

Serial to Dual Band WiFi Converter

USR-DR164, USR-DR162

User Manual



Be Honest & Do Best

Your Trustworthy Smart Industrial IoT Partner

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1. Introduction

USR-DR164/162 is an ultra-small size dual band WiFi serial server device with one serial port. It can realize transparent transmission between RS485/RS232 and WiFi device.

It supports 2.4G & 5.8G WiFi, compatible with IEEE 802.11 a/b/g/n standard. With 2.4 G WiFi, it has longer range signal while with 5.8G WiFi, it has fast speed and better resistance to signal interference.

In software, it supports multiple networking methods AP/STA/AP+STA mode, which is convenient for users to conduct wireless networking. And supports multiple communication protocols like TCP/UDP/HTTP/MQTT, and supports Modbus TCP/RTU conversion, so this device can establish a data communication bridge between the serial device and the server of different protocols, which is convenient for users to monitor the device remotely.

1.1. Features

- •Dual band WiFi 2.4G & 5.8G, support IEEE 802.11 a/b/g/n.
- •Ultra small size, save your space.
- •Wide Operating Temp -40°C ~ 85°C, industrial grade design, stable operation in harsh environments.
- •V0 flame retardant rating,
- •Wide power input designed DC 5-36V, EMC level 2.
- •RS232/RS485 is optional.
- •Hardware and software watchdog to ensure stable operation.
- •DIN rail mounting, easy for installation.
- •Support AP/STA/AP+STA mode.
- •Rich communication protocol MQTT/TCP/UDP/HTTP.
- •Support Modbus TCP/RTU conversion, heartbeat packet and registration packet.
- •Support SmartAPLink app to set up network parameter.
- •Multiple configuration methods AT command, browser, serial AT command, network AT command.
- •Rich indicators Power, Work, COM, Link.
- •Long transmission distance up to 200 meters(2.4G WiFi, open environment).

1.2. Ordering Guide

Model	USR-DR164	USR-DR162
Serial Port	RS485	RS232

1.3. Technical Parameters

USR-DR164/162 parameters are as follows:



Items	Description		
Power Supply	DC: 5-36V, 2-pin push-type connector		
Working Current	170-350mA@5V		
Serial port			
	USR-DR164:1 x RS485,		
No.	USR-DR162:1 x RS232,		
	3-pin push-type connector.		
Baud rates	1200-460800 bps		
Data bits 5, 6, 7, 8			
Stop bits	1, 2		
Parity	NONE, ODD, EVEN, Mark, Space		
Packaging Interval	Range: 10 ~ 1000ms, default: 20ms		
Packaging Length	Range: 32 ~ 1400 bytes, default: 1400 bytes		
Pull-up Resistor	2.2 KΩ(Only USR-DR164)		
Protection	ESD, EFT, over-voltage protection		
Wi-Fi			
	IEEE 802.11a/b/g/n		
Standards & Frequency	2.4G: 2.412GHz-2.484GHz		
	5.8G: 5.17GHz-5.25GHz, 5.725GHz-5.835GHz		
Working Mode	AP/STA/AP+STA		
	2.4G:		
	802.11b: +17±1.5dBm(@11Mbps)		
	802.11g: +14±1.5dBm(@54Mbps)		
	802.11n: +14±1.5dBm(@HT20, MCS7)		
Tx power	5.8G:		
	15±1.5dBm (OFDM 6Mbps)		
	13±1.5dBm (OFDM 54Mbps)		
	12±1.5dBm (HT20 MCS7)		
	12±1.5dBm (HT40 MCS7)		
	2.4G:		
	802.11b:-95 dBm (@1Mbps ,CCK)		
	802.11b:-85 dBm (@11Mbps ,CCK)		
	802.11g:-72 dBm (@54Mbps, OFDM)		
	802.11n:-70dBm (@HT20, MCS7)		
Receive sensitivity	802.11n:-67dBm (@HT40, MCS7)		
	5.8G:		
	-90dBm (@6Mbps ,OFDM)		
	-73dBm (@54Mbps ,OFDM)		
	-70 dBm (HT20,MCS7)		
	-67 dBm (HT40,MCS7)		



Antenna	SMA female connector	
Physical Property		
Casing material	ABS, V0 rating	
Dimensions	92 * 24 *22mm(including terminal block connector)	
Installation	DIN rail mounting	
Operating temperature	-40℃ ~ +85℃	
Storage temperature	-40°C ~ +125°C	
Operating humidity	5% ~ 95% RH, non-condensing	
Storage humidity	1% ~ 95% RH, non-condensing	
Software Function		
Work mode	TCP Client, TCP server, UDP client, UDP server, HTTP client, MQTT client, IGMP	
Modbus Gateway Modbus RTU/TCP protocol conversion		
IP	DHCP/StaticIP	
Registration packet		
Heartbeat packet		
WiFi Encryption	WEP/WPA-PSK/WPA2-PSK	
Encryption Methods	WEP64/WEP128/TKIP/AES	
IOT PLATFORMS	PUSR cloud	
User Configuring	Web console(HTTP), AT command, SmartAPLink	
Others		
	Reset button	
Reset	1>Press and hold for 4~15 to reset to factory settings	
	2>Quickly double-tap to enter SmartAPLink for networking	
Indicators	Power, Work, COM, LINK	
APPROVALS		
Regulatory	CE/RED*, RoHS*, WEEE*, FCC*	

