

USR-C321 SPI User Manual

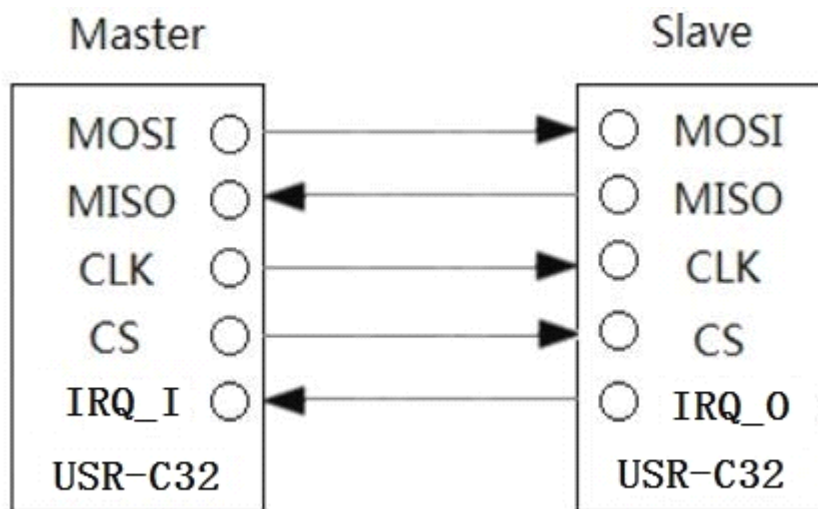
1、Function Description

The version of USR-C321 SPI mainly realize the WiFi-SPI transparent transmission.UART implement the AT command operation only.

SPI passthrough is half duplex mode, that is only to receive or send at the same time.

2、Hardware Description

Modules are connected to the SPI equipment through 5 pin, supports the transfer of four different clock polarity and phase mode, support 10 MHZ highest rate.

