

# **USR-N510 User Manual**

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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 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 Websocket function.
- Support hardware Reload.
- Support Keep-alive.
- Support RS232/RS485/RS422.





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#### Product link:

http://www.usriot.com/p/rs232rs485rs422-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

Indicator	Status			
	On: Power on			
	Off: Power off			
WORK	On: Working			
	Off: Not working			
TV	On: Sending data to serial			
IX	Off: No data sending to serial			
DV	On: Receiving data from serial			
ΓA	Off: No data receiving from serial			

Figure 4 Hardware Indicator

#### 1.2.3. DB9 Pin definition



Pin Number	R\$232	RS422	R\$485
1			
2	RXD	RX+	
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

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## 2. Product Functions

This chapter introduces the functions of USR-N510 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:



evice(D) 中文	(I) Help	- pt 7 shite	a batic P and D	62		_
Search List [	Click a device to	o read parameters	in the Search List]	Post		
Device IP	Device Name	MAC	Version	10/11		_
192.168.5.7	USR-N510	D8 B0 4C BE 0	EDC 3031	Baudrate:	115200 👻	(?)
				Parity/Data/Stop:	NONE - 8 - 1 -	(?)
				FlowControl:	None 🔻	(?)
				Work Mode:	TCP Server 💌	(?)
				RemoteIP:	192.168.0.201	(?)
	🔍 Search Device		Clear ARP table Compatible with	Remote Port:	8899	(?)
			_	Local Port:	8899	(?)
📄 Open Dev	vice 💽 Der	vice Restart	🥥 Factory Reset	TCP Server style:	Transparent transmi 💌	(?)
Base Save				ModbusTCP:	None 🔻	(?)
Websocket Por	rt:6432 (?)	Device Name: U	JSR-N510 (?)	PackTime:	0 ms (0~255)	(?)
Web Port:	80 (?)	User MAC: I	08 BO 4C BE OE (?)	PackLen:	0 byte (0~1460)	(?)
Device ID:	1 (?)	IP Type:	Static IP 🔻 (?)	👽 Synchronize ba	udrate (RFC2217	(?)
Device ID Typ	pe: Disa 👻 (?)	ModuleStaticIP 1	.92. 168. 5. 7 (?)	Enable USR Clo	ud	(?)
User Name:	admin (?)	SubnetMask: 2	255. 255. 255. 0 (?)	Device :		
Password:	admin (?)	Gateway: 1	92.168.0.1 (?)	Communication Co	le	
Tidy	Show -	B:	ase Save		V Save COM1	
			On-line Device NUM	1 Search Port	:1901	

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:

USR-TCP232-M4,E45 V2.3.0.78	\$		- x
Device(D) 中文(L) Help			
User config	> read parameters in the Search List]	Port1	
Firmware upgrade	MAC Version		
Exit	D8 B0 4C BE 0E DC 3031	Rudauta: 115200 - (0	2)
		Parity/Data/Stop: NONE V 8 V 1 V	?)
		FlowControl: None - (3	2)
		Work Mode: TCP Server 🗸 🤇	?)
		RemoteIP: 192.168.0.201	?)
🔍 Search Device	Clear ARP table	Remote Port: 8899	?)
		Local Port: 8899 (S	?)
📄 Open Device 🚫 De	vice Restart 🖓 Factory Reset	TCP Server style: Transparent transmi 💌 🤅	?)
Base Save		ModbusTCP: None (3	?)
Websocket Port: 6432 (?)	Device Name: USR-N510 (?)	PackTime: 0 ms (0~255) (3	?)
Web Port: 80 (?)	User MAC: D8 B0 4C BE OE (?)	PackLen: 0 byte (0~1460) (3	?)
Device ID: 1 (?)	IP Type: Static IP (?)	Synchronize baudrate (RFC2217 (3))	?)
Device ID Type: Disa 👻 (?)	ModuleStaticIP 192.168.5.7 (?)	Enable USR Cloud	?)
User Name: admin (?)	SubnetMask: 255.255.255.0 (?)	Device ID	
Password: admin (?)	Gateway: 192.168.0.1 (?)	Communication Code	
Tidy Show -	Base Save	Save COM1	
	On-line Device NUM:1	Search Port:1901	



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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

N510 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.

N510 work in TCP Client mode need connect to TCP Server and need set the parameter: Remote IP/Port. N510 work in TCP Client won't accept other connection request except target server and will access server with random local port.

User can set N510 in TCP Client mode and related parameters by setup software or web server as follows:

USR-TCP232-N	14,E45 V2.3.0.78	other Classes				
Device(D) 中文(L	L) Help					
- Search List [C]	lick a device to	) read parameters in	the Search List]	Port1		
Device IP	Device Name	MAC	Version			
192.168.5.7	USR-N510	D8 B0 4C BE 0E D	C 3031	Baudrate:	115200	(?)
				Parity/Data/Stop:		(?)
				FlowControl:	None 🔻	(?)
				Work Mode:	TCP Client 🗸	(?)
				RemoteIP:	192. 168. 0. 201	(?)
9	Search Device		lear ARP table ompatible with	Remote Port:	8899	(?)
				Local Port:	8899	(?)
📄 Open Devi	ce 🚫 Det	vice 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 B	0 4C BE OE (?)	PackLen:	0 byte (0~1460)	(?)
Device ID:	1 (?)	IP Type: Stat	ic IP 🔻 (?)	👿 Synchronize bau	idrate (RFC2217	(?)
Device ID Type	Disa 🔻 (?)	ModuleStaticIP 192.	168.5.7 (?)	📃 Enable USR Clou	d	(?)
User Name:	admin (?)	SubnetMask: 255.	255.255.0 (?)	Bevice I		
Password:	admin (?)	Gateway: 192.	168. 0. 1 (?)	Communication Cod	2	
Tidy S	how -	Sase	Save		Save COM1	
		Or	n-line Device NUM:	1 Search Port:	1901	



	USR IOT Be Honest	, Do Best!
Current Status	UART Packet Length: 0 (0~1460)chars	time/length  default 0/0.
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 [N/A]	
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	
		· · · · · · · · · · · · · · · · · · ·
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**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.