1.4. Indicator status description

Table 1. Indicator Status

Name	Description	
PWR	Red,	
	on: power on	
	Off: power off	
WORK	Green,	



	System on: 2Hz flashing frequency after the system boot up;	
	Firmware upgrading: fast flashing.	
СОМ	Flashing when there is data sending or receiving on serial port.	
	Blue: sending data from serial port to network;	
	Off: receiving data from network to serial port.	
LINK	In AP mode,	
	This indicator is off.	
	In STA mode,	
	The blue is on: RSSI≥-60, connected to AP device.	
	The blue is flashing: RSSI \geq -60, connected to AP device and have data	
	communicating.	
	The blue is off: RSSI≥-60, not connected to AP device	
	The red is on: RSSI<-60, connected to AP device.	
	The red is flashing:RSSI<-60, connected to AP device and have data	
	communicating.	
	The red is off: RSSI<-60, not connected to AP device	

1.5. Dimensions

Unit: mm





1.6. Wiring connector

USR-DR164/162 series adopts push-type terminal connector, which can realize wiring conveniently and quickly. Terminal wiring definitions are shown below.





Table 2. Pin description

No.	Pin	Туре	Description
1	DC 5-36V +	Р	Positive input of the power supply
2	DC 5-36V -	Р	Negative input of the power supply
3	RX/A	I/O	Serial signal
4	ТХ/В	I/O	Serial signal
5	GND	Р	The digital ground

2. Get started

2.1. Preparations

2.1.1. Hardware

USB to RS485 converter*1

PC*1

USR-DR164*1

WiFi antenna*1

Power Supply*1

2.1.2. Log in device

Power on the USR-DR164 device, connect PC to USR-DR164 via Wi-Fi, users can login router via Chrome or the other browser. The default network parameters are shown in the following table:

Table 3.	Default network par	ameters
----------	---------------------	---------

Parameter Default value



	SSID	USR-DR164-xxxx	
	LAN IP	10.10.254	
	Username	admin	
	Password	admin	
Wi-Fi password None		None	

Open the browser, enter 10.10.100.254 in the URL blank, and press Enter, it will navigate to the following

web page. After entering the login password, clicking login, the web page will show configuration page of USR-DR164.

登录
http://10.10.100.254 您与近网站的连接不是私运连接
用户名 admin

3. Serial port

3.1. Basic Parameters

Serial parameters of USR-DR164 must be consistent with the parameters of the serial device. Serial port

parameters include basic parameters and framing parameters.

Item		Parameter		
Baud rate		1200~460800bps		
Data b	oit	5,6,7,8		
Stop b	oit	1,2		
Check	bit	NONE, EVEN, ODD, Space, Mark		
System Work Mode STA Setting AP Setting Net Setting Account Upgrade SW Reboot	>>UAR Baud Rat Data Bit Parity Bit Stop Bit CTSRTS Pack Inte Pack Size Com Hea ModBUS	rval 20 rval 20 Enabled OFF ~		
ADOUL USR		Save		



3.2. Frame Forming Mechanism

3.2.1. Time Trigger

When DR164 receives data from the UART, it continuously checks the interval of two adjacent bytes. If the interval time is greater or equal to a certain "time threshold", then a frame is considered finished, otherwise the data is received until greater or equal to the packet length byte set. This frame is sent to the network as a TCP or UDP packet. The "time threshold" here is the time between packages. The range of settable is 10ms~1000ms. Factory default: 20ms.

This parameter can be set by AT command, AT+UARTTM=<time>.



Note: T is the packing interval time.

3.2.2. Length trigger

When DR164 receives data from the UART, it constantly checks the number of bytes received. If the number of bytes received is equal to a certain "length threshold", a frame is considered to have ended, otherwise the packaging time is waiting for the end. This frame is sent to the network as a TCP or UDP packet. The "length threshold" here is the package length. The settable range is 32~1400. Factory defaults is 1400.

This parameter can be set by AT command, AT+UARTBUF=<length>.



Note: L is the packaging length.



4. Networking application

USR-DR164 supports wireless WIFI communication modes, flexible networking and network topology.

