

USR-TCP232-S2 User Manual

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Be Honest, Do Best !	USR-TCP232-S2 User Manual	<u>h.usriot.com</u>
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1. Quick Start

USR-TCP232-S2 is used for data bidirectional transparent transmission between TTL and Ethernet. S2 module itself complete protocol conversion, parameter can be set by built-in webpage or software. Once set permanent preservation.

This chapter is quick start for using USR-TCP232-S2 module, we advice users to read it carefully and operate personally, it can help you know about module generally.

Here is application case for inference: http://www.usriot.com/support/application-case/usr-tcp232-series-application-case/ You can also email it to Customer Support Center: http://h.usriot.com/

1.1. Hardware Testing Environment

To test S2 conversion function, user should connect S2 UART to computer by USB to TTL serial line, then connect S2 LAN port to computer LAN port by internet cable. If you want to use S2 evaluation board, use USB to RS232 serial line instead of USB to TTL serial line.

Here is schematic diagram for hardware link .



Diagram 1 Hardware Link

1.2. Connection

Computer should be set as follows:

1) Shut down firewall and anti-virus software .



🚱 🔵 🗣 « Windows 🕨 Customize Settings 🛛 👻 🍫 🛛 Search Control Panel 🛛 👂
File Edit View Tools Help
Customize settings for each type of network
You can modify the firewall settings for each type of network location that you use. What are network locations?
Home or work (private) network location settings
👩 💿 Turn on Windows Firewall
Block all incoming connections, including those in the list of allowed programs
Votify me when Windows Firewall blocks a new program
 Turn off Windows Firewall (not recommended)
Public network location settings
👔 💿 Turn on Windows Firewall
Block all incoming connections, including those in the list of allowed programs
Votify me when Windows Firewall blocks a new program
 Turn off Windows Firewall (not recommended)
OK Cancel

Diagram 2-1

2) Shut down unrelated network card, just use one local connection.



Diagram 2-2

3) If you want connect module to PC directly, user should set static IP for computer which is in the same network segment with module.



Gaperal	Networking	General	
Connection IPv4 Connectivity: No networf IPv6 Connectivity: No networf Media State: Duretion: 0 Speed: 200	Connect using: Reatek PCIe GBE Family Con This connection uses the following in Connection uses the follo	You can get IP settings assigned automatically if your net this capability. Otherwise, you need to ask your network: for the appropriate IP settings. Obtain an IP address automatically @ Use the following IP address: IP IP Address: IP	work s. adminis
Activity	Re and Pinter Sharfing for A home Protocol Version 6 A home Protocol Version 4 A home Layer Topology Decon	Subnet mask: Default gateway: Obtain DNS server address automatically - @ Upe the following DNS server addresses:	. 0 . 1
Bytes: 302,456	Install Uninst Description Transmission Control Protocol /Inte wide area network protocol that p across diverse interconnected net	Preferred DN5 server: Alternate DN5 server:	Adva

Diagram 2-3

1.3. Default Parameter

Item	Content
User name	admin
Password	admin
IP address	192.168.0.7
Subnet mask	255.255.255.0
Default gateway	192.168.0.1
Serial baud rate	115200
Serial parameter	None, 8 ,1
Local port	20108
Target IP	192.168.0.201
Target port	8234

Table 1 S2 Module Default Parameter

1.4. Data Transmission Testing

Steps for network communication parameters:

- 1) Install USR-TCP232-Test.exe .
- 2) Connect UART to PC, LAN to PC.
- 3) Protocol: TCP Server
- Server IP: 192.168.201 (PC Static IP) Server Port No: 8234





Diagram 3 Port to LAN Test

2. Overview

2.1. Brief Introduction

TCP232-S2 is a new and tiny size serial to Ethernet module which realizes data bidirectional transparent transmission between TTL Port and RJ45 Port, it can also used in RS232/ RS485 by level shift circuit.

S2 is equipped with Cortex-M0 core. It has characters of low power, fast speed, high efficiency, strong compatibility, it is easy to use.

2.2. Features

- Support DHCP (Dynamic Host Configuration Protocol);
- •Support DNS (Domain Name System);
- •Web-set: Setting parameters through web;
- •Upgrade firmware via network;
- •Support AUTO MDI/MDIX, can use a crossover cable or parallel cable connection;
- •Serial port baud rate 600 bps ~460.8Kbps, and None, Odd, Even, Mark, Space, five check bits;
- •Work mode: TCP Server, TCP Client, UDP Client, UDP Server, HTTPD Client;
- •Working mode related parameters can be set via a serial port or network;



- •Support virtual serial port, self-developed USR-VCOM software;
- •Heartbeat package mechanism to ensure connection is reliable, put an end to connect feign death;
- •User-defined registration package mechanism, check the status of connection;
- •Under TCP Server mode, Client number rangefrom1 to 16, default value is 4;
- •Support User-defined MAC address;
- •Restore factory default;
- •Across the gateway, switches, routers;
- •Across the gateway, across switches, routers;
- •Provide(socket), VB, C++, Delphi, Android, IOS;
- Download application cases;
- •Support customization;

2.3. Parameters

Parameter	Parameter Value
Voltage	VCC: DC typical value 3.3V, 3.0V~3.6 V
Current	150mA (aver) /200mA (max)
Serial Level	TTL(3.3V)
Network interface	PHY signal
Packing	SMD package
Size	PCB: 33.0*20.3 mm (L*W)
	Working temp: -25 ~ 75 °C
Temperature	Storage temp: -40 ~ 105 °C
	Storage humidity: 5% ~ 95% RH