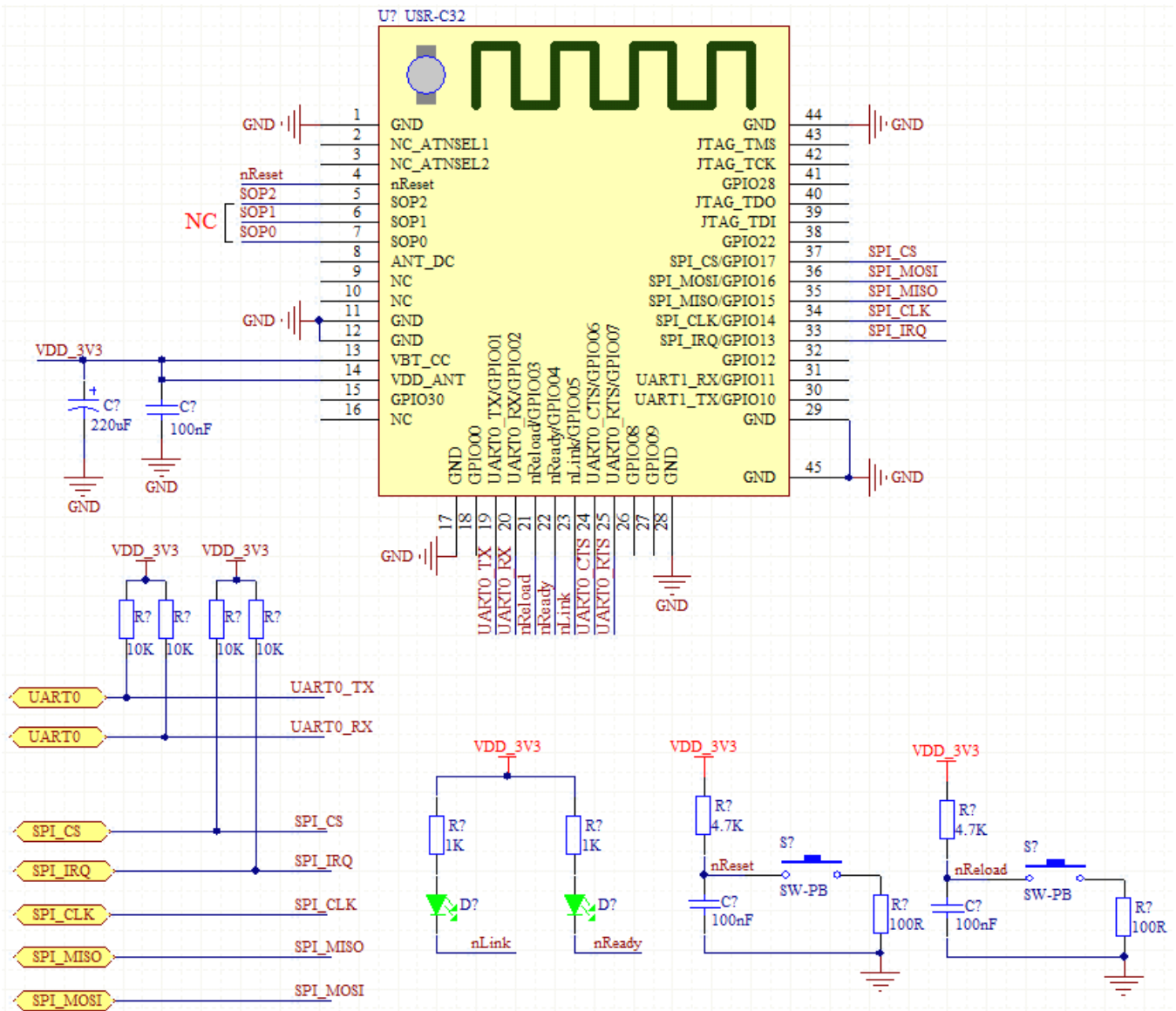


The corresponding SPI pin stated below:

SPI PIN	Num	Function
MOSI	Pin 36	SPI data output
MISO	Pin 35	SPI data in
CLK	Pin 34	SPI CLK
CS	Pin 37	SPI Enable
IRQ	Pin 33	SPI data indicating pin from the slave model.when the slave device needs to send data to the master equipment, the slave device drives the IRQ pins down to tell the master module reading data.

		<p>Low level effectively.</p> <p>The main equipment read data from the slave device,when the IRQ is down.The master module stop reading data ,when the IRQ is high levels.</p>
--	--	--

Module system diagram:

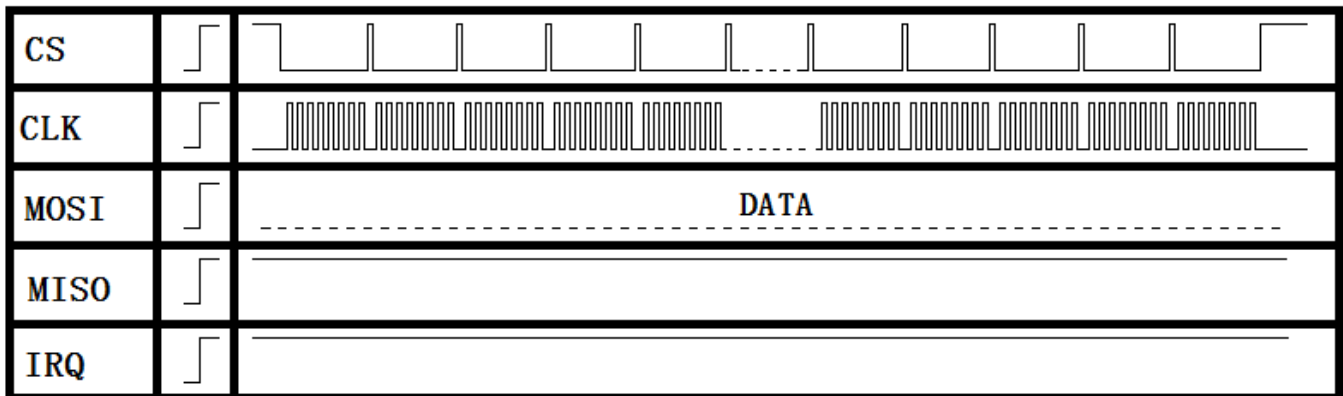


3、SPI Time Sequence

1) When the module is set to master mode,the time sequence is like below.

The module drive down the CS pin.The clk output level.The MOSI pin output data to the slave module.