	Select Mode	
System		
Work Mode		
STA Setting		
AP Setting		
Serial Setting	Select Mode:	AP+STA mode 🗸
Net Setting	WIFI Frequency:	AP+STA mode
Account		STA mode
Upgrade SW		Save
Reboot		a state and a state of the stat
About USR		

4.1. AP mode

When USR-DR164/162 work as AP, other serial port device and PC can connect to it via WiFi as a STA, also it can connected to user device via RS485, as fellows:



Users can set parameters using the following AT commands:

(1) Set the WIFI server to AP mode

AT+WMODE=AP

(2) The parameters of the WIFI serial server in AP mode can be set according to needs or use the default

parameters. For example:

AT+WAP=11BGN,USR-DR164-TEST,Auto(Optional)

AT+WAKEY=WPA2PSK,AES,12345678(Optional)

AT+LANN=10.10.100.254,255.0.0.0(Optional)

(3) Restart the WiFi serial device

AT+Z

Note: This device is a software AP(no routing function), so STA devices connected to the AP cannot



communicate with each other.

Settings on web page:

evstem (Wireless AP Setting Network Mode	11bgn 🗸 🗸
Vork Mode	Network Name(SSID)	USR-DR164_0B5A
STA Setting	Module MAC Address	402A8F5A0B5E
P Setting	Select Channel	Auto-select 🗸
erial Setting		Save
let Setting .ccount	Wireless AP Security Setting Encryption Mode	Disable 🗸
pgrade Svv		Save
bout USR	Network Parameters Setting IP Address(DHCP Gateway Setting)	10.10.100.254
	Subnet Mask	255.255.255.0
	DHCP Server	Enable 🗸

4.2. STA mode

When USR-DR164/162 work as STA, it connect to other AP via WiFi, all STA take the AP as wireless networking centre, mutual communication between STAs is completed through AP forwarding, as below:



WIFI serial server parameter settings are as follows:

(1)Set the working mode of WIFI serial server:

AT+WMODE=STA

(2)Set the SSID, encryption mode, and password of the router to be connected (for example, the SSID of the

route is: USR-WIFI-TEST, the encryption mode is WPA2PSK, AES, and the password is www.usr.cn). As follows:

AT+WSSSID=USR-WIFI-TEST

AT+WSKEY=WPA2PSK,AES,www.usr.cn

(4) Restart AT+Z

Settings on web page:



untorm	Network Name (SSID) Note:case sensitive	产品部2 Scan
ystern /ork Modo	Encryption Method	WPA2PSK V
	Encryption Algorithm	AES 🗸
P Setting	Password	
erial Setting	 Obtain an IP address automatically	Show passwords
et Setting	IP Address	192.168.66.227
count	Subnet Mask	255.255.255.0
ograde SW	Gateway Address	192.168.66.1
eboot	DNS Server Address	192.168.66.1

4.3. AP+STA mode

USR-DR164 can support AP+STA mode. Enable the AP+STA function, STA and AP interface can be used meanwhile, STA interface connected to the router, and then connected to the server in the internet via TCPB; AP interface can be connected by the phone/ pad (TCPA). So the TCP server, phone /pad can control the device connected to the DR164 and configure the parameters for the DR164. As below:



WIFI serial server parameter settings are as follows:

(1)Enable AP + STA function of WIFI serial server

AT+FAPSTA=on

(2)Parameters take effect after resetting the module

AT+RELD

(3)Set the WIFI serial server to STA mode, the WIFI serial server AP interface is still valid

AT+WMODE=STA

(4)Set the SSID, encryption mode, and password of the route to be connected (for example, the SSID of the route is: USR-WIFI-TEST, the encryption mode id WPA2PSK, AES, and the password is www.usr.cn). As follows:



AT+WSSSID=USR-WIFI-TEST AT+WSKEY=WPA2PSK,AES,www.usr.cn (4)Set socket A, socket B Socket A setting example: AT+NETP=TCP,Server,8899,10.10.100.100 Set the IP and port of the server to be connected. Socket B setting example: AT+TCPADDB=192.168.1.100 AT+TCPPTB=18899 (6)Restart AT+Z

Note: In AP+STA mode, you are advised to use AP only for configuration. Because it is a soft AP (no routing function), STA devices connected to the AP cannot communicate with each other.

5. Product function

5.1. Work mode

USR-DR164 has 5 communication protocol: TCP, UDP, MQTT, HTTP, IGMP.

	>>All Socket Set	
System	Socket A Set	25
Vork Mode	Protocol	TCP-Server 🗸
STA Setting	Port ID	TCP-Server
AP Setting	Server Address	TCP-Client
Serial Setting	TCP Time Out Setting	UDP-Server UDP-Client
let Setting	Net heart	MQTT
Account	Reg Set	нттр
Jpgrade SW	Socket B Set	IGMP
Reboot	Protocol	NONE

5.1.1. SOCKET function

When socket A in TCP server , at most supports 5 TCP client to connect. In multi-TCP link connection mode, data transmitted from TCP will be forwarded to the serial port one by one. The data coming from the serial port will be copied into multiple copies, and one copy will be forwarded on each TCP link. The specific data flow chart shows:





Socket A settings:

