USR IOT
Be Honest, Do Best !

SPI to Ethernet Module

(USR-ES1)

File version: Ver 1.0

Content

1. Quick Start

Hardware Requirement:

1 MCU development board(we use one kind of STM32F103RBT6 core board), +3.3V power from core board, Network cable, USB to TTL converter.
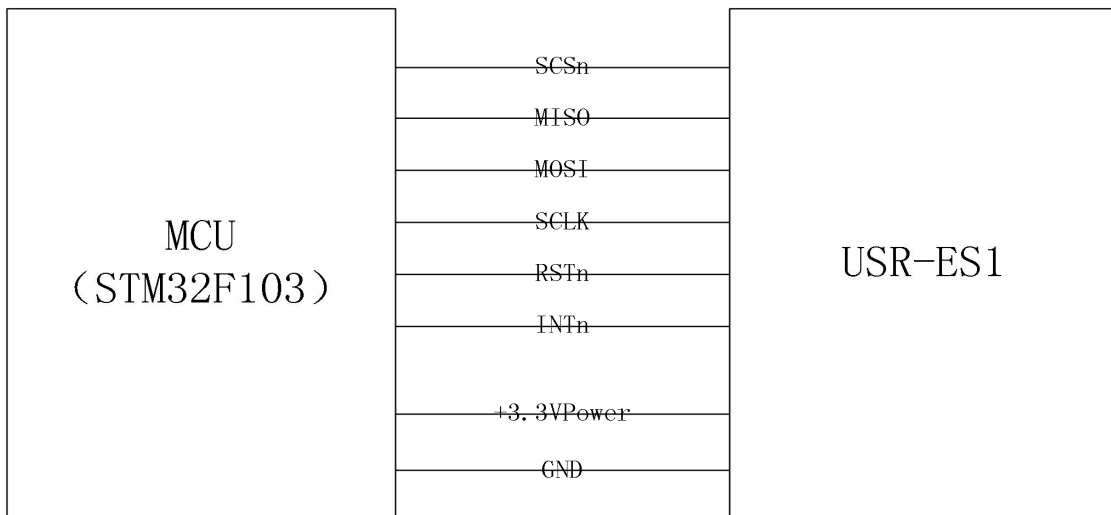
The hardware connection diagram as follows:

Diagram 1-1 Connection Diagram

Because here the use of the 3.3V micro controller system, so the middle without adding a level conversion.
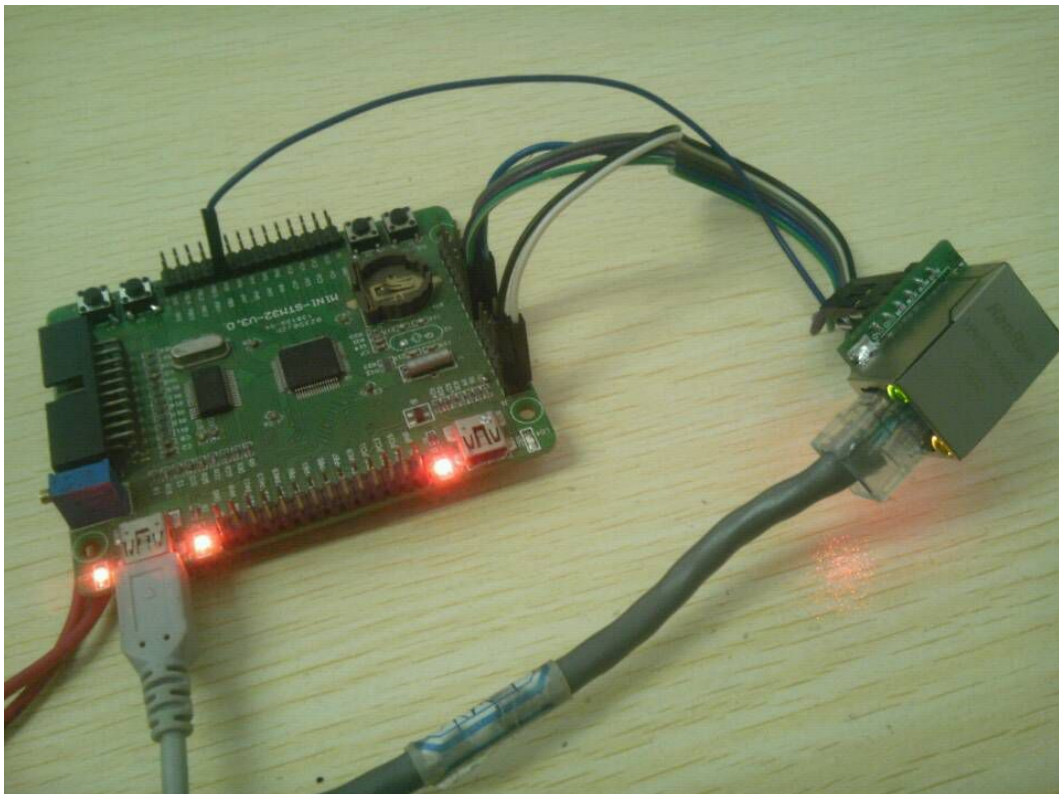
Diagram 1-2 Connection with an Core Board