N510 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 N510 in TCP Server mode simultaneously.

N510 work in TCP Server support 8 client connections at most and will kick off oldest connection beyond maximum connections.

User can set N510 in TCP Server mode and related parameters by setup software or web server as follows:



arch Erst [crick a	device co	, reau parameter.	s in the Search	Por	t1		
evice IP Device	Name	MAC	Version				
92.168.5.7 USR-N	510	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	(?)
🔍 Sear	ch Device		Clear ARP ta Compatible w	le th	Remote Port:	8899	(?)
				_	Local Port:	8899	(?)
📄 Open Device	💽 Dev	vice Restart	Factory Res	it l	TCP Server style:	Transparent transmi 🕶	(?)
se Save					ModbusTCP:	None 🔻	(?)
bsocket Port:6432	(?)	Device Name:	USR-N510	(?)	PackTime:	0 ms (0~255)	(?)
b Port: 80	(?)	User MAC:	D8 B0 4C BE OE	(?)	PackLen:	0 byte (0~1460)	(?)
vice ID: 1	(?)	IP Type:	Static IP 🔻	(?)	👽 Synchronize bau	idrate (RFC2217	(?)
vice ID Type: Disa	▼ (?)	ModuleStaticIP	192.168.5.7	(?)	📃 Enable USR Clou	1d	(?)
er Name: admin	(?)	SubnetMask:	255.255.255.0	(?)	Device I	D	
ssword: admir	(?)	Gateway:	192.168.0.1	(?)	Communication Cod	e	
Tidy Show -		<ul> <li>✓</li> </ul>	Base Save			Save COM1	

	USR IOT Be Honest, -IOT Experts-	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 ▼ Location Connect With ▼	
	Socket B Parameters	
	Work Mode: NONE 🔻	
	Save	
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**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, N510 will only communicate with target IP/Port. If data not from target IP/Port, it won't be

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received by N510.

User can set N510 in UDP Client mode and related parameters by setup software or web server as follows:

💮 USR-TCP232-M4,E4	5 V2.3.0.78		illine a				
Device(D) 中文(L) H	lelp						
- Search List [Click	a device to rea	d parameters	in the Search L	.ist] Port	:1		
Device IP Devic	ce Name	MAC	Version				
192.168.5.7 USR-	N510	D8 B0 4C BE	DE DC 3031		Baudrate:	115200	• (?)
					Parity/Data/Stop:	NONE - 8 - 1	• (?)
					FlowControl:	None	• (?)
				[	Work Mode:	UDP	• (?)
					RemoteIP:	192. 168. 0. 201	(?)
🔍 Sea	arch Device		📄 Clear AKF tab 📄 Compatible wi	th [	Remote Port:	8899	(?)
					Local Port:	8899	(?)
Open Device	C Device	Restart	Factory Rese	et	TCP Server style:	Transparent transp	ni - (?)
Base Save					ModbusTCP:	None	<b>,</b> (?)
Websocket Port: 6432	? (?) Dev	rice Name:	USR-N510	(?)	PackTime:	0 ms (0~25	5) (?)
Web Port: 80	(?) Vse	ar MAC:	D8 B0 4C BE OE	(?)	PackLen:	0 byte (0~	1460) (?)
Device ID: 1	(?) IP	Туре: (	Static IP 🔻	(?)	👽 Synchronize ba	udrate (RFC2217	(?)
Device ID Type: Dist	a' <b>▼</b> (?) Mod	uleStaticIP	192.168.5.7	(?)	📃 Enable USR Clo	ud	(?)
User Name: admi	in (?) Sub	netMask:	255.255.255.0	(?)	Device I		
Password: admi	in (?) Gat	eway:	192.168.0.1	(9)	Communication Cod	Le	
Tidy Show	-	🗸 🗸	lase Save			✔ Save COM1	
			On-line Device	NUM:1	Search Port	:1901	
							-
	USR IO	Т			Be	Honest. 1	Do Best!
~~~	-IOT Experts-						
Current Status	U,	ART Packet I	ength: 0	(0~1460	)chars	tir	ne/length
Local IP Config	Sync Baudra	te(RF2217 S	Similar): 💌			de	eans automatic
PORT1	Enable Uart	Heartbeat	Packet: 🔲			pa me	echanism; you
Web to Sorial		S	ocket A Parame	ters			one-zero value
web to Senar		Work	Mode: UDP C	lient ▼ Non	e 🔻		

65	USR IOT Be Honest	, Do Best!	
Current Status	UART Packet Length: 0 (0~1460)chars	time/length	1
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 [N/A]		_
Reboot	Local/Remote Port Number; 8899 8899 (1~65535)		
	UDP Not Check Remote PORT:		
	PRINT:		
	ModbusTCP Poll: Doll Timeout : 200 (200~9999) ms		
	Enable Net Heartbeat Packet:		
	Registry Type: None		
	Socket B Parameters		
	Work Mode: NONE		
	Save		
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Figure 12 UDP Client

#### 2.2.4. UDP Server

In UDP Server mode, N510 will change target IP every time after receiving UDP data from a new IP/Port and will

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send data to latest communication IP/Port.

User can set N510 in UDP Server mode and related parameters by setup software or web server as follows:

USR-TCP232-M4,E4	45 V2.3.0.78		
Device(D) 中文(L) H	Help • device to read normeters in the Search List] –		
bearen hist joirtek	a device to read parameters in the beatch hist;	Port1	
Device IP Devi 192.168.5.7 USR	ice Name MAC Version	Baudrate: 115200 Parity/Data/Stop: NONE v FlowControl: None	(?) • [
Se Open Device	arch Device Clear ARP table Compatible with Device Restart	RemoteIP: 192.168.0. Remote Port: 8899 Local Port: 8899 TCP Server style: Transparer	<ul> <li>(7)</li> <li>(7)</li> <li>(7)</li> <li>(7)</li> <li>(7)</li> </ul>
Base Save Websocket Port: 643 Web Port: 80 Device ID: 1 Device ID Type: Dis User Name: adm	2         (?)         Device Name:         USR-W510         (?)           (?)         User MAC:         D8 B0 4C BE 0E         (?)           (?)         IP         Type:         Static IP ▼         (?)           (a)         (?)         ModulaStaticIP         188.5.7         (?)           in         (?)         SubmetMask:         255.255.0         (?)	ModbusTCF: None PackLime: 0 PackLen: 0 Synchronize baudrate (RFC23 Danable USR Cloud Device ID	(?) (?) (?) (?) (?) (?) (?) (?)
Password: adm	in (?) Gateway: 192.168.0.1 (?) - Sase Save On-line Device NUM:1	Communication Code  Save COM  Search Port:1901	1
	USR IOT -IOT Experts-	Be Hones	t, Do Best!
Current Status Local IP Config PORT1 Web to Serial	UART Packet Length: 0 (0^ Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet: Socket A Parameters Work Mode: UDP Server V	-1460)chars	time/length default 0/0, means automatic packet, mechanism; you can modify it as a none-zero value
Reboot	Remote Server Addr: 192.168.0.201 Local Remote Port Number: 8899 PRINT: ModbusTCP Poll: Poll Timeou Enable Net Heartbeat Packet: Registry Type: None Socket B Parameters Work Mode: NONE Save Cancel	[IV/A] 99 (1~65535) It : 200 (200~9999) ms ▼ Location Connect With ▼	
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**Figure 13 UDP Server** 

### 2.2.5. HTTPD Client

In HTTPD Client mode, N510 can achieve data transmission between serial port device and HTTP server. User just need set N510 in HTTPD Client and set the HTTPD header, URL and some other related parameters, then can



achieve data transmission between serial port device and HTTP server and don't need care about the HTTP format of data.User can set N510 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
	Socket A Parameters	none-zero value
Local IP Coning	Work Mode: Httpd Client V None V	
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 [N/A]	
	Local/Remote Port Number: 8899 80 (1~65535)	
	Server Response Time : 10 (2~255)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 🔻	-
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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 N510 with WebSocket function by web server as follow:

<del>ر</del> الم	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!	
		•
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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 N510 and virtual serial to solve the problem that traditional equipment PC software used in serial port communication way.

#### 2.3.2. Flow Control

N510 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 paramet	ers in the Search List]	Port1		
Device IP	auioo Nomo MAC	Version	1 of Ci		
19216857 US	SB-N510 D8B0.4C	BE OF DC 3031			
			Baudrate:	115200	• (?)
			Parity/Data/Stop	NONE - 8 - 1	• (?)
			FlowControl:	None	• (?)
			Novis Hada:	None	(2)
			NOTA MODE.	RS485	