	Item	Description
1	AT+NETP	Setting / Query TCPA's network protocol
		parameters
2	AT+NETPIDEN	Set/query whether to display which communication
		channel the data comes from
3	AT+TCPLK	Query whether the TCP link is established
4	AT+TCPTO	Setting/query TCP timeout
5	AT+TCPDIS	Connect / Disconnect TCP (only valid when TCP
		Client)
6	AT+NETPID	Set or query the value of the channel ID tag
7	AT+MAXSK	Set/query the number of TCP Client connections when
		module SOCKA works in the TCP Server
8	AT+SEND	Send data to SOCKA in command mode
9	AT+RECV	Receive SOCKA data in command mode

Socket B settings:

	Item	Description
1	AT+SOCKB	Set or query SOCKB network protocol parameters
2	AT+TCPDISB	Establish or disconnect the SOCKB TCP Client mode
3	АТ+ТСРТОВ	Set or query the TCP timeout period of SOCKB
4	AT+TCPLKB	Check whether the SOCKB link has been established
5	AT+SNDB	Send data to SOCKB in command mode
6	AT+RCVB	Receive data from SOCKB in command mode
7	AT+UDPLCPT	Set/query SOCKA, SOCKB used as UDP traffic
		The local port of the call



5.1.2. IGMP

IGMP is based on UDP. In IGMP mode, allows multicasting of data to groups of IP addresses. A multicast is a packet sent by one host to multiple hosts. In multicast mode, each host that belongs to a specific multicast group will receive multicast packets for that group. For a host to be configured as a multicast receiver over the Internet, the must inform the routers on its LAN. The Internet Group Management Protocol (IGMP) is used to communicate group membership information between hosts and routers on a LAN. The valid IP range for multicast group 224.0.0.2-239.255.255.255.

The relevant AT command:

AT+NETP=IGMP,CLIENT,8899,239.255.0.1 // Setting socket A work at IGMP mode, 8899 is the destination port and 239.255.0.1 is the destination multicast IP address. If the IP address is not a multicast address, an error is reported.

AT+SOCKB=IGMP,9999,239.255.0.2 //Setting socket B work at IGMP mode

AT+UDPLCPT=XXXX,XXXXX // Set the UDP local receive port, also applicable to multicast packets. Setting on web page:

	>>All Socket Set		
ystem	Socket A Set		
Vork Mode	Protocol	IGMP	~
TA Setting	Port ID	8899	
P Setting	Server Address	10.10.100.254	
Serial Setting	TCP Time Out Setting		
let Setting	Net heart	OFF	~
ccount	Reg Set	OFF	~
pgrade SW	Socket B Set		
eboot	Protocol	IGMP	Ý
bout USR	Port ID	0	
	Server Address		

5.1.3. MQTT mode

MQTT's broker/client design eliminates the need for all devices in the system to be online at the same time. The clients (i.e., "devices" or "things") communicate directly with the broker, which plays the role of middleman to pass messages back and forth between clients.

The relevant AT command is as follows:



	Item	Description
1	AT+NETP	Setting / Query TCPA's network protocol parameters
2	AT+MQLOGIN	Set/query user name and password for MQTT. The setting takes effect after the reset
3	AT+MQID	Set/query MQTT Client ID. The setting takes effect after the reset
4	AT+MQTOPIC	Set/query MQTT topic. The setting takes effect after the reset
5	AT+MQPARA	Set/query MQTT parameters. The Settings take effect after the reset

Setting on web page:

	>>All Socket Set	
stem	Socket A Set	
ork Mode	Protocol	MQTT ÷
TA Setting	Port ID	8899
P Setting	Server Address	10.10.100.254
erial Setting	Client ID	402A8F5A0B5A
et Setting	MQTT User	admin
ccount	MQTT Password	admin
ograde SW	MQTT Heart	60
eboot	Subscribe Topic	402A8F5A0B5A/down
bout USR	publish Topic	402A8F5A0B5A/up
	Socket B Set	
	Protocol	NONE 🗸

5.1.4. HTTP mode

In HTTP mode(HTTP client), users need to specify the remote httpd server's address, port, method and other parameters. The device will submit the serially received data to the httpd server in the form of GET or POST. At the same time, the data sent by the http server can be transparently transmitted to the serial port.



Relevant AT command:

	ltem	Description
1	AT+NETP	Setting / Query TCPA's network protocol parameters
2	AT+HTPTP	Set/query the HTTP request methods.
3	AT+HTPURL	Set or query the HTTP header path and version.
4	AT+HTPHEAD	Set or query the contents of HTTP packets of the new version.
5	AT+HTPPARA	Set/query a new version of the HTTP connection disconnection time.

Setting on web page:

• •		中文 English
System	>>All Socket Set	
Work Mode	Protocol	HTTP 🗸
STA Setting	Port ID	8899
AP Setting	Server Address	10.10.100.254
Serial Setting	HTTP request type	POST 🗸
Net Setting	HTTP message type	Serial data as the path 🐱
Account	HTTP Protocol header path	/abcd
Jpgrade SW	HTTP Protocol version	1.1 🗸
Reboot	HTTP Protocol message content	Content-type:text/html;cha
About USR	HTTP Disconnect time	5
	Socket B Set	
	Protocol	NONE 🗸
		Save



5.2. Modbus function

USR-DR164/162 supports Modbus TCP/RTU conversion and Modbus polling(up to 10). This function is only

valid for socket A.