Table 2 USR-TCP232-S2 Parameter

2.4. Hardware Information

Table 3 USR-TCP232-S2 Pin

Number	Pin	Function	Instruction
1	GND	Ground signal	Connect to ground
			Pin receive current below 200ms ,it can reset module.
2	2 DET	Reset	If unneeded, don't connect the pin .
2	KST		(Power on , reset means restart the module. Advice connect
			I/O of MCU, MCU can control the module .)
3	ISP	NC	Don't connect the pin
Δ	BXD	Receive data	TTL connect to 3.3v MUC
-			(For 5V, refer to Diagram 4)



			USR-TCP232-S2 User Manual <u>h.usriot.com</u>
5	TXD	Send data	TTL connect to 3.3v MCU (For 5V, refer to Diagram 4)
6	CFG(Reloa d)	For module configuration and restore factory default	When normal working , don't connect the pin or connect to high level. Under low level, the pin is used for module Configuration. When configuration, pull down Reload pin, enter into port Configuration. If choose "Reload" in webpage or setting software, it is used to restore factory default
7	LD2	Network data indication	Network data indication light, connect VCC by LED, don't need to connect current-limiting resistance.
8	LD1	Network connection indication	Network connection indication light, connect VCC by LED, don't need to connect current-limiting resistance.
9	AVDD	PHY output voltage	PHY control voltage output, connect network transformer center tap.
10	RX+	Receive signal +	Receive Data+ ,shorten the line if connect
11	RX-	Receive signal +	Receive Data- ,shorten the line if connect
12	TX+	Send signal+	Transceiver Data+ ,shorten the line if connect
13	TX-	Send signal-	Transceiver Data-, shorten the line if connect
14	RS_485	Reserved	RS485 reserved pin
15	Link	Reserved	Used as indication pin for TCP connection status.
16	VCC	Power supply	Typical value 3.3V @ 200mA







2.5. Pin Dimension



Diagram 5 S2 Dimension



3. Module Function



Diagram 6 USR-TCP232-S2 function flow

3.1. Work mode

TCP Client, TCP Server, UDP Client, UDP Server, HTTPD Client

3.1.1. TCP Client mode

It has to be connected before transferring data.

1) In TCP Client Mode, TCP232-S2 connects TCP Server actively, establish a connection to transmit date

2) In TCP Client Mode, It has function of identifying disconnected link. When connected, it will send keepalive package every 15s. If unconnected ,it can be detected timely and enforceTCP232-S2 to disconnect the former link to establish a new one.

3) When TCP232-S2 try to connect remote server ,if the local port number is not "0" ,it will establish a connection with the same source port every time.

- 4) It has synchronizing function of baud rate, user should install USR VCOM Software.
- 5) When local port number is "0", it means local port is random.



Operate	e Via LAN	Operate Via	COM	Base Param (which is	without ★,	usually keep d	efault)	
Device IP 192.168.0.7	Device Name	MAC D8 B0 4C 63 59 83	Ve 3 4012	IP Type ★ ModuleStaticIP ★ SubnetMask ★ Gateway ★ RS422 ☐ Index	Static IP 192.168.0.7 255.255.255 192.168.0.1 V RS485 Link	.0	HTTP Port User Name Password Device Name Device ID	80 admin admin 1 onnected
Data has beer Data has beer lick device (i sent i sent san read the parame	ters, right-click De	wice list	Port Param Parity/Data/Stop Module work mode	NONE - 8 TCP Client	• 1 • •	Baudrat Local Por	e 115200 √ t 20108
show more				RemoteIP	192. 168. 0. 2	D1 Save Config	Remote Por	t 8234

TCP Client Setting

TCP Client Mode

Module starts connection to all set TCP Server; if connection fails, module will try to reconnect till success If connection succeeds, Server will transmit data with serial device



TCP Client mode

3.1.2. TCP Server mode

1) It has to be connected before transferring data.

2) In TCP Server Mode, S2 monitors local port, it will response and establish a connection when there is a request. Up to 4 links at the same time. Once received data, S2 serial port will send data to all the devices



which connect to TCP232-S2.

3) It has synchronizing function of baud rate, user should install USR VCOM Software.

4) In TCP Server Mode, The maximum number can be configured by user. TCP Client number is from 1 to 16, default value 4. When the Client link is more than 16, the new link will replace the former link from Link 1 If the Client link is more than 4, send and receive data at same time , the data flow should be within 2.5 KB/s

Operate	e Via LAN	Operate Via (COM	Base Param (which is	: without ★, 1	usually kee	ep default)	
)evice IP	Device Name	MAC	Ve	IP Туре ★	Static IP	•	HTTP Port	80
92. 168. 0. 7		D8 B0 4C 63 59 83	4012	ModuleStaticIP ★	192.168.0.7		User Name	admin
				SubnetMask ★	255. 255. 255.	. 0	Password	admin
				Gateway ★	192.168.0.1		Device Name	
				RS422	📝 RS485		Device ID	1
				Index	📄 Link	📄 Send	device ID when c	onnected
	🔍 Seard	ch Device		m Reset	📝 RFC2217	📄 Send	data with device	ID
				Port Param				
)ata has beer	n sent			Parity/Data/Stop	NONE 🕇 8	• 1 •	Baudrat	e 115200 🗸
)ata has been lick device (n sent can read the parame	ters, right-click Dev	ice list	Module work mode	TCP Server	•	Local Por	t 20108
				RemoteIP	192, 168, 0, 20	01	Remote Por	t 8234
how more								
how more								

TCP Server Setting

TCP Server Mode

Module monitors the set port and waits for TCP Client to connect Data sent by serial device will transmit to all successfully-linked Clients via module



TCP Server mode



3.1.3. UDP Client mode

1) The mode belongs to UDP Protocol.