		Clear ARP table	RemoteIP:	192. 168. 0. 201	(?)
Q :	Search Device	Compatible with	Remote Port:	8899	(?)
			Local Port:	8899	(?)
📄 Open Device	😋 Device Restart	Factory Reset	TCP Server style	Transparent transm	ni - (?)
			ModbusTCP:	None	. (?)
Base Save			PoskTino	none (0 <sup>~</sup> 25	5) (2)
Websocket Port:6	9.54 (?) Device Name:	(?)	n 17	u ms (0 200	., ()
nep Fort: 8	U (?) User MAC:	DO BU 4U BE UE (?)	FackLen:	0 byte (0)	(Y) (Y)
Device ID: 1	(y) II iype	TP 192 168 5 7 (2)	📝 Synchronize b	audrate (RFC2217	(?)
Device ID Type: D	(y) Subnetllerk	255 255 255 0 (2)	Enable USR Clo	oud	(?)
User Name: a	dmin (7) Subnetwark.	192, 168, 0, 1 (?)	Commination Co	4.	-
fassword: a	dmin (7) outenuy.		communeactor co		
Tidy Sho	* - ·	🖉 Base Save		✓ Save CO‼1	
		On-line Device NUM	1:1 Search Port	t:1901	
		On-line Device NUM	1:1 Search Port	t:1901	
		On-line Device NUM	:1 Search Port	t:1901	
ent Status		On-line Device NUM	k1 Search Port	t1901	help
ent Status I IP Config	Ba	On-line Device NUM parameter aud Rate: 115200	11 Search Port	t:1901	help ocal port
ent Status I IP Config F1	Ba	On-line Device NUM parameter aud Rate: 115200 Data Size: 8  bit	k1 Search Port	t:1901	help Incal port L~65535, whe FCP Client, set
ent Status I IP Config f1 to Serial	Ba	On-line Device NUM parameter aud Rate: 115200 bata Size: 6 V bit Parity: None V	k1 Search Port	t1901	help ocal port L~65535. whe CP Client, set his to 0 mear use random lo
ent Status I IP Config I I to Serial Confin	Ba	On-line Device NUM parameter aud Rate: 115200 bata Size: 6 ▼ bit Parity: None ▼ Stop Bits: 1 ▼ bit	kl Search Por	t1901	help ocal port (~65535. whe CP Client, set his to 0 mear ise random lo port
ent Status I IP Config I1 to Serial Config	Ba D Flow	On-line Device NUM           parameter           aud Rate:         115200           ata Size:         6 ▼ bit           Parity:         None ▼           Stop Bits:         1 ▼ bit           Y Control:         None	k1 Search Por	±1901	help ocal port t~65535. whe CP Client, sel his to 0 next use random lo oot remote port ~65535
ent Status I IP Config ri to Serial Config oot	Ba D Flow UART Pac	On-line Device NUM parametee aud Rate: 115200 pata Size: 6 ♥ bit Parity: None ♥ Stop Bits: 1 ♥ bit ( Control; None ♥ None ♥	1 Search Por bps(600~230400)bps	t1901	help ocal port t-65555, who fCP Client, sel his to 0 mear use random lo port remote port w-65535 packet
ent Status I IP Config I Config Config sot	Ba D Flow UART Packe	On-line Device NUM parameter sud Rate: 115200 vata Size: 8 ▼ bit Parity: None ▼ Stop Bits: 1 ▼ bit r Control: None ▼ None ♥ None ♥	11 Search Por bps(600~230400)bps ~255)ms ~1460)chars	±1901	help t=65525, whi rCP Client, sel fris to 0 mear ise random lo port remote port ~65535 packet ime/length lefault 0/0,
ent Status	Ba D Flow UART Packe Sync Baudrate(RF2217	On-line Device NUM parameter aud Rate: 115200 bata Size: 8 ▼ bit Parity: None ▼ Stop Bits: 1 ▼ bit r Control: None ▼ None ▼ None ▼ None ▼ Non2CIT NON2CIT	11 Search Por bps(600~230400)bps ~255)ms ~1460)chars	£1901	help ocal port 1×65535, whith CP Client, sel this to 0 mear use random lo oot remote port 1×65535 acket ime/length default 0/0, neans automs acket
ent Status I IP Config I to Serial Config Dot	Ba D Flow UART Pac UART Packe Sync Baudrate(RF2217 Enable Uart Heartbea	On-line Device NUM parameter aud Rate: 115200 bata Size: 8 ▼ bit Parity: None ▼ Stop Bits: 1 ▼ bit ✓ Control: None ▼ None ▼ None ▼ None ▼ None ▼ None ▼ t Length: XonXoff ✓ Similar): ♥ tt Packet: □	2~255)ms	E1901	help ocal port t=65255, whit CP Client, self his to 0 mear se random lo ordt remote port t=65535 oacket ime/fength default 0/0, means autom oacket mechanism, y am modifw.az m cm factor a m odifw.az
ent Status I IP Config I to Serial Config tot	Ba D Flow UART Pac UART Packe Sync Baudrate(RF2217 Enable Uart Heartbea	On-line Device NUM  parameter aud Rate: 115200 Data Size: 8 ▼ bit Parity: None ▼ stop Bits: 1 ▼ bit  Control; None ▼ Ket Time: Nonco ▼ t Length: XonXoff 7 Similar):  Socket A Parameters	2255)ms	E1901	help ocal port I~55353, who CP Client, set his to 0 mear set random lo sort <b>************************************</b>
ent Status I IP Config I to Serial Config tot	Ba D Flow UART Packe Sync Baudrate(RF2217 Enable Uart Heartbea Wo	On-line Device NUM parameter aud Rate: 115200 bata Size: 8 ▼ bit Parity: None ▼ Stop Bits: 1 ▼ bit ✓ Control; None ▼ None ▼ None ▼ None ▼ Softer Size Softer A Parameters Softer A Parameters Softer C Softer C	Search Por     Search Por	E1901	help ocal port I~<55353, whi CP Client, se se random bo sort =omote port I~<65335 acket mey/ength default 0/0, nearts automa acket mey/angth default 0/0, nearts automa acket ime/longth ime/lon
ent Status I IP Config F1 to Serial Config oot	Ba D Flow UART Pac UART Packe Sync Baudrate(RF2217 Enable Uart Heartbea Wo Local/Remote Port	On-line Device NUM	k1         Search Por           bps(600~230400)bps           >~255)ms           >~1460)chars           V           None           V           None           V           8899           (1~65535)	£1901	help ocal port (~65335, whi (°C C) Cient, as use random lo sort ~65535 oacket me/length offault 0/0, neans automa oacket nechanismy, van modify it a one-zero vali
ent Status I IP Config r1 to Senial Config oot	Ba D Flow UART Packe Sync Baudrate(RF2217 Enable Uart Heartbea Wc Local/Remote Port	On-line Device NUM	k1 Search Port     bps(600~230400)bps     ~255)ms     ~1460)chars      None ▼     None ▼	£1901	help ocal port i~65335. whi (70 Cient, size random lo sort ser random lo sort remote port "65535 packet ime/length default 0/0, neans autom. acket nechanism; van modify it a none-zero vali
erit Status I IP Config I1 to Serial Config bot	Ba D Flow UART Packe Sync Baudrate(RF2217 Enable Uart Heartbea Wo Local/Remote Port Modbus	On-line Device NUM	None *       None *       1000 (1000-230400)	£1901	heip ocal port 1655253. while 1655253. while 1655253. while while while while the constant modify in a modify in a modify in a modify in a socket mechanism; yr an modify in a socket an modify in a an modify in a