Modbus TCP/RTU conversion:



Modbus polling: USR-DR164 support multiple host polling to check parameter.

Relevant AT command:

	Item	Description
1	AT+Modbus	Setting / Query Modbus parameters

Setting on web page:

		中文	English
	>>UART SET		
System	Baud Rate	115200	~
Work Mode	Data Bit	8	~
STA Setting	Parity Bit	None	~
AP Setting	Stop Bit	1	~
Serial Setting	CTSRTS	Disable	~
Net Setting	Pack Interval	20	
Account	Pack Size	1400	
Upgrade SW	Com Heart	OFF	∼
Reboot	ModBUS Enabled	Protocol Conversion	~
About USR	<u> </u>	OFF	
		Protocol Conversion	
		Multi Host Polling	

5.3. WiFi band settings

USR-DR164 supports 2.4G & 5.8G dual band WiFi, users can set it using AT+WFREQ command. In 2.4G & 5.8G dual-band, when connecting as a STA to a router with the same SSID, USR-DR164 connects to the router with better signal strength with priority. In 5G only frequency, USR-DR164 has better better anti-interference, so it can work in complex environment.



2	Select Mode	
System		
Work Mode		
STA Setting		
AP Setting		
Serial Setting	Select Mode:	AP+STA mode 🗸
Net Setting	WIFI Frequency:	2G5G mode 🗸
Account		2G5G mode
Upgrade SW		2G mode
Reboot		5G mode

5.4. Heartbeat Packet

In the network transparent transmission mode, the user can choose to enable the custom heartbeat packet function. The heartbeat packet can be sent to the network or serial device:



The main purpose of sending to the network is to maintain a connection with the server, and at the same time let the server that is idle for a long time (do not send data to the server for a long time) to detect whether the current connection status is valid.

In applications where the server sends fixed query commands to the device, in order to reduce frequent interactions, users can choose to send heartbeat packets (query commands) to the serial device instead of sending query commands from the server.

Enable the custom heartbeat packet function. AT command settings are as follows:

(1)Enable heartbeat packet function AT+HEARTEN=on

(2)Set the sending direction (NET or COM) of the heartbeat packet, for example, set the heartbeat packet to



be sent to the network.

AT+HEARTTP=NET

(3)Set the heartbeat packet data (maximum 40 bytes). For example, to set the data to the string www.usr.cn, you need to first convert the string to hex 777772E7573722E636E.

AT+HEARTDT=7777772E7573722E636E

(4)Set the interval for sending heartbeat packets. The setting range is 1-65535s, and the default is 30s. For example, set the sending interval to 30 seconds.

AT+HEARTTM=30

Then need to set up network connections such as socket A and socket B, please refer to section 2.4. After completing the settings, restart the serial server. After socket A or socket B is connected to the server, if there is no data transmission within 30 seconds, the serial server will send the string www.usr.cn to the server. AT commands:

	Item	Description
1	HEARTEN	Query / Se whether to enable the heartbeat packet function
2	HEARTTP	Query / Set heartbeat packet sending mode
3	HEARTDT	Query / Set heartbeat packet data
4	HEARTTM	Query/ Set heartbeat packet sending interval

Setting on web page:

	>>All Socket Set	
System	Socket A Set	
Work Mode	Protocol	TCP-Client V
STA Setting	Port ID	8899
AP Setting	Server Address	10.10.100.254
Serial Setting	TCP Time Out Setting	300
Net Setting	Net heart	ON 🗸
Account	Interval Network heartheat	60
Upgrade SW	Data	
Reboot		🔍 ASCII 🔍 HEX
About USR	Reg Set	OFF 🗸
	Socket B Set	
	Protocol	NONE 🗸



	>>UART SET	
System	Baud Rate	115200 🗸
Vork Mode	Data Bit	8 🗸
STA Setting	Parity Bit	None 🗸
AP Setting	Stop Bit	1 🗸
Serial Setting	CTSRTS	Disable 🗸
let Setting	Pack Interval	20
Account	Pack Size	1400
Jpgrade SW	Com Heart	ON 🗸
Reboot	Interval	60
bout USR	Data	5553522D4452313634

5.5. Registration packet

This function is only allowed when the working mode is UDP and TCP Client. The content of the registration packet can be up to 40 bytes long. Users can choose to display this content in hexadecimal format or ASCII format.

FIRST: The registration packet is only sent once when the network connection is established.

EVERY: The registration packet is filled in front of the serial port data every time the serial port sends data to the network.

