Use NUC240 SPI to Drive ENC28J20

Example Code Introduction for 32-bit NuMicro® Family

Information

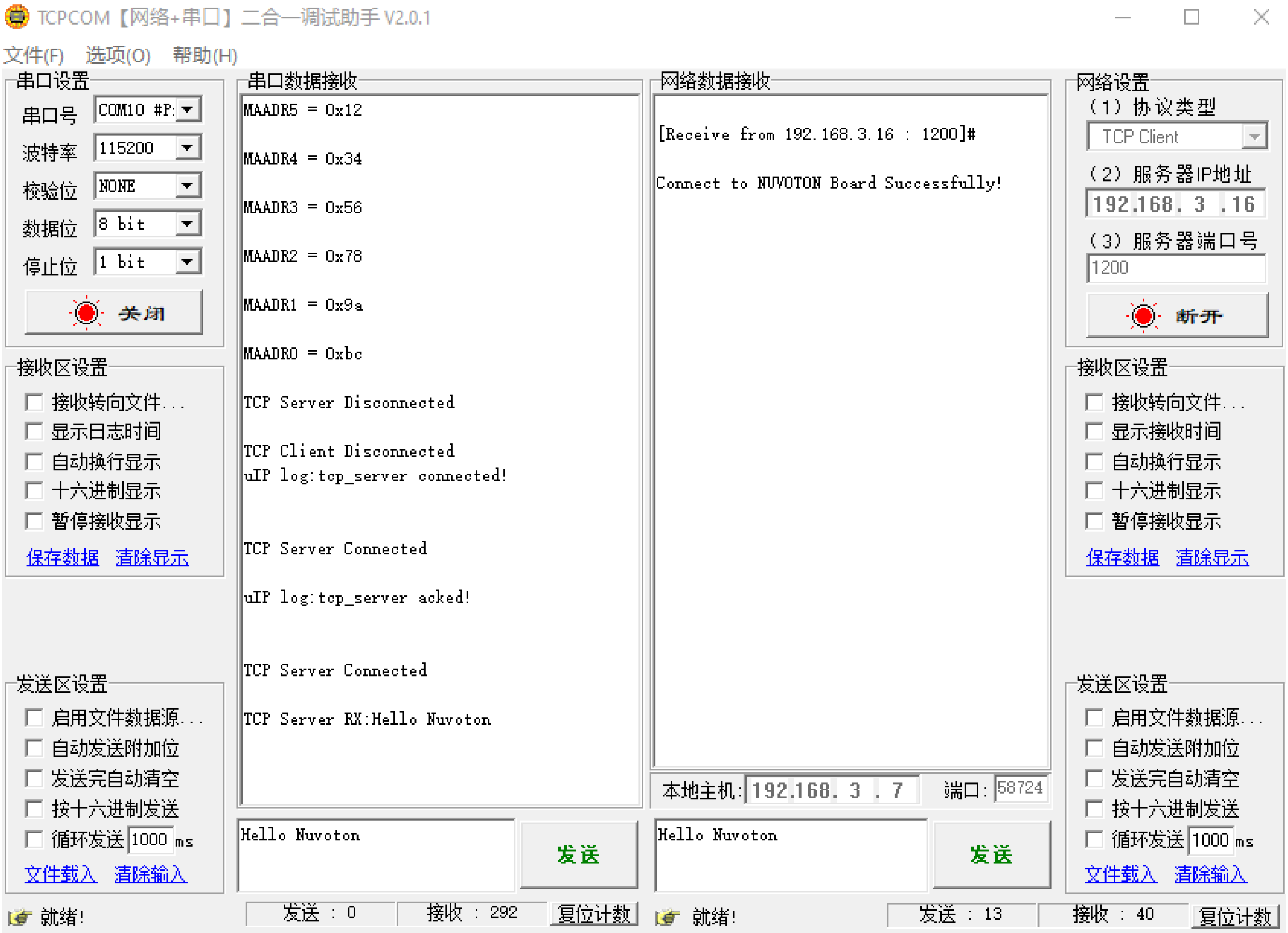
Application	This sample code uses NUC240 SPI to drive ENC28J20
BSP Version	NUC230_240_Series_BSP_CMSIS_V3.01.001
Hardware	NuTiny-SDK-NUC240V

1 Function Description

1.1 Introduction

This sample code uses NUC240 series MCU to drive ENC28J20 Ethernet controller through SPI2 interface to archive uIP function. When the ENC28J20 module connects to the network through the network cable, users can use the serial port computer tools and network assistant tools to view the execution results under the same gateway.