2) In UDP Client Mode, TCP232-S2 won't establish the connection actively. It can only communicate with the target port whose IP has been set. When serial port receive data, it send data to target IP and port. If data doesn't come from this channel, it will not be accepted by TCP232-S2.

3) In UDP Client Mode, if target IP is set as 255.255.255.255, it can realize function of entire network broadcast, also can receive broadcast data. If broadcast in network segment ,eg.192.168.0.255, it can only send data ,can't receive data.

4) Under UDP Client, maximum data length sent from MCU to TCP232-S2 is 1460.



UDP Client mode

3.1.4. UDP Server mode

1) UDP Server is based on normal UDP, it doesn't validate the source of IP address. Once received UDP data, it convert target IP to data source IP, similar to TCP Server.

2) In UDP Server Mode, TCP232-S2 records an IP, Once it receives data, it will send data to record IP. TCP232-S2 also works as a server, can receive data from Ethernet and convert target IP to data source IP.



- 0 23

-	USR-M0	Series	V2.0.1.521

operati	e Via LAN	Operate Via COM		Base Param (which is	without ★, usually	keep default)	
Device IP 192.168.0.7	Device Name	MAC Ve. D8 B0 4C 63 59 83 40:	12	IP Type ★ ModuleStaticIP ★ SubnetMask ★ Gateway ★	Static IP 192.168.0.7 255.255.255.0 192.168.0.1	 HTTP Port User Name Password Device Name 	80 admin admin
	🔍 Seard	th Device		Fort Param	Link S.	end device ID when co	nnected ID
Data has been Data has been Lick device ist show mor- ead [Mac :] Data has been ead OK Receive union	n sent n sent can read the parame e DB BO 4C 63 59 83] n sent pwn length is: 50	ters, right-click Device	E	Parity/Data/Stop Module work mode RemotaIP	NONE • 8 • 1 UDP Server 192.168.0.201	 Baudrate Local Port Remote Port 	115200 ↓ 20108 8234

UDP Server Setting

3.1.5. HTTPD Client

This function is used for developer.

- 1) Module S2 send data to HTTP Server or receive from HTTP Server, complex HTTP protocol will be done by S2, it is convenient for user to programming.
- 2) S2 received data from HTTP Server will send to serial port without process.
- 3) According to demand, user can define HTTP content.

3.1.6. TCP and UDP mechanism

	TCP	UDP
	Stable;	Transmission interval is accurate;
Advantages	Not easy to lose data package;	No connection mechanism;
	Reliable connection mechanism;	Easy and flexible;
Disadvantage	Easy to block up Information;	Under bad network condition, it is
	Because of check and resend	high risky to losing data package
	mechanism, interval isn't accurate	

3.2. DHCP and DNS Function

DHCP: Dynamic Host Configuration Protocol



When S2 connects to remote server, it can obtain an IP address automatically which router or gateway distributed. If you don't know how to set IP address or it can't connect because of the set IP is not in the same segment, the function is helpful for you.

Operate	e Via LAN	Operat	te Via COM	Base Param (which is	; without ★, usual	lly keep default)	
Device IP	Device Name	MAC	Ve	IP Type ★	DHCP/Auto IP	▼ HTTP Port	80
192.100.0.1		DO DO 4C 03	35 03 4012	ModuleStaticIP ★	192.168.0.7	User Name	admin
				SubnetMask ★	255.255.255.0	Password	admin
				Gateway 🚖	192.168.0.1	Device Name	
				RS422	📝 RS485	Device ID	1
				RS422	🔽 RS485	Device ID Send device ID when co	1 onnected
	🔍 Sear	ch Device		📄 RS422 📄 Index 📄 Reset		Device ID Send device ID when co Send data with device	1 onnected ID
	Q Sear	ch Device		E R5422 Fort Param	R5485 Link RFC2217	Device ID Send device ID when co Send data with device	1 onnected ID
	Q Sear	ch Device		RS422 Index Reset Port Param Parity/Data/Stop	 ✓ R5485 ✓ Link ✓ RFC2217 ✓ NONE ▼ 8 ▼ 1 	Device ID Send device ID when co Send data with device Baudrate	1 onnected ID e 115200
192.168.0.20 Length 84	Q Sear 01 : 50079] ← [:	ch Device 192.168.0.7 : 15	500]	RS422 Index Reset Port Param Parity/Data/Stop Module work mode	 ✓ R5485 Link ✓ RFC2217 NONE ▼ 8 ▼ 1 TCP Client 	Device ID Send device ID when co Send data with device Baudrate Local Fort	1 onnected ID = 115200 t 20108
192.168.0.20 Length : 84 0 00 00 00 40	Q Sear 01 : 50079] ← [:] 0 41 42 43 44 45 44	'ch Device 192.168.0.7 : 15 5 47 48 49 4A 00	500] 500 00 00 00	RS422 Index Reset Fort Param Parity/Data/Stop Module work mode RemoteIP	✓ R5485 Link ✓ RFC2217 ✓ RFC2217 ✓ NOWE ▼ 8 ▼ 1 TCP Client 192.168.0.201	Device ID Send device ID when co Send data with device Baudrate Local Port Remote Port	1 onnected ID = 115200 t 20108 t 8234
192.168.0.20 Length : 84 10 00 00 00 40 10 00 00 00 40	Q Sear 01 : 50079] ← [:] 0 41 42 43 44 45 44 0 00 00 00 00 00 00 041 42 43 44 45 44	<pre>'ch Device '192.168.0.7 : 15 5 47 48 49 4A 00 0 00 00 00 00 00 5 47 48 49 5A 00</pre>		RS422 Index Reset Port Param Parity/Data/Stop Module work mode RemoteIP	 RS485 Link RFC2217 NONE • 8 • 1 TCP Client 192.168.0.201 	Device ID Send device ID when co Send data with device Baudrate Local Fort Remote Fort	1 onnected ID a 115200 b 20108 b 8234