AT commands:

	Item	Description
1	AT+REGEN	Set the registration package type
2	AT+REGSND	Set the registration package mode
3	AT+REGCLOUD	Set/query PUSR cloud account and password
4	AT+REGUSR	Set or query the content of the user-defined registration package

Settings on web page:



	>>All Socket Set	
System	Socket A Set	
Vork Mode	Protocol	TCP-Client 🗸
TA Setting	Port ID	8899
P Setting	Server Address	10.10.100.254
Serial Setting	TCP Time Out Setting	300
let Setting	Net heart	OFF 🗸
ccount	Reg Set	MAC 🗸
Ipgrade SW	Send Type	FIRST V
Reboot	Socket B Set	
bout USR	Protocol	NONE

5.6. PUSR cloud

USR-DR164/162 supports sending data to PUSR cloud. It requires the device to connect to the WIFI network that can normally access the external network. Use the access address, port number, device SN and communication password generated by the manned cloud platform to fill in the device TCP Client and registration package content settings.

PUSR cloud address: https://account.usriot.com/

1> Add device

*	USR Cloud Cor www.usr.cn	nsole IOT DM						🛱 service support 🛛 user rig	hts 😗 简体中文	z 🔘 I	umeimei@usr.cr
×	Quick start	Gateway management > Ga	ateway list								
민	Screen v management	Gateway list	Total Gateways	Offline gateway			More gatewa	y features Go to DM platform	Add Batcl	h Add	Delete
G	Scene management		3 0	3							
55	Device management	Please select organiz*	Please select gatewar All models	Pelase Choose tags	Please enter SN or g	Y .					
E	Gateway ^ management ^	Gateway status	Gateway name	SN	Gateway model	Number of associa ted devices	Belonging organize	Tag	Operation		
	Gateway list -	Offline	未命名_网关名称_24	01601223021500001039	USR-G806w-43	0	My Project		View Ed	lit Delete	More 2
ត	Configuration management	Offline	USR-G806s-GPS	00007647000000000001	Unknown type	1	My Project		View Ed	lit Delete	More
Let	Data center 💙	Offine	USR-G816	01301622060700001586	USR-G816	0	My Project		View Ed	lit Delete	More
Ë	Alarm linkage 🗡										
\$	Value-Added v							Total 5 To/page V Pro	Neo	it Go to	1
₿	Exclusive ~ configuration										

2> Edit device information, click "SN does not support, click here"



*'	USR Cloud	Console ar.cn	IOT DM		
×	Quick start	Gate	eway management	> Galeway list > Add Galeway	
2	Screen management	Ade	d Gateway		
Ŷ	Scene management	×	c		
65	Device management	~	* Gateway name	\$100-WA12	
2	Gateway management	~	Belonging organize	My Project \checkmark	
	Gateway list				
瓳	Configuration management	~	* SN 💿	Please Input SN SN does not support, click here	
ш	Data center	~	* MAC / IMEI	Please Input MAC/IMEI/NID number	
畄	Alarm linkage	~	Positioning method	Manual positioning Automatic positioning	
⊗	Value-Added services	~	Gateway address	Swatch Jinan Mixc, East Jingshi Road, Jinan Shi, Shandong 250014, China Map	
≞	Exclusive configuration	~			
88	Extend	~	lag 🌚	Add tags	
		US	R transparency 🔋	Sur	
				save	
			Tips	×	
			S G: Yo	ateway added succeed surgateway SN is: 0000764700000000002; The communication password is: admin000;	
			(In e, en	the future, you can also view the communication password of the gateway on the "View" pag or view and modify the communication password of the gateway through "Gateway Managem tt Edit Gateway")	
			Op	perating procedures:	
				Download the Corresponding gateway software; Configure the gateway with the SN number allocated by the cloud platform and the com	
				munication password in the software;	
				 Ine gateway has been configured through the configuration software to connect to serv er. For details, please click to see how to configure the cloud 	
				Close	

3> DR164/162 parameters setting, the server address is tcp.mp.usriot.com, and the port is 15000. The device number and password is the ones on the last picture.

	>>All Socket Set	中文 English
System	Socket A Set	
Nork Mode	Protocol	TCP-Client 🗸
STA Setting	Port ID	15000
AP Setting	Server Address	tcp.mp.usriot.com
Serial Setting	TCP Time Out Setting	300
Net Setting	Net heart	OFF 🗸
ccount	Reg Set	CLOUD 🗸
Jpgrade SW	USR Cloud ID	0000764700000000002
Reboot	USR Cloud PassWorld	admin000
About USR	Socket D Set	
	Protocol	NONE 🗸
		Save

4> Save and restart the device, we can see the S100-WA12 is online status on the cloud.



• Offline	Unnamed_Gateway name_59	30801524052300000238	AP310i	0	My Project	View	Edit	Delete	More
Online	DR164	00007647000000000002	Unknown type	0	My Project	View	Edit	Delete	More
Offline	未命名_网关名称_24	01601223021500001039	USR-G806w-43	0	My Project	View	Edit	Delete	More
Offline	USR-G806s-GPS	00007647000000000001	Unknown type	1	My Project	View	Edit	Delete	More

5.7. SmartAPLink

USR-DR164 supports SmartAPLink to get quick internet access.Press the Reload button twice to access the SmartAPLink configuration mode. Users can also use AT+SMARTAPSTART command to enter SmartAPLink configuration mode. After entering SmartAPLink mode, the Work indicator of the DR164 blinks rapidly.