ent Status	Ba D Flow UART Packe Sync Baudrate(RF2217 Enable Uart Heartbea Wo Local/Remote Port Modbus Enable Net Heartbea	On-line Device NUM parameter aud Rate: 115200 bata Size: 8 ▼ bit Parity: None ▼ Stop Bits: 1 ▼ bit Control: None ▼ None Ket Time: RTS/CTS Xon/Xoff 7 Similar): Ø st Packet: 0 Socket A Parameters rk Mode: TCP Server RMDe: 8899 PRINT: 0 STCP Poll: 0 Poll Times t Packet: 0	k1         Search Por           bps(600~230400)bps           0~255)ms           0~1460)chars           v           None           v           1000           200           (200~)	£1901	help coal port the 55255 white CP Client, set the 50 means ser random to yout <b>emote port</b> ensoted ime/nenth idefault 0/0, means autom acket mechanism; y acket ao modify it a none-zero vali
ent Status	Ba D Flow UART Packe Sync Baudrate(RF2217 Enable Uart Heartbea Wo Local/Remote Port Modbus Enable Net Heartbea Regis	On-line Device NUM  parameter  aud Rate: 115200  bata Size: 8 ▼ bit Parity: None ▼  Stop Bits: 1 ▼ bit 7 Control: None ▼ Ket Time: RTS/CTS Xon/Xoff 7 Similar): Ø  t Length: Xon/Xoff 7 Similar): Ø  t Packet: □ Socket A Parameters Srk Mode: TCP Server Number: 8899 PRINT: □ stCP Poll: □ Poll Time at Packet: □ stry Type: None	L1 Search Por     bps(600~230400)bps     0~255)ms     ~ 1460)chars      None ▼     None ▼     1~65535)     out : 200 (200~	E1901	help ocal port (+ <5535; wh CP Client, Ess set and on lo sort 
ent Status I IP Config 1 to Serial Config tot	Ba D Flow UART Packe Sync Baudrate(RF2217 Enable Uart Heartbea Wo Local/Remote Port Local/Remote Port Modbus Enable Net Heartbea Regis	On-line Device NUM  parameter  aud Rate: 115200  bata Size: 8 ▼ bit Parity: None ▼  stop Bits: 1 ▼ bit  Control: None ▼  ket Time: RTS/GTS Xon/Xoff  7 Similar): Ø  t Length: Xon/Xoff  7 Similar): Ø  t Packet:  Socket A Parameters  rK Mode: TCP Server  Number: 8899 PRINT:  STCP Poll: Poll Time  t Packet:  Socket B Parameters	L1         Search Por           bps(600~230400)bps           >~255)ms           >~1460)chars           V           None           V           None           V           Location	£1901 • • • • • • • • • • • • • • • • • • •	help ocal port I=<55353, whi (CP Client, set set random lo sort ==mote port I=<55353 ==ocket ime/rength ==sacket ime/rength ==sacket
ent Status I IP Config I to Serial Config tot	Ba D Flow UART Packe Sync Baudrate(RF2217 Enable Uart Heartbea Wo Local/Remote Port Local/Remote Port Modbus Enable Net Heartbea Regis	On-line Device NUM  parameter aud Rate: 115200 bata Size: 8 ▼ bit Parity: None ▼ stop Bits: 1 ▼ bit / Control: None ▼ Ket Time: None TS/CTS XonXoff / Similar):  Socket A Parameters ork Mode: TCP Server INumber: 8899 PRINT: StCP Poll: Poll Time: t Packet: Strd Packet: Parameters ork Mode: NONE None Socket B Parameters ork Mode: NONE None None None None None None None None		£1901 • • • • • • • • • • • • • • • • • • •	help ocal port I~55353, who CP Client, set set random loo sort 

Figure 16 Flow Control

## 2.3.3. Serial Package Methods

BLEMATIC

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, N510 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	I5 V2.3.0.78				
Device(D) 中文(L) 上	<u>l</u> elp				
Search List [Click	a device to read parameters in the Search List]	Port1			
Device IP Devic	ce Name 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:	UDP Server 💌	(?)	
		RemoteIP:	192.168.0.201	(?)	
🔍 Sea	arch Device Clear ARP table Compatible with	Remote Port:	8899	(?)	
		Local Port:	8899	(?)	
Dpen Device	Device Restart 🖓 Factory Reset	TCP Server style:	Transparent transmi 💌	(?)	
Base Save		ModbusTCP:	None -	(?)	
Websocket Port: 6432	2 (?) 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	udrate (RFC2217	(?)	
Device ID Type: Dis	a v (?) ModuleStaticIP 192.168.5.7 (?)	🔄 Enable USR Clo	ud	(?)	
User Name: admi	in (?) SubnetMask: 255.255.255.0 (?)	Device I			
Password: admi	in (?) Gateway: 192.168.0.1 (?)	Communication Cod	le		
Tidy Show	- 🗸 Base Save		✓ Save COM1		
	On-line Device NUM:1	Search Port	1901		
Current Status	parameter	(600a/230/00)bps	he	lp	
Local IP Config	Data Size: 8 V bit	(000-200400)000	<ul> <li>local por 1~6553</li> </ul>	rt 5. when	
PORT1	Parity: None 🔻		TCP Clier this to 0	nt, set means	
Web to Serial	Stop Bits: 1 🔻 bit		use rand port	lom local	
Misc Config	Flow Control: None 🔻		• remote	port	
Reboot	UART Packet Time: 0 (0~25	55)ms	• packet	)	
	UART Packet Length: 0 (0~14	160)chars	time/ler	ngth	
	Sync Baudrate(RF2217 Similar): 🗹		means a	utomatic	
	Enable Uart Heartbeat Packet: 🔲		mechani	sm; you	
	Socket A Parameters		none-ze	ro value	
	Work Mode: TCP Server V	lone 🔻			
	Local/Remote Port Number: 8899 8899	(1~65535)			
	PRINT:				
	ModbusTCP Poll: Doll Timeout :	200 (200~99	199) ms		
	Enable Net Heartbeat Packet:				
	Registry Type: None	Location Connect	With <b>v</b>		
	Socket B Parameters				
	Save Cancel				
	Gave Califer			-	
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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:

GUSR-TCP232-M4,E	45 V2.3.0.78	ters back to origin	al parameters.			
Device(D) 中文(L)	<u>H</u> elp					
Search List [Ulick	a device to read parameters	in the Search Listj	Port1			
Device IP Dev	ice Name MAC	Version				
192.168.5.7 USF	(-NSTU D8 BU 4C BE U	: DC 3031	Baudrate:	115200	• (?)	
			Parity/Data/Stop:	NONE • 8 • 1	• (?)	
			FlowControl:	None	(?)	
			Work Mode:	UDP Server	• (?)	
			RemoteIP:	192.168.0.201	(?)	
🔍 Se	arch Device	Clear ARP table	Remote Port:	8899	(?)	
		]	Local Port:	8899	(?)	
Dpen Device	🔄 Device Restart	Factory Reset	TCP Server style:	Transparent transm	i 🔻 (?)	
Base Save			ModbusTCP:	None	• (?)	
Websocket Port:643	2 (?) Device Name: U	SR-N510 (?)	PackTime:	0 ms (0~255	) (?)	