DNS: Domain Name System

e.g. domain name sever is cloud usr.cn, when we don't know Server IP or Server IP changed, this function plays an important role.

Note: when use NDS function, S2 gateway must be same as router IP or choose DHCP function.



Operate Via LAN Operate Via COM	Base Param (which is without 🗙 usually keep default)
evice IP Device Name MAC Ve 92.168.0.7 DB BD 4C 63 59 83 4012	IF Type★ Static IP HTTP Port 80 ModuleStaticIP★ 192.168.0.7 User Name admin SubnetMask★ 255.255.255.0 Password admin Gateway★ 192.168.0.1 Device Name Image: Comparison of Compari
🔍 Search Device	RS422 V RS485 Device ID I Index Link Send device ID when connected Reset V RFC2217 Send data with device ID
据已发送 据已发送 击搜到的设备可读取参数,右键点击设备列表显示更多功能 取 [Mac : D8 BO 4C 63 59 83] 据已发送 取完成 数收未知数据,长度为: 50 数收未知数据,长度为: 84	Port Param Parity/Data/Stop NONE • 8 • 1 • Baudrate 115200 • Module work mode TCP Client • Local Port 20108 RemoteIP 192.168.0.201 Remote Port 8234

Diagram 8 DNS

3.3. VCOM

USR-VCOM Download: http://www.usriot.com/usr-vcom-setup-software-v3-7-1-520/

USR-VCOM Manual: http://www.usriot.com/usr-vcom-setup-software-user-manual-v3-5-2/

If user's upper computer and device are all connect by serial port, user can create a COM which has TCP/ IP to realize remote control by USR-VCOM software.

1) Turn off firewall and anti-virus software.

2) Install USR-VCOM.

I advise user to choose "Search" or "Smart vcom" to create virtual port. Please refer to 4.3.3

3.3.1. Module Works as Client

- 1) Set module parameters. S2 work mode: TCP Client.
- 2) Open USR-VCOM, set virtual port as follows :





Diagram 10 Create Server Virtual Port

USR-VCO	M Virtual Se	rial Port Se	rver V3.7.1.520							
)evice(D)	Tools(T) O	ptions(O)	Chinese Help	(H)						
Add COM	Del COM	Connect	Reset Count	Monitor	Search -	Smart VCOM	Quit			
emarks 🛛	COM Name	Parameters	COM State	Net Protoco	ol Femote IF	P Remo	te Port Local Port	COM Rece	eived Net Received	Net State
	COM3		Not used	TCP Server			8234	0	0	Connected(1)
						1				
					11	l.				<u>+</u>
										-

Diagram 11 VCOM software monitor function

3.3.2. Module Works as Server

- 1) Set S2 work mode: TCP Server.
- 2) Set virtual port as follows:









3.3.3. Create VCOM

1) Create VCOM by "search" button.

ASI COM	Del COM	Connect	Co Reset Count	Monitor Se	ach -	5nat VCOM								
marke	COMName	Parameters	CDM State	Nel Protocol	E ,	ISR-1CP232-124	-	sai Pot	CDM Received	Not Received	Not State	RegID	GoudD	
	COM1	1	Not used	TCP Server	- I	ISR-WIFI232-X		34	0	0	Listen	0 -		
		3	USR-TCP232-T	24 series add vir	tuar sen	arport compr	anuoan	CP232-T2	4 series					
		1	levice P	MAC	Beng	ie IP Ben	ote Port	Device Port	Gateway	Net Protocol	BaudRate	COM Parane	1D	Subnet Ma



0	USR-VCO	M Virtual Se	rial Port Sei	rver V3.7.1.520							
De	vice(D)	Tools(T) O	ptions(O)	Chinese Help(H)						
	Add COM	Del COM	Connect	Cont Reset Count	Monitor	Search	Smart VCOM	Quit			
Re	marks	COM Name	Parameters	COM State	Net Protoco	Remote I	P Remo	ote Port Local Port	COM Received	Net Received	Net State
		COM1		Not used	TCP Server	-	12	8234	0	0	Connected(1)
10										-	7
	Q USR-	ГСР232-Т24	series add	virtual serial por	t Compliant	USR-TCP232	2-T24 series				
	Device IF	P MAC	5	Remote IP	Remote f	Port Device F	ort Gateway	Net Protocol			
	192.168.0	.7 D88	30 4C 63 59 8	3 192.168.0.20	1 8234	20108	192.168.0.1	TCP Client			
											_
						1		Red Virtual Ser	ial Port	2	3
						1					
						1		Virtual COM:	СОМ1	•	
								Net Protocol:	TCP Server	-	
								Local IP:	192 1/8 0 201		
								Deviate Ded	100100		
								Hemote Port:	12100		
								Local Port:	8234		
								Remarks:			
									-	1	
								🔮 ОК	🔯 Cancel	Advanced +	
	1			III			/				
							4				
			O Cor		Conno	et Virtual COM		Set Device			
•				a chi Device	Service Conne				-		