Smar	rtAPLink	🔶 Sma	irtAPLink
	version: 1.4.0		version: 1.4.0
SSID:	产品部2	SSID:	
密码:	chanpinbu	密码:	chanpinbu
Ap SSID:	APDR16X	Ap SSID: Ap 密码:	APDR16X
	开始	Sma	artAPLink
onProgress onProgress onProgress onProgress onProgress	s: SCAN_AP s: CONNECT_AP s: CONFIG_AP s: CONNECT_ORIGINAL_AP s: FIND DEVICE	linke {"id":	d module: "402A8F 5A","ip":"192.168 ","mac": 3F5 A"}

5.8. Event

Using AT+EVENT=on to turn on this function, then users can receive the event from serial port.

	Item	Description
1	+EVENT=SOCKA_ON	When the SOCKA connection is established (TCPClient/Server only, MQTT,HTTP)
2	+EVENT=SOCKA_OFF	When SOCKA connection disconnected (TCPClient/Server only, MQTT, HTTP)
3	+EVENT=SOCKB_ON	When the SOCKB connection is established (TCP Client only)
4	+EVENT=SOCKB_OFF	When the SOCKB connection disconnected (only TCP Client)
5	+EVENT=CON_ON	When DR164 connect to router as STA
6	+EVENT=CON_OFF	When DR164 disconnect with router as STA
7	+EVENT=DHCP_OK	When DR164 get IP address with DHCP



₩ • / (Uart Assistant	→ □ ×
COM Configs	Data log	UartAssist V5.0.2 🗇 📿
Channel COM42 #L_	[2024-10-30 18:55:30.168]# BECV ASCII>	^
Baudrate 115200 🚽	+EVENT=SOCKA_OFF	
Paritybits NONE	2024-10-30 18:55:30 262]# BBCV ASCITA	
Databits 8	+EVENT=SOCKA_ON	
Stopbits 1 💌 Flowetri NONE 💌	[2024-10-30 18:55:30.340]# RECV ASCII> 鏡8 ロロ	
· Close	L2024-10-30 19:00:31.358]# RECV ASCII> +EVENT=SOCKA_OFF	
Recy Options	[2024-10-30 19:00:31.484]# RECV ASCII> +EVENT=SOCKA_ON	
✓ Log Display Mode ✓ Auto Linefeed	[2024-10-30 19:00:31.579]# RECV ASCII> 鏡8 □□	
☐ Hide Received Data ☐ Save Recv to File	[2024=10=30_18:0E:32_601]# RECV ASCII> +EVENT=SOCKA_OFF	
<u>AutoScroll</u> <u>Clear</u>	[0004 10 20 10:05:20 712]# RECV ASCII>	
Send Options	+EVENT=SOCKA_ON	
ASCII C HEX	[2024-10-30 19:05:32.806]# RECV ASCII> \$≢⊛ □□]	
V Use Escape Chars(i)	[320 CC]	~
Auto Append Bytes	Data Send 1. DCD • 2. RXD • 3. TXD • 4. DTR •	5. GND 🔹 6. DSR 🌒 두 Clear 🛧 Clear
Cycle 200 ms	AT+Z	Send
Shortcut Aistory	<u> </u>	
🛎 Beadul	32/6 BX-439	TX-47 Recet

5.9. Firmware upgrade

For DR164, the function firmware and the web firmware is separate. On the following page, user can upgrade function firmware.

	Upgrade Software	
System		
Work Mode	Current version:V1.0.10.000000.0000	
STA Setting		
AP Setting	[选择文件] 木选择文件	
Serial Setting		
Net Setting	2 Upload	
Account		
Upgrade SW		
Reboot		
About USR		

Users can upgrade the web firmware in this URL:http://10.10.100.254/iweb.html

← C ▲ 本	安全 10.10.100.254/iweb.html
Upgrade application	
选择文件 未选择文件	Function Firmware
Upload	
Upgrade customized	d webpage
选择文件 未选择文件	Web Firmware
Upload	



5.10. System information

	MID	USR-DR164
ystem	Software Version	V1.0.10.000000.0000
ork Mode	Device Sn	
TA Setting	WiFi Work Mode	APSTA
P Setting	AP mode	
erial Setting	SSID	USR-DR164_0B5A
at Catting	IP Address	10.10.254
ersetting	MAC Address	402A8F5A0B5B
count	STA Mode	
ograde SW	Router SSID	产品部2
eboot	Signal Strength	94%
	IP Address	192,168,66,227

On this page, users can check some system information like firmware version and others.

5.11. Account

Users can modify the user name and password of the login page.