Notice: When the module is set to master mode,it can recive most 1000 bytes one time.So the slave module must send less than 1000 bytes one time.Suggest the time intervals between bag and bag is more than 5 ms.

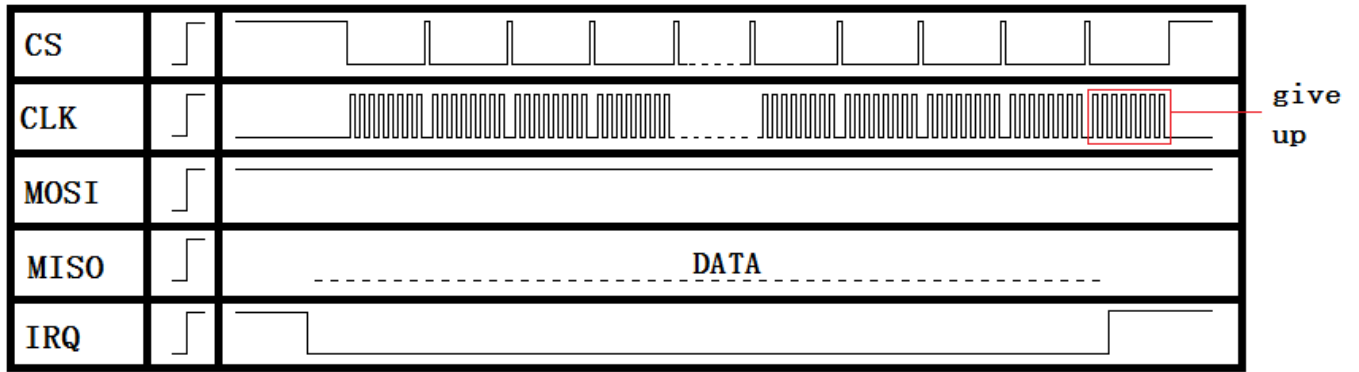


SPI Master to Slave

2) When the module is set to slave mode,the time sequence is like below.

When the SPI slave module needs to send to the master equipment,it drives down the IRQ pin.While the master mode detected IRQ pins are lower,it make the CS, output CLK level, read the MISO data, the slave SPI continuously detect the number of data is read from the model, when all the data is read out, raising IRQ pins.The master mode detected IRQ up CLK will output clk of a data,but master mode will not receive this data.

Notice: The modules can receive a maximum of 1000 bytes at a time from the master module as a slave mode.So a packet of data can be only less than 1000 bytes.The master mode to send the package with the time interval between packets must be greater than 5 ms, or from the pattern can't packaged data in time, can lead to loss of data.



SPI Slave to Master

4、AT Command Format

This version of firmware supports the AT command of UART and SPI at the same time. The serial port AT command format refers to the conventional firmware AT instruction.

Only one port between UART and SPI enters the AT command mode, the other port is also in AT command mode.

NOTICE:

SPI AT command format is the same as serial port. In SPI command mode, while the SPI receives a frame of data, it checks if it is an AT command. If the format is wrong, it sends "+ERR=-1" back.

The command for setting SPI is :