Diagram 13 Search Function

2) Automatically Create





Diagram 14 Smart VCOM

3.4. Special Function

3.4.1. RS485 Function

S2 reserved 485 pin, this function can be set by software, won't effect RS232 communication.

3.4.2. Transparent transmission cloud

This function is used to get communication between module and MCU, transmit remote data transparently . http://cloud.usr.cn/en

Cloud user name and password can be set through software.

3.4.3. Link Function

Link pin can be used as indication pin for TCP connection status. When connected, it output low level; When unconnected, high level. When S2 is under TCP mode, Link pin will pull down, otherwise, it stays in high level. When S2 is under DUP mode, Link pin will always pull down. By default ,it is not checked .

3.4.4. Factory Reset

1) Hardware: At first, check "Reload" in webpage or software, then Reload can only used to restore factory settings. After setting then module will reset, pull "Reload " down to 0 V level for 5 seconds then pull CFG(Reload) up to 3.3 V or don't connect it, factory reset is finished.



2) Software: finish it by set-up software.

3) AT Command: After entering into AT Command, then send AT+ clear.

3.4.5. Reset Function

When S2 works as TCP Client, S2 connects to TCP Server actively. When start Reset function, S2 try to connect to TCP Server for 30 times. If failed, S2 will restart automatically. By default, it won't be chose.

3.4.6. ID Function

When S2 works as TCP Client, it send module ID when establishing connection or carry ID when in communication, S2 ID is decimal .1-65535 (ID function and transparent transmission can't work at same time)

3.4.7. Index Function

When S2 works as TCP Server, it can establish 16 links simultaneously at most. The max number can be set from 1 to 16. Default is 4. Take 16 link as example, Server send data to 16 Client simultaneously or Server can't distinguish the data source, Index can realize the choice of data source of sending or receiving.

Index function can be set by software or web-page.

3.4.8. Similar RFC2217 Function

This function is used to change USR-TCP232-S2 serial port parameter through network.

E.g: change baud rate from 115200bps to 9600bps. It can be set by software or webpage.By default , it is in open state.

When using VCOM software, this function also works, the baud rate of software in PC will match Autonomic with the baud rate of USR-TCP232-S2, don't need to focus on serial port baud rate .After restart, it is default parameter .

3.5. New Function

3.5.1. AT Command

According to AT Command protocol, TCP232-S2 enter into AT Command mode and set parameter More details ,please refer to 《USR-TCP232-S2 software manual》

When pull low CFG(Reload)Pin firstly, S2 will set parameter by port, AT Command is invalid.

When enter into AT Command Mode, then pull down CFG(Reload), S2 will set parameter by port firstly,

AT Command is invalid. User pull up or don't connect CFG(Reload), it enter into AT Command Mode again.

3.5.2. Display IP and Data

On the web page of TCP232-S2, it can display the IP of device and sent/received data byte, and the total data byte of TCP232-S2.

In TCP Mode, it can display the TOP 5 device IP and sent/received data byte. In UDP Mode, it only display sent/received data byte,don't display connection IP.

3.5.3. Set Client Number in TCP Server Mode

In TCP Server Mode, The maximum number can be configured by user. TCP Client number is from 1

to 16, default value 4. When the Client link is more than 16, the new link will replace the former link from Link 1 When the Client link is more than 4, send and receive data at same time , the data flow should be within 2.5 KB/s.

3.5.4. Defined MAC Address

Mac address can be modified. Factory Mac address is exclusive.

3.5.5. Defined DNS Server IP

To resolve server domain name, user should send data by gateway or router, then gateway or router Distributes IP address, it can show IP in the webpage. User can set specific domain name resolution IP, to specific gateway or router to resolve domain name.

3.5.6. Defined Registration Package

The content of registration package can be defined, 40 bytes at most.

It includes sending registration package when connecting and carrying registration package when sending data. It can be used singly or together.

It is set by webpage, support decimal input and hexadecimal input. By default ,this function isn't open..

3.5.7. Defined Heartbeat Package

The content of heartbeat package can be defined, 40 bytes at most. Time set from 1s to 255s It can ensure connection is reliable, put an end to connect feign death; It can send to LAN Port or Serial Port singly or at same time.

3.5.8. HTTPD Client

TCP232-S2 has HTTPD Client, it support GET and POST. In HTTPD Client, package head and end can be modified. In GET Mode, package head data is replaced by "\$'. In POST Mode, put port data in the end, "\$" means data length in package head, TCP232-S2 will assign a value, user don't need to modify. The Parameter can be set in webpage.