	Set a New Account and Password	
System		
Work Mode		
STA Setting	Current User Name	admin
AP Setting	Current Password	admin
Serial Setting	New User Name	
Net Setting	New Password	
Account		2
Upgrade SW		
Reboot		Save
About USR		

6. AT Commands

AT command is used for controlling modem, for USR devices in transparent mode normally, you must enter AT command mode at first, then you can send AT commands to configure or query the parameter settings. After setting all parameters, restart the modem to make the settings take effect. Every time the modem restart will work in work mode rather AT command mode.

Every AT command must add character carriage return <CR> and line feed <LF>. In Hex, <CR> is 0x0D



<LF> is 0x0A.

For detailed AT commands, please check the AT commands set.

6.1. AT Command Settings



≻Enter AT command mode:

1.Send "+++" from the serial port, it will be a "a" returned.

2.Do not send any data within a serial port packaging interval before sending "+++".

3.After receiving "a", send another "a" within 3s.

4.Receiving "+ok" means the device has changed to AT command mode.

5.Then can send AT commands to the device.

≻Exit AT command mode:

- 1. Send "AT+ENTM" from the serial port.
- 2. Receiving "+ok" means the device has exited AT command mode.

om Net	AT+H AT+RELD AT+VEI	R AT+Z	send normal error
	Common oprate		1 Search module in LAN
0	AT+UART	Send Send	2.Click searched device
com port COM42 V	AT+UART=115200, 8, 0, 0	Send Send	3.Click button to oprate
Bandrate 115200 ~	AT+PFLAG	Sand	+++a+ok
Parity NONE ~	AT+CIVER?	Send Send	
Databits 8 bit ~	AT+WAKEY	Send Send	AT+UART?
AT+ENTM	AT+WRMID=usr-cn	Send Send	AT+UART?
Stoppits 1 010	AT+UARTTE=45	Send 🗌	+ERR=-2
	AT+WANN	🗌 Send	
Close	AT+TMODE=Agreement	🗌 Send	AT+UART
	AT+NETP	🗌 Send	Altoan
ommonButton	AT+WMODE=sta Send +ok=115200,8,1,		+ok=115200,8,1,None,NFC
	AT+NETP=tcp, client, 8899, 192.16	Send Send	
AT+CIVER? AT+CIVER?	AT+WANN	Send Send	AT+WAKEY AT+WAKEY
	AT+UART=128000, 8, 1, none, nf c	□ Send	+ok=OPEN,NONE
	Interval ms	Select all	

6.2. Network AT Commands

In transparent mode, you can also send AT command from the network side to query or change the modem's parameter settings. The port is 48899, and the keyword is **www.usr.cn**



Port	48899	1	
keyword	www.u	ısr.cn	
Sea	rch		Open
AT	+¥		AT+Q
IP		MAC	MID : VER

Users can using the network AT command on other software, the search protocol is based on UDP.

		 2		X
Network data receive	800]:	NetSettings (1) Protocol		-
		(2) Local ho	st IP .100.1	50
		(3) Local ho 8234	st port	
	L	🔘 Di	sconn	ect
		Recv Optio	ns	
		Add 1i	e to II. ne retu	n n
		T Receiv	e As HE	(
		T Receiv	e Pause	
		Save	<u>Clear</u>	
		Send Optic	ns	
		🗌 Data f	rom fil	e
		Auto C	hecksum	
		Auto C	lear Ing	put
ParataTP: 10 10 100 254 Pa	48899	│ Send A	s Hex	
Aemoterr. 10.10.100.254 Fo	11. 140000	☐ Send R	ecycle	
www.usr.on	Send	Interval <u>Load</u>	1000 Clear	ns
🖝 Ready! Se	nd : 10	Recv: 36		Resel

Example: query parameters of UART or the LAN port, there is a carriage return and line feed after the AT

command.



Network data receive		NetSettings
[Receive from 10.10.100.	254 : 48899]:	(1) Protocol
0.10.100.254,402A8F5A0B5	A, USR-DR164	UDP 💌
+ok=115200, 8, 1, None, NFC		(2) Local host IP
		10.10.100.150
ok=115200, 8, 1, None, NFC		(2) Local bast port
		8234
•		0204
⊦ok=10. 10. 100. 254, 255. 255	. 255. 0	🔘 Disconnect
I		-Recy Options
		E Passing to file
		Theorive to file
		V Add line return
		Deceive AS JEA
		Neceive rause
		Save Clear
		Send Options
		Data from file
1		Auto Checksum
		Auto Clear Input
		Send As Hex
Rem¢teIP: 10.10.100.2	254 Port: 48899	🔽 Send Recycle
AT+LANN		Interval 1000 ms
	Send	Load Clear

7. Contact Us

Jinan USR IOT Technology Limited

Address : Floor 12 and 13, CEIBS Alumni Industrial Building, No. 3 Road of Maolingshan, Lixia District, Jinan,

Shandong, China

Official website: https://www.pusr.com Official shop: https://shop.usriot.com Technical support: http://h.usriot.com/ Email : sales@usriot.com Tel : +86-531-88826739 Fax : +86-531-88826739-808

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