect in TCP/UDP Client mode). User can set N540 with Heartbeat Packet function by web server as follow:

	USR IOT -IOT Experts-	Be Hones	st, Do Best!
Current Status	Stop Bits:	1 v bit	use random local
Local IP Config PORT1 Web to Serial	Flow Control: UART Packet Time: UART Packet Length:	None • 0 (0~255)ms 0 (0~1460)chars	remote port 1~65535 packet time/length default 0/0
Misc Config Reboot	Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet: Uart Heartbeat Packet:	♥ www.usr.cn HEX:ASCII: ♥	means automatic packet mechanism; you can modify it as a none-zero value
	Beat Time:	30 (1~65535)s	
	Socket A Work Mode: Local/Remote Port Number: PRINT: ModbusTCP Poll: Enable Net Heartbeat Packet: Registry Type: Socket B Work Mode:	TCP Senver None Poll Timeout : 200 Poll Timeout : 200 Connect With Parameters None Save Cancel	
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Figure 21 Heartbeat Packet

2.4.3. Impersistent Connection

N540 support impersistent connection function in TCP Client mode. When N540 adopt this function, N540 will connect to server and send data after receiving data from serial port side and will disconnect to server after sending all the data to server and no data from serial port side over 3s. User can set N540 with impersistent connection function by web server as follow:

<i>₹</i>	USR IOT -IOT Experts-	Be Hones	st, Do Best!
Current Status	Stop Bits:	1 V bit	use random local
Local IP Config	Flow Control:	None •	remote port
PORT1	UART Packet Time:	0 (0~255)ms	• packet
Web to Serial	UART Packet Length:	0 (0~1460)chars	time/length default 0/0,
Misc Config Reboot	Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet:		means automatic packet mechanism; you can modify it as a
	Beat Time:	HEX: ASCII: 30 (1~65535)s	none-zero value
	Socket A	Parameters	
	Work Mode: Remote Server Addr: Local/Remote Port Number:	TCP Client V Short Connection V 192.168.0.201 [N/A] 8899 (1~65535)	
	Timeout Reconnection : Disconnect Time : PRINT:	86400 (1~99999)s 3 (2~255)s	
	ModbusTCP Poll:	Poll Timeout : 200 (200~9999) ms	
	Enable Net Heartbeat Packet: Registry Type:	None Location Connect With	
	Socket B	Parameters	
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Figure 22 Impersistent Connection



2.4.4. Modbus Gateway

Modbus Gateway include: Modbus RTU transparent transmission, Modbus ASCII transparent transmission, Modbus RTU<=>Modbus TCP protocol conversion, Modbus polling and serial port query.

Modbus RTU<=>Modbus TCP: Set N540 in TCP Server or TCP Client mode, then user can set N540 with Modbus RTU<=>Modbus TCP function by setup software or web server as follows:

USR-TCP232-M4,E4	45 V2.3.0.78	_		
Device(D) 中文(L) 」	<u>H</u> elp			
- Search List [Click	a device to read paramete:	rs in the Search List]	Portl	
Device IP Devi	ce Name MAC	Version		
192.168.5.7 USR	-N510 D8 B0 4C B	E 0E DC 3031	Baudrata 115	200 (2)
			Buniter/Data (Stars) MON	
			Farity/Data/Stop. Mur	
			FlowControl: Nor	ne v (?)
			Work Mode: TCF	'Server • (?)
		Class APP table	RemoteIP: 192	. 168. 0. 201 (?)
🔍 Se	arch Device	Clear AAF table	Remote Port: 889	9 (?)
			Local Port: 889	9 (?)
Dpen Device	😋 Device Restart	Factory Reset	TCP Server style: Tre	ansparent transmi 🕶 (?)
- Bara Sava			ModbusTCP: Mod	ibusTCP (?)
Webrocket Port: 643	2 (2) Berri de Neme	USR-N510 (2)	PackTime: 0	ms (0~255) (?)
Web Port: 80	(?) User MAC:	D8 B0 4C BE OE (?)	PackLen:	byte (0~1460) (?)
Device ID: 1	(?) IP Type:	Static IP V (?)	Simehveni ze burduu	+• (98022217 (?)
Device ID Type: Dis	a 🗸 (?) ModuleStaticI	P 192.168.5.7 (?)	Enable USR Cloud	(?)
User Name: adm	in (?) SubnetMask:	255.255.255.0 (?)	Device ID	
Password: adm	in (?) Gateway:	192.168.0.1 (?)	Communication Code	
Ti dr. Show	-	Bara Sava		COU1
ITdy Show		Dase Save		save comi
		On-line Device NUM:1	Search Port:190	1
25	USR IOT -IOT Experts-	·	Be Ho	onest, Do Best!
Current Status	S	itop Bits: 1 🔻 bit		port
Local IP Config	Flow	Control: None 🔻		 remote port 1~65535
PORT1	UART Pac	ket Time: 0 (0/	~255)ms	• packet
Web to Serial	UART Packet	Length: 0 (0/	~1460)chars	default 0/0,
Misc Config	Sync Baudrate(RF2217	Similar): 🗹		packet
Reboot	Enable Uart Heartbea	Socket A Parameters		can modify it as a
	Wo	rk Mode: TCP Server V	ModbusTCP •	none-zero value
	Local/Remote Port	Number: 8899 88	399 (1~65535)	
		PRINT:		
	Modbus	TCP Poll: 🔲 Poll Timeou	ut : 200 (200~9999) ms
	Enable Net Heartbea	t Packet: 📃		
	Regis	try Type: None	Location Connect With Conn	ith 🔻
		Socket B Parameters		
	Wo	rk Mode: NONE 🔻]	
		Save Cance	I	