3.6. Firmware Upgrade



1	e Via LAN	Operat	e Via COM	
Device IP	Device Name	MAC	Ve	
192, 168, 0, 7	1	D8 B0 4C 6	OpenWeb	
			Restart	
			Firmware upgr	ade
			Keset	
			Copy The Mac	1
			Cope All Mac	
[Q Sea	urch Device		
00 00 00 00 00				
00 00 00 00 00 00 [192.168.0.20 [Length : 84)1 : 64781] ← []	192.168.0.7 : 15	500]	
00 00 00 00 00 [192.168.0.20 [Length : 84 00 00 00 00 40	01 : 64781] ← []) 41 42 43 44 45	192.168.0.7 : 15 46 47 48 49 4A 00	00 00 00 00	
00 00 00 00 00 00 [192.168.0.20 [Length : 84 00 00 00 00 40	01 : 64781] ← []) 41 42 43 44 45) 00 00 00 00 00	192.168.0.7 : 15 46 47 48 49 4A 00 00 00 00 00 00 00		
00 00 00 00 00 00 [192.168.0.20 [Length : 84 00 00 00 00 40 00 00 00 00 40 00 00 00 00 40	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	192.168.0.7 : 15 46 47 48 49 4A 00 00 00 00 00 00 00 46 47 48 49 5A 00		
00 00 00 00 00 00 [192.168.0.20 [Length : 84 00 00 00 00 40 00	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	192.168.0.7 : 15 46 47 48 49 4A 00 00 00 00 00 00 00 46 47 48 49 5A 00 00 00 00 00 00 00		

Diagram 17 Firmware upgrade

4. Parameter Setting

At first, user should connect PC to TCP232-S2 Lan port ,then set parameter by webpage or software. TCP232-S2 connects Auto-MDI/MDIX RJ45 port with 10/100Mbps. It support Router connection and direct connection.

1)TCP232-S2 connect PC by Lan cable, user should set parameter for PC. When TCP232-S2 connects to power supply and PC, module will connect PC directly. (Module IP and PC IP should in the same Network segment)

2)TCP232-S2 connects PC by router, one PC can connect several modules or one module connects Several PC (When modules works as TCP Server , at most it can connect 16 clients)







4.1. Webpage Setting

User should set parameter as follows:

- Work mode:
 - ◆ TCP Client、TCP Server、UDP Client、UDP Server、HTTPD Client
- Default TCP/UDP connection parameter
 - Connection type (Server, Client, HTTPD Client)
 - ♦ Target Port
 - Target IP address
 - Local Port
- Serial Port parameter
 - Baud rate
 - Data bit
 - Check bit
 - Stop bit
 - RS485 function
- IP address and module password
 - The way of getting IP address.
 - Module name and password

After setting parameter then reset the module .

4.2. Log in

Open a browser, type 192.168.07, Name and password: admin User can also log in by software.

Operate	e Via LAN	Opera	te Via COM	I
Device IP	Device Name	MAC	Ve	
192, 168, 0, 7		D8 B0 4C 63	59.83 4012 OpenWeb	
			Restart Firmware upg Reset	rade
			Copy The Ma	c

Diagram 18 Open Web



4.3. State Configuration

Module name , Current IP address , Mac address, Remote IP/TX/RX , TX Count/ RX Count.

	JSR IOT Experts-	Be Honest, Do Best!
State Config	parameter	Help
Local IP Config	Module Name:	• Current IP
Serial Port	Current IP Address: 192.168.0.7 MAC Address: d8-b0-4c-63-59-83	Address: default IP of
Expand Function	Remote IP/TX/RX-1: 192.168.0.201 / 0 byte / 0 byte	module - Remote
Misc Config	-2:0.0.0.0/0 byte/0 byte	IP/TX/RX:
Roboot	-3 : 0.0.0.0/ 0 byte / 0 byte	IP of server or device connecting
Rebool	-4:0.0.0.0/0 byte/0 byte	with module;reset
	-5 : 0.0.0.0/ 0 byte / 0 byte	for disconnect
	TX Count/RX Count: 0/ 0 bytes	volume that each server or device



4.4. Local IP

1)IP type : Static IP means fixed IP, DHCP means acquire IP automatically.
2)Static IP : when user choose Static IP, don't conflict IP address in the LAN.
3)Subnet mask: used to distinguish network segment, default value is 255.255.255.0
4)Gateway: Router IP address, it should be set correctly when used for domain name resolution.
5)DNS Gateway : Server IP of domain name resolution , by default it is module gateway.

	SR IT Experts-				Be Hone	st, Do Best
State Config		parar	neter			Help
Local IP Config	IP type: S	tatic IP 🔻				• IP type:
Serial Port	Static IP: 19	02 · 168	. 0	. 7		StaticIP or DHCP
Expand Function	Submask: 25	. 255	. 255	. 0		 StaticIP: Module's static ip
Misc Config	Gateway: 19	. 168	. 0	. 1		• Submask:
Reboot	DNS Gateway: 19	. 168	. 0	. 1		255.255.255.0
		Save	Cancel			 Gateway: Usually router's ip address
						• DNS IP: DNS gateway or Router's IP



firmware revision:	v4012	中立	Ζ
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	USR -IOT Experts-	Be Honest, Do Best.	!
State Config	Rahoot	Rocot	
Local IP Config	Rebot/Reset Module	Reset Module Restart module	



## 4.5. Serial Port Parameter

- 1) Baud rate: 600bps~460.8Kbps
- 2) Stop bit: 1,2.
- 3) Data bit : 5,6,7,8.
- 4) Check bit: NONE,ODD,EVEN,MARK,SPACE.
- 5) Local Port :By default ,it is local port number, it can set 0 if connect outer net.
- 6) Remote: Remote server port
- 7) Work mode :TCP Server, TCP Client, UDP Client, UDP Server, HTTPD Client.
- 8) Remote Server address: it can be IP address or server domain name.
- 9) HTTPD:HTTPD GET or HTTPD POST.