Routine parameters module, the default for the:

IP Address: 192.168.1.101

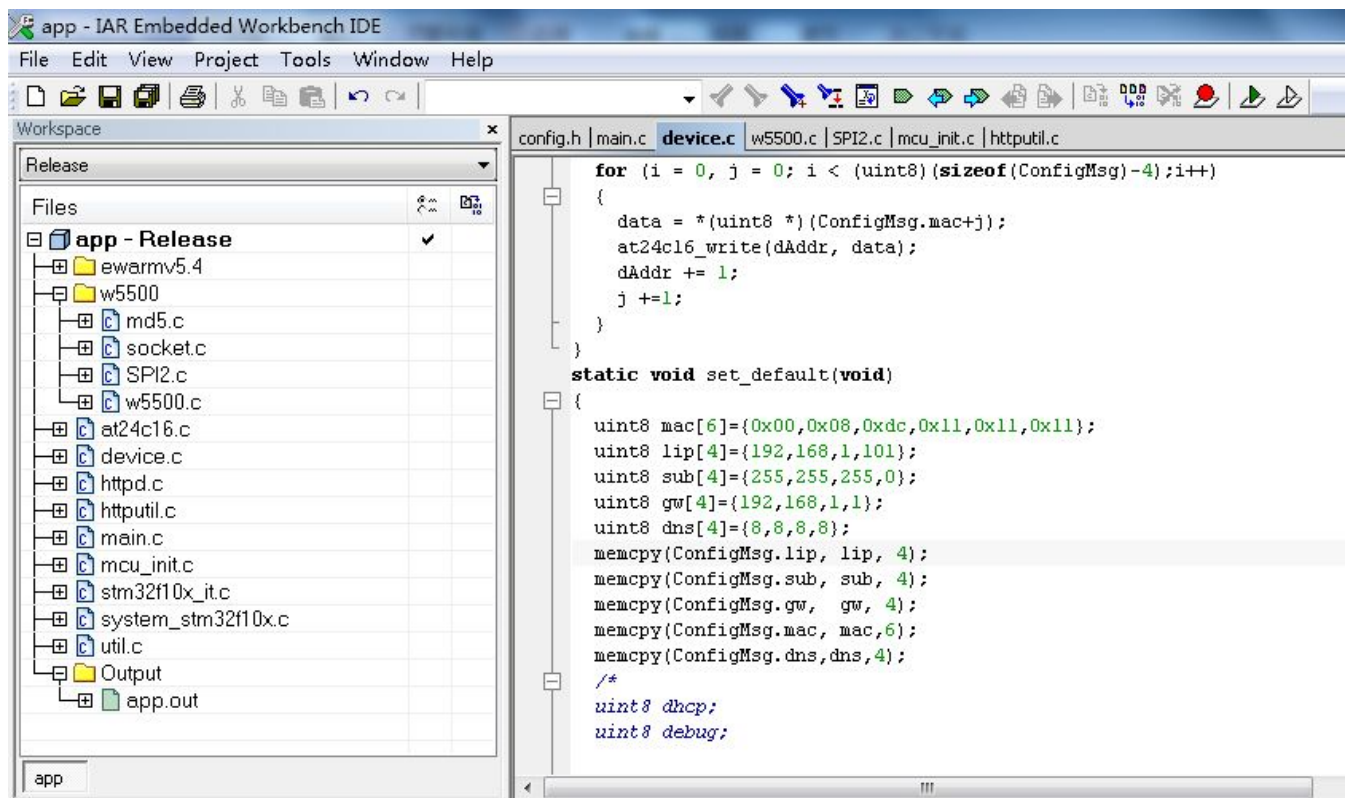The subnet mask: 255.255.255.0

GateWay Address: 192.168.1.1

Diagram 1-3 The Sample Project

Ping module's IP address.
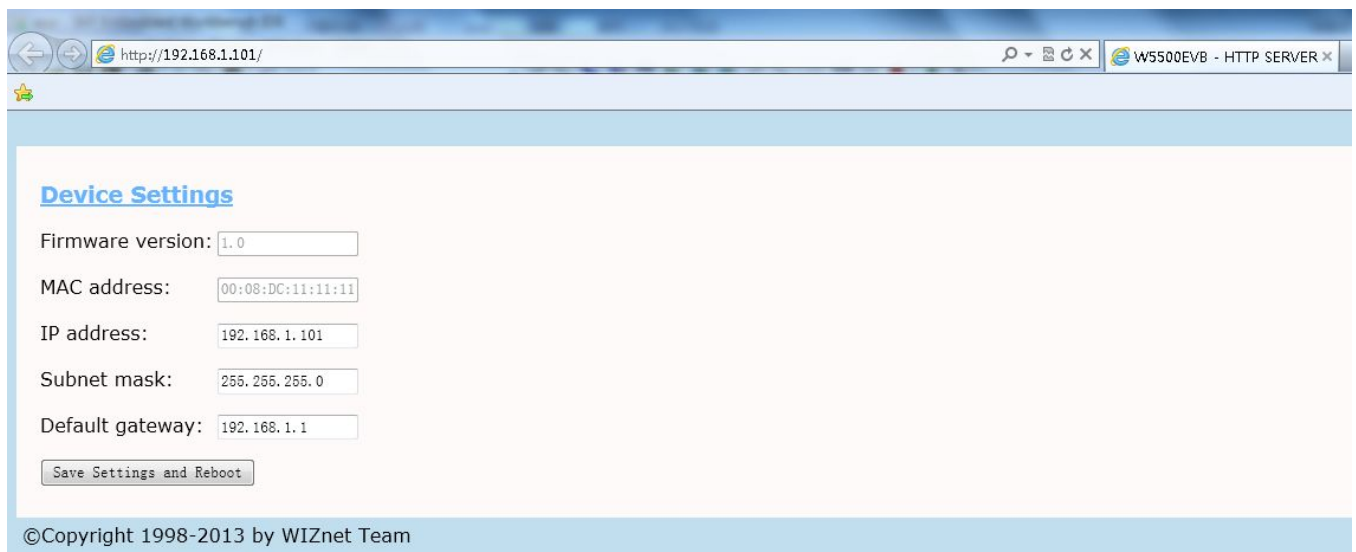

Diagram 1-4 Ping

Open the Webpage in brower.

Diagram 1-5 Module' webpage

2. Introduction

USR-ES1 is the Ethernet module of a SPI interface, interface is TTL level of 3.3V, power supply voltage of +3.3V, please ensure that the current is not less than 200mA, voltage is continuous and stable +3.3V.