Figure 23 Modbus RTU<=>Modbus TCP



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Modbus polling: N540 support Modbus polling function and user can set N540 with Modbus polling function by web server as follow:

	USR IOT Be Hones	t, Do Best!
Current Status	Stop Bits: 1 ▼ bit	use random local
Local IP Config	Flow Control: None 🔻	remote port
PORT1	UART Packet Time: 0 (0~255)ms	• packet
Web to Serial	UART Packet Length: 0 (0~1460)chars	time/length default 0/0,
Misc Config	Sync Baudrate(RF2217 Similar): 🕑	means automatic packet
Reboot	Enable Uart Heartbeat Packet:	mechanism; you can modify it as a
	Work Mode: TCP Server V None V Local/Remote Port Number: 8899 8899 (1~65535) PRINT: ModbusTCP Poll: Poll Timeout : 200 (200~9999) ms Enable Net Heartbeat Packet: Registry Type: None Location Connect With V Socket B Parameters Work Mode: NONE V Save Cancel	
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Figure 24 Modbus polling

2.4.5. Network Printing

The network printing function is similar to the printer server. Through the existing printing driver, it can be modified slightly and realize the network printing function by the original serial printer. User can set N540 with Network Printing function by web server as follow:

	USR IOT -IOT Experts-	Be Hones	t, Do Best!
Current Status	Stop Bits:	1 ▼ bit	use random local
Local IP Config	Flow Control:	None •	remote port
PORT1	UART Packet Time:	0 (0~255)ms	• packet
Web to Serial	UART Packet Length:	0 (0~1460)chars	time/length default 0/0,
Misc Config	Sync Baudrate(RF2217 Similar):		means automatic packet
Reboot	Enable Uart Heartbeat Packet: Socket A	Parameters	mechanism; you can modify it as a
	Work Mode: Local/Remote Port Number: PRINT: ModbusTCP Poll: Enable Net Heartbeat Packet: Registry Type: Socket B Work Mode:	TCP Server None • 8899 (1~65535) Poll Timeout : 200 (200~9999) ms None • Location Connect With • Parameters NONE • Save Cancel	
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Figure 25 Network Printing



2.4.6. Editable Web server

N540 support user modify the web server based on template according to needs, then use related tool to upgrade. If user have this demand can contact to our salespersons for web server source and tool.





3. Parameter Setting

There are three ways to configure USR-N540. They are setup software configuration, web server configuration and AT command configuration.

3.1. Setup software Configuration

User can download setup software from http://www.usriot.com/usr-tcp232-m4k3-setup-software/. When user want to configure the N540 by setup software, user can run setup software, search N540 in same LAN and configure the N540 as follow:

evice(<u>D)</u> 中文	:(<u>L) H</u> elp			- i- dhe Grouph I				
Search List [CIICK & Gev	ice co	reau parameter	s in the Search i	Por Por	rti		
Device IP	Device Nan	ne	MAC	Version				
192.168.5.7	USR-N510		D8 B0 4C BE	0E DC 3031		Baudrate:	115200 👻	(?)
						Parity/Data/Stop:	NONE - 8 - 1 -	(?)
						FlowControl:	None 🔻	(?)
						Work Mode:	TCP Server 💌	(?)
						RemoteIP:	192.168.0.201	(?)
	🔾 Search I	evice		Clear ARP tab	le .th	Remote Port:	8899	(?)
					_	Local Port:	8899	(?)
Dpen Der	vice	🔉 Dev	rice Restart	🥥 Factory Res	et	TCP Server style:	Transparent transmi 💌	(?)
Base Save						ModbusTCP:	ModbusTCP 🔹	(?)
Websocket Por	t:6432	(?)	Device Name:	USR-N510	(?)	PackTime:	0 ms (0~255)	(?)
∦eb Port:	80	(?)	User MAC:	D8 B0 4C BE OE	(?)	PackLen:	0 byte (0~1460)	(?)
Device ID:	1	(?)	IP Type:	Static IP 🔹	(?)	🔽 Synchronize ba	udrate (RFC2217	(?)
Device ID Typ	e: Disa 👻	(?)	ModuleStaticIP	192.168.5.7	(?)	 Enable USR Clo	ud	(?)
User Name:	admin	(?)	SubnetMask:	255. 255. 255. 0	(?)	Device I	D	
Password:	admin	(?)	Gateway:	192.168.0.1	(?)	Communication Cod	le	
Tidy Show -					V Save COM1			
				On line Davis	NUM-1	Search Port	1001	

Figure 26 Setup software

After researching N540 and clicking N540 to configure, user need log in with user name and password. Default user name and password both are admin. If user keep the default user name and password, it is not necessary to log in.

3.2. Web Server Configuration

User can connect PC to N540 through LAN port and enter web server to configure.Web server default parameters as follow:

Parameter	Default settings
Web server IP address	192.168.0.7
User name	admin
Password	admin

Figure 27 Web server default parameters



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After firstly connecting PC to N540, user can open browser and enter default IP 192.168.0.7 into address bar, then log in user name and password, user will enter into web server. Web server screenshot as follow:

Version: v3032		中文
	USR IOT Be H	onest, Do Best!
Current Status	parameter	help 🔶
Local IP Config	Module Name: USR-N540	Run time:
PORT1	Firmware Revision: 3032	run time means the minutes
PORT2	Current IP Address: 192.168.5.7	since latest reboot
PORT3	MAC Address: d8-b0-4c-00-55-44	• TX/RX Count:
PORT4	Run Time: Oday: Ohour: Omin	TX/RX count give us a calculation
Web to Serial	TX Count(ETH) : 0/0/0/0 bytes	of the total byte we have been
Misc Config	RX Count(ETH) : 0/0/0/0 bytes	received or send.
Reheat	Conn Status(ETH)A: LISTEN/LISTEN/LISTEN/LISTEN	
Rebool	Conn Status(ETH)B: IDLE/IDLE/IDLE/IDLE	
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Figure 28 Web Server

3.3. AT Command

We have specific user manual for AT commands.

3.3.1. Serial AT Command

In transparent mode, user can enter AT command mode, then user can send AT command to module. For entering AT command mode, please refer to this FAQ: http://www.usriot.com/enter-serial-command-mode/.

3.3.2. Network AT Command

Network AT command is to send a search keyword by broadcast, then set the parameters in a single broadcast way. Default keyword is **WWW.USR.CN** and default port number is 48899. User can enter Network AT command as follow:



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🔮 USR-TCP232-Test RS2	32 to Ethernet Convert tester							
File(F) Options(O) Help(H)								
COMSettings	COM port data receive	Network data receive	NetSettings					
PortNum COM4 💌			(1) Protocol					
BaudR 115200 💌			UDP					
			(2) Local host IP					
			192.168.5.38					
DataB 8 bit 🔽			(3) Local host port					
StopB 1 bit 💌			10000					
🔵 Open			🔆 Disconnect					
Recv Options			Recv Options					
🔲 Receive to file			🔲 🔲 Receive to file					
🔽 Add line return			🔽 Add line return					
🔲 Receive As HEX			🔲 Receive As HEX					
🔲 Receive Pause			🗖 Receive Pause					
<u>Save</u> <u>Clear</u>			<u>Save</u> <u>Clear</u>					
Send Options			Send Options					
🗌 Data from file			🗌 🔲 Data from file					
🔲 Auto Checksum			🔲 Auto Checksum					
🗌 Auto Clear Input			🗌 Auto Clear Input					
🗌 Send As Hex			Send As Hex					
🗌 Send Recycle		Lemoterr. 233.235.255.255	🗌 🔲 Send Recycle					
Interval 1000 ms	Jinan USR Technology Co.,	d Sond	Interval 1000 ms					
Load Clear	Ltd.	Jeilu	Load Clear					
🎯 Ready!	Send:0 Recv:0 Re	eset 🕼 Keady! Send:0	Recv:0 Reset					

Figure 29 Network AT Command



4. Contact Us

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