	USR -IOT Experts-	Be Honest, Do Best!
State Config	parameter	Help
Local IP Config	Baud Rate: 115200 bps	
Serial Port	Data Size: 8 🔻 bit	
Expand Function	Parity: None 🔻	
Misc Config	Stop Bits: 1 ▼ bit	
Reboot	Remote Port Number: 8234 (0~65535)	
	Work Mode: TCP Client 🔻	
	Remote Server Addr: 192.168.0.201	
	→RS485: 🗹	
	RESET:	
	LINK 🔲	
	INDEX:	
	Sync Baudrate(RF2217 similar): 🕑	
	Send device ID when connected:	
	Send data with device ID: 🔲	
	Save Cancel	



#### Diagram 21 Serial Port parameter

## 4.6. Expand Function

State Config	parameter	Help
Local IP Config	Enable USR Cloud : 🔲	• Custom
Serial Port	Cloud ID:	Heartbeat Packet:
Expand Function	Cloud Password:	this function is
Misc Config	Heartbeat Format: Send To Com Send To Net	support the transmission
Reboot	Custom Heartbeat Packet: @ABCDEFGHIJ Heartbeat Time(0~255): 0 (s)	chosen Chinese characters, and 40 bytes in leng
	Register Format: 🔲 Data With 📄 Connect with	Custom Regist
	Custom Register Packet: (HEX) @ABCDEFGHIZ	Packet: this function is not open,does n
	Reload ON/OFF :	support the

Diagram 22 Expand Function

## 4.7. Misc Configuration

After setting , click "save" ,then restart the module .

State Config	01 Experts-	Help
Local IP Config	Module Name:	MAC Address:
Serial Port	weberver port number: 80	The module can modify the MAC
Expand Function	Module Id(use for indentify modue): 1 (1~6553	5) address,all'F'is no allowed
Misc Config	User name: admin	Max Clients
Reboot	Pass word: admin	Connect To TCP Server:
	MAC Address: D8B04C635983	when Module is TCP Server, the
	Max Clients Connect To TCP Server: 4 (1~16)	max number of
	Save Cancel	TCP client allowed to connect





## 4.8. Reboot

Only have reset function.

25	USR -IOT Experts-	Be Ho	nest, Do Best
State Config	Reboot/I	Reset	Help
Local IP Config	Rebot/Reset Module	Reset Module	Restart module
Serial Port			
Expand Function			
Misc Config			
Reboot			



## 4.9. Software Setting

1) Search device



Language Help	
Language help	
Operate Via LAN	Click device can read
Derri co. TP. Derri co. Nono	right-click Device list
92. 168. 0. 7	D8 10 10 00 00 00 1012
O Search I	lavi ca
Jearch 1	evice
Data has been sent	
Data Mas Deen Sent	s right-click Device list
Click device can read the parameter	a, right chick beyice hist
Click device can read the parameter show more	s, fight tith bevice fist
Click device can read the parameter show more	a, frent trith pevice frat
Click device can read the parameter show more	a, frent trith bevice frat
Click device can read the parameter show more	a, frent trita pevice frat
Click device can read the parameter show more	a, frent tritte pevice frat
Click device can read the parameter show more	

Diagram 25 Search

### 2) Set parameters

After setting parameters, click "save" .



Language	пер							
Operat	e Via LAN	Operat	te Via COM	Base Param (which :	is without ★, us	sually keep def	ault)	
Device IP	Device Name	MAC	Ve	IP Type	Static IP	-	HTTP Port	80
192.168.0.7		D8 B0 4C 63	59 83 4012	ModuleStaticIP <b>3</b>	192.168.0.7		User Name	admin
				SubnetMask 3	255.255.255.0	D	Password	admin
				Gateway 3	192.168.0.1	De	evice Name	
				RS422	👿 RS485		Device ID	1
				🕅 Index	📄 Link	Send device	e ID when c	onnected
	🔍 Sear	ch Device		📄 Reset	📝 RFC2217	🔤 Send data v	with device	ID
				Port Param				
Data has been	n sent			Parity/Data/Sto	p NONE - 8 -	• 1 •	Baudrat	e 115200 🗸
Data has been Click device	n sent can read the parame	eters, right-cli	ick Device	Module work mod	e TCP Client	-	Local Por	t 20108
list show more	e N8 B0 40 63 59 83 1			RemoteI	P 192.168.0.20	1	Remote Por	t 8234
Data has been	n sent		=					
lead UK Receive unkn	own length is: 50							
Receive unkn	own, length is: 84							_
					S N	ave Config		

Diagram 26 Parameter setting

3) Check data

Click" Hex streams", check whether the data sends correctly.



	Via LAN	Opera	te Via COM	
Device IP	Device Name	MAC	Ve	
192.168.0.7		D8 B0 4C 63	3 59 83 4012	
	🔍 Sear	ch Device		
F 01 05 4B 192.168.0.20:	l : 64781 ] ← [ 1	92.168.0.7 : 1	500 ]	*
Length : 4 ] F 01 06 4B				
		92 168 0 7 1	500 ]	

Diagram 27 Check Streams

4) Pull CFG(Reload) down and keep this state. Choose right COM, click"operate via COM", then Set parameter in the right page.