Web Port: 80	(?) User MAC: D	3 BO 4C BE OE (?)	PackLen:	0 byte (0~1	460) (?)	
Device ID: 1	(?) IP Type: S	tatic IP 🔻 (?)	👿 Synchronize ba	udrate (RFC2217	(?)	
Device ID Type: Di	sa 🗸 (?) ModuleStaticIP 1	92.168.5.7 (?)	📄 Enable USR Clo	ud	(?)	
User Name: adm	in (?) SubnetMask: 2	55. 255. 255. 0 (?)	Device I			
Password: adm	in (?) Gateway: 1	52, 160, 0, 1 (?)	Communication Cod	le		
Tidy Show	- 🗸 🗸 🗸	se Save		V Save COM1		
		On-line Device NUM:1	L Search Port	:1901		
Current Status		parameter			help	
Local IP Config	Baud	Rate: 115200 b	ps(600~230400)bps			
	Data	Size: 8 🔻 bit		• loo 1~	al port 65535. when	
	Р	arity: None 🔻		TC thi	P Client, set s to 0 means	
web to Serial	Stop	Bits: 1 🔻 bit		us po	e random local rt	
Misc Config	Flow Co	ntrol: None 🔻		• rei	mote port	
Reboot	UART Packet	Time: 0 (0^	~255)ms	• pa	cket	
	UART Packet Le	ngth: 0 (0^	-1460)chars	tin de	fault 0/0,	
	Sync Baudrate(RF2217 Similar): 🖉 means automatic packet					
	Enable Uart Heartbeat Packet: mechanism; you can modify it as a					
	Socket A parameters         none-zero value           Work Mode:         TCP Server         None					
	Local/Remote Port Number: 8899 (1~65535)					
	PRINT:					
	ModbusTCP Poll: D Poll Timeout : 200 (200~9999) ms					
	Enable Net Heartbeat Pa	cket: 🔲				
	Registry	Type: None	<ul> <li>Location Connect</li> </ul>	With 🔻		
	Soc	ket B Parameters				
	Work M	Iode: 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 N510 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 V bit	1~65535. when TCP Client, set
Web to Serial	Parity: None 🔻	this to 0 means use random local
Misc Config	Stop Bits: 1 V bit	port
Reboot	UART Packet Time: 0 (0~255)ms	• remote port 1~65535
	UART Packet Length: 0 (0~1460)chars	packet 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 ▼ None ▼	
	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 N510 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	Flow Control:	None •	<ul> <li>remote port 1~65535</li> </ul>
PORT1 Web to Serial Misc Config Reboot	UART Packet Time: UART Packet Length: Sync Baudrate(RF2217 Similar): Enable Uart Heartbeat Packet: Uart Heartbeat Packet: Beat Time: Socket A Work Mode: Local/Remote Port Number: PRINT: ModbustCP Poli: Enable Net Heartbeat Packet: Registry Type:	0 (0~255)ms 0 (0~1460)chars 0 www.usr.cn HEX: ASCII: 30 (1~65535)s Parameters TCP Server V None V 8899 8899 (1~65535) Poll Timeout : 200 (200~9999) ms None V Location Connect With V	<ul> <li>packet time/tength default 0/0, means automatic packet mechaney suutomatic mechaney vu can mode/ it as a nome-zero value</li> </ul>
	Work Mode:	NONE V	
		Save Cancel	
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Figure 21 Heartbeat Packet

#### 2.4.3. Impersistent Connection

N510 support impersistent connection function in TCP Client mode. When N510 adopt this function, N510 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 N510 with impersistent connection 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	Flow Control:	None •	remote port
PORT1	UART Packet Time:	0 (0~255)ms	1~65535
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: Uart Heartbeat Packet:	Vww.usr.cn	mechanism; you can modify it as a none-zero value
	Beat Time:	HEX: ASCII: 🖉	
	Socket A	Parameters	
	Remote Server Addr:	192.168.0.201 [N/A]	
	Local/Remote Port Number: Timeout Reconnection :	8899 8899 (1~65535) 86400 (1~99999)s	
	Disconnect Time : PRINT:	3 (2~255)s	
	ModbusTCP Poll:	Poll Timeout : 200 (200~9999) ms	
	Enable Net Heartbeat Packet:	None	
	Socket B	Parameters	

**Figure 22 Impersistent Connection** 

#### 2.4.4. Modbus Gateway

ablematic

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 N510 in TCP Server or TCP Client mode, then user can set N510 with Modbus RTU<=>Modbus TCP function by setup software or web server as follows:

<pre>windbuild #F2CU_defp Search #F2CU_defp Search #F2CU_defp 18218857_USR-MEND</pre>	USR-TCP232-M4,E	45 V2.3.0.78	<b>X</b>
Stard Lat (Elick + derive to red paraeters in the Seach List)   Device IF Outcome Num   12:19:57 USRMOND   Deside I brie Perture I and I brie   Image: I brie Perture I brie	Device(D) 中文(L)	Help	
Device IP Occese Hame McC Verinin   12:1837 USR H510 DB 80 d CB E D C 301   Image: Second Device Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device Image: Second Device   Image: Second Device NUM1 Second Device   Image: Second Device NUM1 Second Device   Image: Second Device Image: Second Device   Image: Second Device NUM1 Second Device   Image: Second Device NUM1 Second Device   Image: Sec	Search List [Click	a device to read parameters in the Search List] Port1	
Image: Sauch Bories       Image: Sauch Bories<	Device IP Device IP Device IP	vice Name MAC Version AR-N510 D8 B0 4C BE 0E DC 3031	
Image: Search Berice       Image: Search Berice <td< th=""><th></th><th>Baudrate: 115200</th><th>(?)</th></td<>		Baudrate: 115200	(?)
Image: Sarch Berice       Image: Sarch Berice<		Parity/Data/Stop: NONE -	8 • 1 • (?)
Image: Search Device Reture		FlowLontrol: None	• (7)
Image: Search lawing       Image: Law AP table         Image: Search lawing       Image: Law AP table         Image: Search lawing       Image: Law AP table         Image: Law AP table       Image: Law AP table		nork mode.	201 (?)
Image: Sevent in the second	Q s	earch Device Clear ARP table Remote Port: 8899	(1)
	·	Compatible with Local Port: 8899	(?)
Bes Sore       Webbookt Fort: 642       0       Device Num:       Webbookt EVE       0       Device Num:       0       Device Num:       0       Device OV       Device Num:       0       Device OV       Device OV </th <th>📄 Open Device</th> <th>Device Restart 🖓 Factory Reset TCP Server style: Transpary</th> <th>nt transmi 🕶 (?)</th>	📄 Open Device	Device Restart 🖓 Factory Reset TCP Server style: Transpary	nt transmi 🕶 (?)