2.1 Function Characteristics

● High speed SPI interface 80MHz

● Hardware-TCPIP-protocol stack user built in, almost without understanding the complex network protocol knowledge

● Supports up to 8 Socket

● Support TCP, UDP, ICMP, IPv4, ARP, IGMP, PPPoE protocol

● Integration of the data link layer, physical layer

● Support the wakeup

● Support high speed serial peripheral interface (SPI model 0, 3)

● Internal 32K bytes receive buffer

● The embedded 10BaseT/100BaseTX Ethernet physical layer (PHY)

● Support auto negotiation (10/100-Based full duplex or half duplex)

● Does not support the IP patch

● The working voltage of 3.3V, I/O and 5V voltage signal

● LED display (full duplex or half duplex, network connection, network speed,active)

● Pin type package ultra small, convenient for embedded applications

● Application of C sample project

2.2 Characteristic

Name	Description
Power supply mode	3.3V external power supply, current should be more than 200mA
Control interface	The TTL level, 3.3V SPI interface; 2 * single chip
PCB size	23 * 25 mm
Mechanical Dimensions	28.5 * 23 * 24

Diagram 2-1 Characteristic

2.3 Part Number

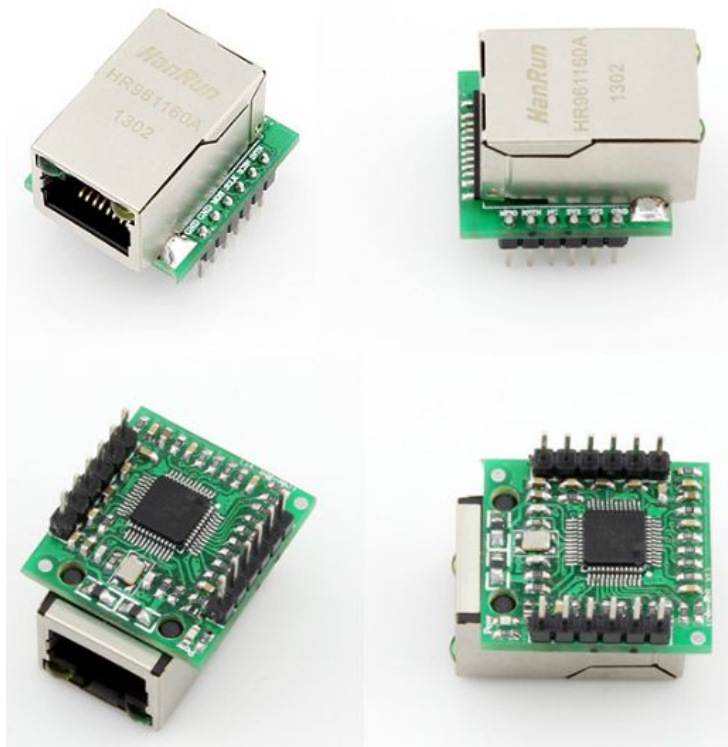| Type	characteristic	remarks
USR-ES1	The SPI communication interface, pin package, TTL level 3.3V	

Diagram 2-1 Characteristic

2.4 Packing List

USR-ES1 module * 1
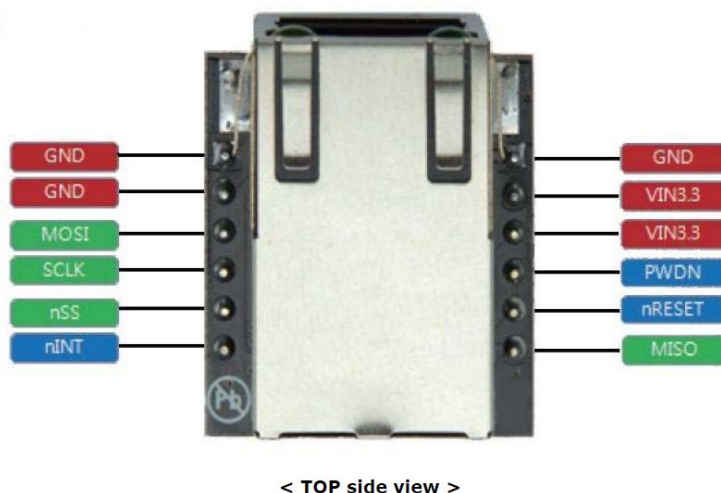
3. Hardware Description