Operate Via LAN	Operate Via COM	Base Param (which is	without ★, usually ke	ep default)	
		IP Type ★	Static IP 👻	HTTP Port	80
		ModuleStaticIP ★	192.168.0.7	User Name	admin
Select serial port COM3	•	SubnetMask ★	255. 255. 255. 0	Password	admin
		Gateway ★	192.168.0.1	Device Name	
		🕅 RS422	📝 RS485	Device ID	1
		🥅 Index	📄 Link 📄 Send	device ID when co	nnected
🔍 Read Co	onfig	🥅 Reset	📝 RFC2217 🛛 🦳 Send	data with device	ID
		Port Param			
PC ] ← [ Device ]		Port Param Parity/Data/Stop	NOME - 8 - 1 -	Baudrate	115200 🗸
PC ] ← [ Device ] Length : 137 ] BD 00 00 00 80 00 20 50 00 00 07	7 00 A8 C0 01 00 A8 C0 00	Port Param Parity/Data/Stop Module work mode	NONE V 8 V 1 V TCP Client V	Baudrate Local Port	115200 <del>↓</del> 20108
PC ] ← [ Device ] Length : 137 ] BD 00 00 00 80 00 20 50 00 00 07 FF FF 00 00 00 00 00 00 00 00 00 00 ED 59 6F 00 51 64 6D 59 6F 00 00	7 00 A8 C0 01 00 A8 C0 00 0 00 00 00 00 00 00 00 61	Port Param Parity/Data/Stop Module work mode RemoteIP	NONE • 8 • 1 • TCP Client • 192.168.0.201	Baudrate Local Port Remote Port	: 115200 <b>↓</b> 20108 8234
PC ] ← [ Device ] Length : 137 ] BD 00 00 00 80 00 20 50 00 00 07 FF FF 00 00 00 00 00 00 00 00 00 6D 69 6E 00 61 64 6D 69 6E 00 00 01 00 A3 C0 00 00 00 00 00 02 01	7 00 A8 C0 01 00 A8 C0 00 0 00 00 00 00 00 00 00 61 0 10 00 84 D8 B0 4C 63 59 00 08 01 01 00 00 00 00	Port Param Parity/Data/Stop Module work mode RemoteIP	NONE • 8 • 1 • TCP Client • 192.168.0.201	Baudrate Local Port Remote Port	115200 ↓ 20108 8234
PC ] ← [ Device ] Length : 137 ] BD 00 00 00 80 00 20 50 00 00 07 FF FF 00 00 00 00 00 00 00 00 00 6D 69 6E 00 61 64 6D 69 6E 00 00 01 00 A8 C0 00 00 00 00 00 C2 01 8C 4E 2A 20 31 39 32 2E 31 36 38	00         A8         C0         01         00         A8         CO         00           00         00         00         00         00         00         00         00           01         00         84         18         80         4C         63         59           00         08         01         10         00         00         00         00           2         2         30         21         00         00         00         00	Port Param Parity/Data/Stop Module work mode RemoteIP	NONE • 8 • 1 • TCP Client • 192.168.0.201	Baudrate Local Port Remote Port	: 115200 ↓ 20108 8234
PC ] ← [ Device ] Length : 137 ] BD 00 00 00 80 00 20 50 00 00 07 FF FF 00 00 00 00 00 00 00 00 00 6D 69 6E 00 61 64 6D 69 6E 00 00 01 00 A8 C0 00 00 00 00 00 C2 01 8C 4E 2A 20 31 39 32 2E 31 36 38 00 00 00 00 00 00 00 00 00 00 00	00         A8         C0         01         00         A8         C0         00           00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00         00 </td <td>Port Faram Parity/Data/Stop Module work mode RemoteIP</td> <td>NONE • 8 • 1 • TCP Client • 192.168.0.201</td> <td>Baudrate Local Port Remote Port</td> <td>115200 ✔ 20108 8234</td>	Port Faram Parity/Data/Stop Module work mode RemoteIP	NONE • 8 • 1 • TCP Client • 192.168.0.201	Baudrate Local Port Remote Port	115200 ✔ 20108 8234
PC ] ← [ Device ] Length : 137 ] BD 00 00 00 80 00 20 50 00 00 00 6D 69 6E 00 61 64 6D 69 6E 00 00 01 00 A8 C0 00 00 00 00 00 00 C2 01 8C 4E 2A 20 31 39 32 2E 31 36 38 00 00 00 00 00 00 00 00 00 00 00 00 04 00 00 00 00 00 00 00 00 00	00 A8 C0 01 00 A8 C0 00 00 00 00 00 00 00 00 00 61 01 00 84 D8 B0 4C 63 59 00 08 01 01 00 00 00 00 2 Z 30 2 Z 32 30 31 00 00 00 00 00 C9 00 A8 C0 00 C0 A8 00 07 AC	Port Faram Parity/Data/Stop Module work mode RemoteIP	NONE • 8 • 1 • TCP Client • 192.168.0.201	Baudrate Local Port Remote Port	: 115200 ↓ 20108 . 8234

Diagram 28 Port Setting

# 5. Contact information

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# 6. Disclaimer

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# 7. Undated History

V 1.0 2016-4-29 First Version