Network: Fort: 642 () Device Hae: USE-ESD ()   Perklin:: 0 ns 0/255 ()   Device ID: 1 () If   Type: District ID: 1 ()   Device ID: 1 () If   Device ID: 1 ()   Device ID: 1 <	Base Save	ModbusTCP: ModbusTCF	• • (?)
Neb Port: 80 (*) User NMC: 10 B 00 4C BE 00   Device ID: 1 (*) IF Type: Status ID:   Device ID: (*) Subactual: 255.255.05 (*)   User Nm: (*) Subactual: 255.255.05 (*)   Tidy Shor (*) Status Status (*) Status   Stop Bits: (*) Dit Search Port:1901      For Data Config <	Websocket Port:64	32 (?) Device Name: USR-N510 (?) PackTime: 0	ms (0~255) (?)
Device ID: 1 (°) IF Type: <u>Lettic IP</u> (°) Device ID Type: <u>Disk</u> (°) MedulaStaticIP 12:168.5.7 (°) User Hae: dain (°) SubastMark: <u>55:255:255.0</u> (°) Tidy Show -	Web Port: 80	(?) User MAC: D8 B0 4C BE 0E (?) PackLen: 0	byte (0~1460) (?)
Device New: abin: (r) Modewilland: 255:255.0 (r) View New: abin: (r) Subawilland: 255:255.0 (r) Tidy Show - ● ● Base Save ● Base Save ● Consumication Code ● Save COMI ● Consumication Code ● Save Comin ● Constant ● Constant ● Config Oot ● Config Oot ● Config Oot ● Config Oot ● Config Oot ● Config O Co	Device ID: 1	(?) IP Type: Static IP V (?)	2217 (?)
Parsword:       watain       (*)       Gateway:       192.108.0.1       (*)         Parsword:       watain       (*)       Gateway:       192.108.0.1       (*)         Toty Shor -       watain       (*)       Gateway:       (*)       (*)         Toty Shor -       watain       (*)       Gateway:       (*)       (*)         Toty Shor -       Watain       (*)       Gateway:       (*)       (*)         Toty Shor -       UART Packet Time:       (*)       *	Device ID Type: Di User Name:	sa • (?) mountestation 152.100.3.1 (?) Enable USR Cloud	(?)
It dy Shor       Image: Save COMI         On-line Device NUM:1       Search Port:1901         Concline Device NUM:1         Search Port:1901         Concline Device NUM:1         Search Port:1901         Concline Device NUM:1         Search Port:1901         Concline Device NUM:1         Search Port:1901         Search Port:1901         Concline Device NUM:1         Search Port:1901         Concline Device NUM:1         Stop Bits: 1 bit         Stop Control: None •         Stop Bits: 1 bit          Stop Bits: 1 bi	Password: ad	min (?) Gateway: 192.188.0.1 (?) Communication Code	
Inclusion       On-line Device NUM:1       Search Port1901         Image: Control Status       Image: Control Stop Bits: Image: Control Control	Tidz Show	- Rese Serre	W1
On-line Device NUM:1       Search Port1901         Image: Construct Stop Dits: 1 bit       Image: Construct Stop Dits: 1 bit         In P Config       Stop Dits: 1 bit         In P Config       Image: Config         Image: Config       Image: Config	ITuy Show	Jase Save	Imi
VIRIOT       JUSE IDT         rent Status       I • Dit         al IP Config       I • Dit         None •       I • Dit         UART Packet Time: 0 • (0~255)ms       UART Packet Length: 0 • (0~1460)chars         UART Packet Length: 0 • (0~1460)chars       spacket         Sync Baudrate(RF2217 Similar): 0       Enable Uart Heartbeat Packet: 0         oot       Socket A Parameters         Work Mode: TCP Server • ModbusTCP •       Local/Remote Port Number: 8899 • 8899 • (1~65535)         PRINT: 0       None • Location Connect With •         Socket B Parameters       Work Mode: NONE •         Work Mode: NONE •       Save Cancel		On-line Device NUM:1 Search Port:1901	
rent Status       Stop Bits:       1       bit         al IP Config       Flow Control:       None          RT1       UART Packet Time:       0       (0~255)ms          UART Packet Length:       0       (0~1460)chars           Sync Baudrate(RF2217 Similar):         packet       means automatic packet         noot       Socket A Parameters         means automatic packet i mechanism; you can modify it as a none-zero value         Not       Socket A Parameters          none-zero value         Work Mode:       TCP Server       ModbusTCP •         none-zero value         Local/Remote Port Number:       8899       8899       (1~65535)       none-zero value         Braneters       Work Mode:       Poll Timeout : 200       (200~9999) ms          Enable Net Heartbeat Packet:          Save Cancel         Save       Cancel	22	-IOT Experts-	st, Do Best.
al IP Config R1 b to Serial b to Serial b to Serial c Config b to Serial c Config c Config b to Serial c Config c	rrent Status	Stop Bits: 1 🛡 bit	use random local port
XT1       UART Packet Time: 0       (0~255)ms         b to Serial       UART Packet Length: 0       (0~1460)chars         Sync Baudrate(RF2217 Similar): •       •       packet         Enable Uart Heartbeat Packet: •       •       •         boot       Socket A Parameters       •         Work Mode: TCP Server •       ModbusTCP •       •         Local/Remote Port Number: 8899       8899       (1~65535)         PRINT: •       •       •         ModbusTCP Poll: •       Poll Timeout : 200       (200~9999) ms         Enable Net Heartbeat Packet: •       •       •         Socket B Parameters       •       •         Work Mode: NONE •       •       •         Save Cancel       •       •	al IP Config	Flow Control: None 🔻	• remote port
b to Serial       UART Packet Length: 0       (0~1460)chars       time/length         Sync Baudrate(RF2217 Similar):          means automatic         soot       Socket A Parameters       mechanism; you       can modify it as a none-zero value         work Mode:       TCP Server        ModbusTCP            Local/Remote Port Number:       6899       6899       (1~65535)        none-zero value         ModbusTCP Poll:       Poll Timeout : 200       (200~9999) ms             Baule Net Heartbeat Packet:                Socket B       Parameters	रा1	UART Packet Time: 0 (0~255)ms	• packet
c Config       Sync Baudrate(RF2217 Similar): ♥         Enable Uart Heartbeat Packet:	b to Serial	UART Packet Length: 0 (0~1460)chars	default 0/0,