3.1 Hardware

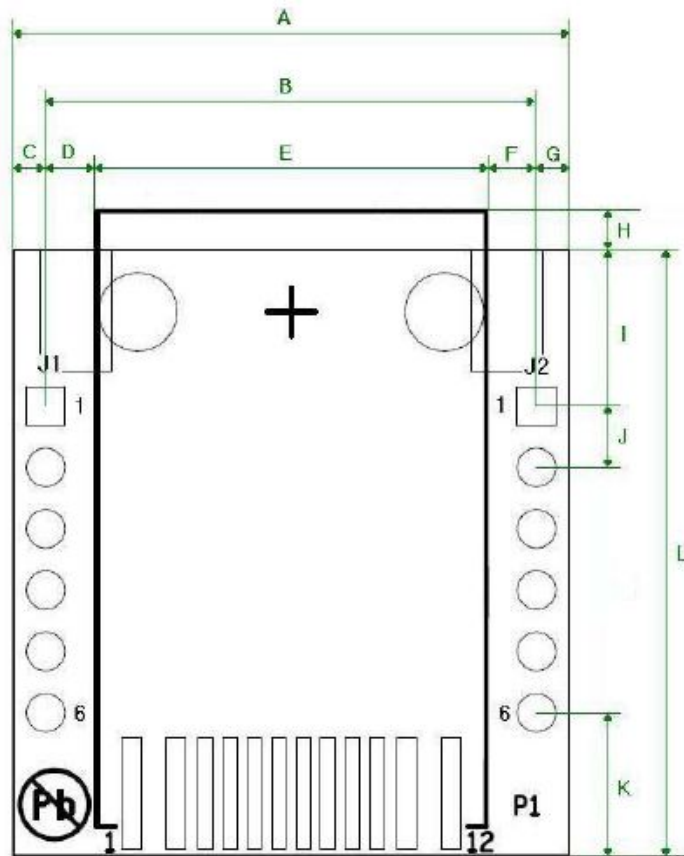A total of two sets of pins, the first group and the second group.

3.2 Pin Definition

< TOP side view >

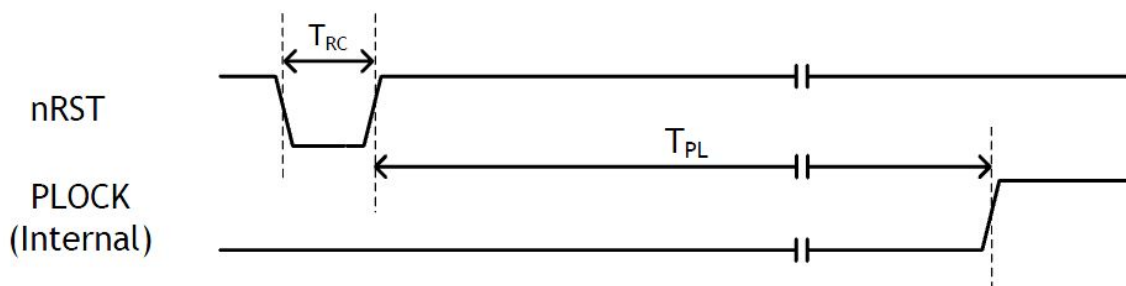| Pin	Name	Function
1 - 1	GND	**Ground**
1 - 2	GND	**Ground**
1 - 3	MOSI	**SPI Master Out Slave In** This pin is used to SPI MOSI signal pin.
1 - 4	SCLK	**SPI Clock** This pin is used to SPI Clock Signal pin.
1 - 5	SCSn	**SPI Slave Select :** Active Low This pin is used to SPI Slave Select signal Pin when using SPI interface.
1 - 6	INTn	**Interrupt** : Active low This pin indicates that W5200 requires MCU attention after socket connecting, disconnecting, data receiving timeout, and WOL (Wake on LAN). The interrupt is cleared by writing IR Register or Sn_IR (Socket n-th Interrupt Register). All interrupts are maskable.
2 - 1	GND	**Ground**
2 - 2	+3.3V	**Power** : 3.3 V power supply
2 - 3	+3.3V	**Power** : 3.3 V power supply
2 - 4	NC	**Not connected**
2 - 5	RSTn	**Reset :** This pin is active low input to initialize or re-initialize W5200. It should be held at least 2us after low assert, and wait for at least 150ms after high de-assert in order for PLL logic to be stable.
2 - 6	MISO	**SPI Master In Slave Out** This pin is used to SPI MISO signal pin.