AT+SPI=wmode,mode,bps

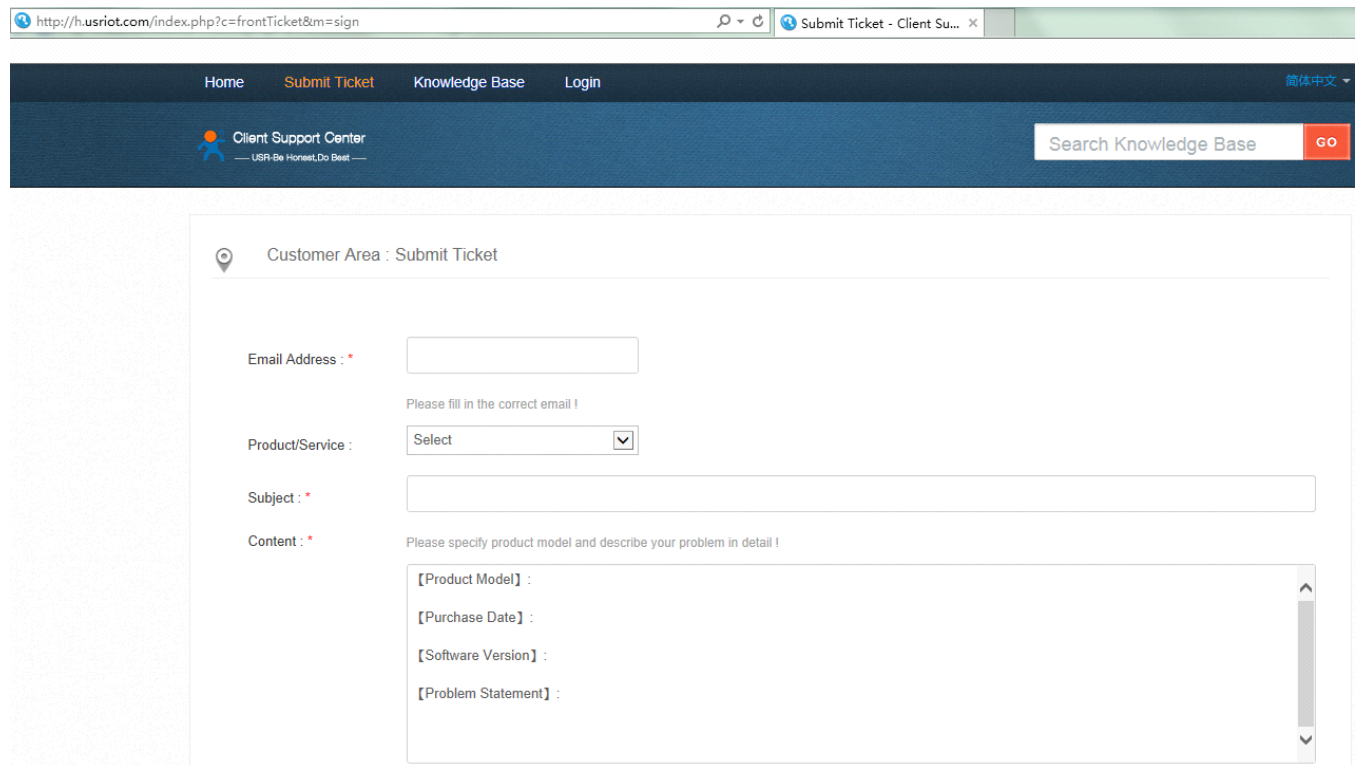
wmode: slave / master

Mode: 0,1,2,3, Four transmission sequences

Bps: 1000000-10000000 bit/s

5、Service and Support

If you have problems when use the module,you can submit the question to <http://h.usriot.com> .We will solve your question at the first time.



The screenshot shows a web browser window with the URL <http://h.usriot.com/index.php?c=frontTicket&m=sign>. The browser tab is titled "Submit Ticket - Client Su...". The website header includes navigation links: Home, Submit Ticket, Knowledge Base, and Login. A search bar for the Knowledge Base is also present. The main content area is titled "Customer Area : Submit Ticket" and contains the following form fields:

- Email Address :** A text input field with a red asterisk indicating it is required.
- Product/Service :** A dropdown menu with "Select" as the current selection and a red asterisk indicating it is required.
- Subject :** A text input field with a red asterisk indicating it is required.
- Content :** A large text area with a red asterisk indicating it is required. Below the text area, there are four labels for structured input:
 - 【Product Model】 :**
 - 【Purchase Date】 :**
 - 【Software Version】 :**
 - 【Problem Statement】 :**

Appendix A: Contact Information

Company: Jinan USR IOT Technology Limited
Address: 1-728, Huizhan Guoji Cheng, Gaoxin Qu, Jinan, Shandong, China
Web: <http://www.usr.so>
Support: <http://h.usriot.com>
Email: sales@usr.cn, order@usr.cn

Appendix B: Disclaimer

This document provides information about USR-C322 modules, this document does not grant any license to intellectual property rights. Except the responsibility declared in the product sale clause, USR does not assume any other responsibilities. In addition, USR does not make any warranties for the sale and use of this product, including the suitability of the product for a particular purpose, merchantability or fitness for any patent, copyright or other intellectual property infringement, etc. USR may make changes to specifications and product descriptions without notice.

Appendix C: Update History

V 1.0 06-10-2015. First Version

<END>