Soot     Socket A Parameters       Work Mode:     TCP Server V ModbusTCP V       Local/Remote Port Number:     8899       BRINT:     PRINT:       ModbusTCP Poll:     Poll Timeout : 200       Cancel     Save Cancel	c Config	Sync Baudrate(RF2217 Similar):	packet
Work Mode:       TCP Server        ModbusTCP          Local/Remote Port Number:       8899       (1~65535)         PRINT:	poot	Socket A Parameters	can modify it as a
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  Socket B Parameters Work Mode: NONE  Save Cancel		Work Mode: TCP Server 🔻 ModbusTCP 🔻	none-zero value
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		Local/Remote Port Number: 8899 8899 (1~65535)	
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		PRINT:	
Enable Net Heartbeat Packet: Registry Type: None  Location Connect With  Socket B Parameters Work Mode: NONE  Save Cancel		ModbusTCP Poll: Doll Timeout : 200 (200~9999) ms	
Registry Type:       None       Location Connect With ▼         Socket B       Parameters         Work Mode:       NONE       ▼         Save       Cancel			
Socket B Parameters Work Mode: NONE  Save Cancel		Enable Net Heartbeat Packet: 📃	
Work Mode: NONE  Save Cancel		Enable Net Heartbeat Packet:  Registry Type: None  Connect With	
Save Cancel		Enable Net Heartbeat Packet:  Registry Type: None  Connect With  Socket B Parameters	
		Enable Net Heartbeat Packet:  Registry Type: None  Location Connect With  Socket B Parameters Work Mode: NONE	
		Enable Net Heartbeat Packet:  Registry Type: None  Connect With  Connect With Connect With Socket B Parameters Work Mode: NONE Save Cancel	
		Enable Net Heartbeat Packet:  Registry Type: None  Connect With  Connect	
		Enable Net Heartbeat Packet: Registry Type: None   Location Connect With   Conn	

Figure 23 Modbus RTU<=>Modbus TCP



Modbus polling: N510 support Modbus polling function and user can set N510 with Modbus polling 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	1~65535 • nacket
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       8899         Ø Poll Timeout :       200         (200~9999) ms         None       Location Connect With ▼         Parameters         NONE       ▼         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 N510 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	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       V         8899       8899         (1~65535)         Poll Timeout :       200         None       Location Connect With ▼         Parameters       NONE         NONE       Cancel	
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Figure 25 Network Printing



### 2.4.6. Editable Web server

N510 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-N510. They are setup software configuration, web server configuration and AT command configuration.

#### 3.1. Setup software Configuration

Cablematic

User can download setup software from http://www.usriot.com/usr-tcp232-m4k3-setup-software/. When user want to configure the N510 by setup software, user can run setup software, search N510 in same LAN and configure the N510 as follow:

	Device Name	MAC	Version				
192.168.5.7	USR-N510	D8 B0 4C BE	OE DC 3031	_	Baudrate:	115200 👻	(?)
					Parity/Data/Stop:	NONE • 8 • 1 •	(?)
					FlowControl:	None 🔻	(?)
					Work Mode:	TCP Server 💌	(?)
					RemoteIP:	192. 168. 0. 201	(?)
(	🔍 Search Devic	e	Clear ARP tab	le th	Remote Port:	8899	(?)
				_	Local Port:	8899	(?)
📄 Open De	vice 🔕 De	wice Restart	🥥 Factory Res	et	TCP Server style:	Transparent transmi 💌	(?)
ase Save					ModbusTCP:	ModbusTCP 👻	(?)
ebsocket Por	rt: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 ba	udrate (RFC2217	(?)
evice ID Typ	pe: Disa 👻 (?)	ModuleStaticIP	192. 168. 5. 7	(?)	Enable USR Cloud		(?)
	(2)	SubnetMask:	255. 255. 255. 0	(?)	Device ID		
ser Name:	admin ()/						

#### Figure 26 Setup software

After researching N510 and clicking N510 to configure, user need log in with user name and password. Default user name and password both are admin. If user keep the default parameters, it is not necessary to log in.

#### 3.2. Web Server Configuration

User can connect PC to N510 through LAN port and enter web server to configure.

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

Web server default parameters as follow:

#### Figure 27 Web server default parameters



After firstly connecting PC to N510, 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:

	USR IOT -IOT Experts-	Be Honest, Do Best!	
Current Status	nt Status parameter		
Local IP Config	Module Name: USR-N510	Run time:	
PORT1	Firmware Revision: 3031	run time means the minutes	
Web to Serial	Current IP Address: 192.168.5.7	since latest reboot	
Misc Config	MAC Address: d8-b0-4c-be-0e-dc	TX/RX Count:	
Reboot	Run Time: 0day: 0hour: 2min:6	TX/RX count give us a calculation	
	TX Count(ETH) : 0 bytes	of the total byte	
	RX Count(ETH) : 0 bytes	received or send.	
	Conn Status(ETH)A: LISTEN		
	Conn Status(ETH)B: 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:



🔮 USR-TCP232-Test RS2	32 to Ethernet Convert te	ster				
File(F) Options(O) Help(H)						
COMSettings	COM port data receive		Network data receive		NetSettings	
PortNum COM4 💌					(1) Protocol	
BaudB 115200 -					UDP 🔽	
					(2) Local host IP	
					192.168.5.38	
					(3) Local host port	
StopB   Dit 💌					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			RemoteTP: 255 255 255 255	Port: 48899	Send As Hex	
🔽 Send Recycle					Send Recycle	
Interval 1000 ms	Jinan USR Technology Co	., Sond	WWW. USR. CN	Sond	Interval 1000 ms	
Load Clear	Ltd.			Jenu	Load Clear	
🎯 Ready!	Send:0 F	Recv: 0 Reset	👉 Ready!	Send:0	Recv:0 Reset	

Figure 29 Network AT Command



### 4. Contact Us

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## 5. Disclaimer

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## 6. Update History

2017-08-11 V1.0.8.01 Established.