Diagram 3-1 Pin Diagram

3.3 Dimensions

Symbol	Dimension(mm)	Symbol	Dimension(mm)
A	23.00	G	1.34
B	20.32 (2.54 x 8)	H	2.50 (+/- 0.50)
C	1.34	I	6.40
D	2.11	J	2.54
E	16.10	K	5.80
F	2.11	L	25.00

Diagram 3-2 Dimensions

3.4 Reset Timing

Symbol	Description	Min	Max
TRC	Reset Cycle Time	2 us	-
TPL	nRST internal PLOCK	-	150 ms

Diagram 3-3 Reset timing

4. Develop Tools

4.1 IAR Embedded

IAR embedded workbench. currently support ARM IDE. (other IDE tools also support ARM IDE, for example, such as the Keil). software version is for ARM 5.41 embedded workbench. On how to use IAR, see the IAR manual.
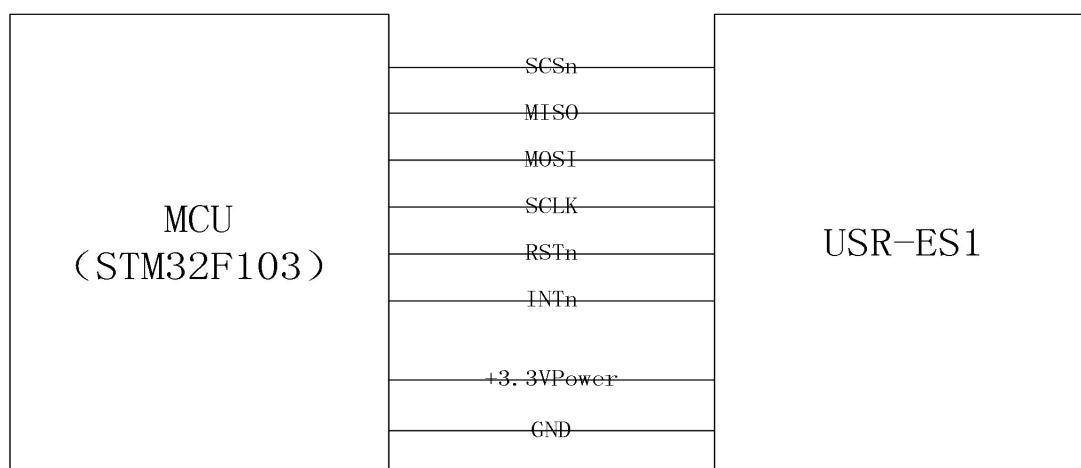
5. Application Structure

Diagram 5-1 Connection Diagram

6. FAQ

6.1 No communication

Power use 3.3V power supply after, to ensure that current above 200mA.

6.2 IAR routine compilation errors

IAR compiler environment, use IAR5.3, 5.4 version, version of IAR6.5 due to the difference in the official library, will be an error situation, you need to reinstallIAR5.4 or manual modification to eliminate these errors.

6.3 No communication, cable connection does not recognize

W5500 does not support Auto-MDI-X, which does not support the cross connect switch automatically, for some older equipment, may need to cross line specific or direct connection. Such as modules connected module, require the use of cross line, module. The router or switch requires the use of straight line.

7. Contact

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8. Update History

2010-12-09   V1.0   created