1.2 Demo Result



串口号: COM10 #P:
波特率: 115200
校验位: NONE
数据位: 8 bit
停止位: 1 bit
循环发送: 1000 ms

串口数据接收:

```
MAADR5 = 0x12

MAADR4 = 0x34

MAADR3 = 0x56

MAADR2 = 0x78

MAADR1 = 0x9a

MAADR0 = 0xbc

TCP Server Disconnected

TCP Client Disconnected
uIP log:tcp_server connected!


TCP Server Connected

uIP log:tcp_server acked!


TCP Server Connected

TCP Server RX:Hello Nuvoton
```

```
Hello Nuvoton
```

发送 : 0 接收 : 292

网络数据接收:

```
[Receive from 192.168.3.16 : 1200]#

Connect to NUVOTON Board Successfully!
```

本地主机: 192.168. 3 . 7 端口: 58724

```
Hello Nuvoton
```

发送 : 13 接收 : 40

(1) 协议类型: TCP Client
(2) 服务器IP地址: 192.168. 3 .16
(3) 服务器端口号: 1200
循环发送: 1000 ms

2 Code Description

Initialize ENC28J60 interface：

```
uint32_t ENC28J60_Init(uint8_t *macaddr)
{
    uint32_t retry = 0;
    ENC28J60_Reset();
    ENC28J60_Write_Op(ENC28J60_SOFT_RESET, 0, ENC28J60_SOFT_RESET);
    while (!(ENC28J60_Read(ESTAT)&ESTAT_CLKRDY) && retry < 500)
    {
        retry++;
        CLK_SysTickDelay(1000);
    }
    if (retry >= 500)
    {
        return 1;
    }
    …….
}
```

uIP initialize and IP address setting：

```
while(tapdev_init()) // Init ENC28J60
{
    printf("ENC28J60 Init Error!");
    CLK_SysTickDelay(200000);
}
uip_init();
uip_arp_init();
uip_ipaddr(ipaddr, 192, 168, 3, 16);
uip_sethostaddr(ipaddr);
uip_ipaddr(ipaddr, 192, 168, 3, 1);
uip_setdraddr(ipaddr);
uip_ipaddr(ipaddr, 255, 255, 255, 0);
uip_setnetmask(ipaddr);
uip_listen(HTONS(1200));
tcp_client_reconnect();
```

3 Software and Hardware Environment

Software Environment

- BSP version
    - NUC230_240_Series_BSP_CMSIS_V3.01
- IDE version
    - Keil uVersion 5.26

Hardware Environment

- Circuit components
    - NuTiny-SDK-NUC240V
    - ENC28J60 module
- Diagram

The hardware use NuTiny-SDK-NUC240V to connect ENC28J60 module.

VCC	↔	VCC
SPI2_SS(PD.0)	↔	CS
SPI2_SLK(PD.1)	↔	SCK
SPI2_MISO(PD.2)	↔	SO
SPI2_MOSI(PD.3)	↔	SI
GPIO(PC.13)	↔	RESET
VSS	↔	GND
NUC240		ENC28J60

4 Directory Information

🗁 EC_NUC240_SPI_ENC28J60_uIP_V1.00	
🗁 Library	Sample code header and source files
🗁 CMSIS	Cortex® Microcontroller Software Interface Standard (CMSIS) by Arm® Corp.
🗁 Device	CMSIS compliant device header file
🗁 NuEdu	Library for NuEdu-SDK-xxxx board
🗁 StdDriver	All peripheral driver header and source files
🗁 SampleCode	
🗁 ExampleCode	Source file of example code
🗁 ThirdParty	
🗁 uIP-1.0	uIP is a very small implementation of the TCP/IP stack that is written by Adam Dunkels <adam@sics.se>. More information can be obtained from the uIP homepage at https://github.com/adamdunkels/uip

5 How to Execute Example Code

1. Browsing into sample code folder by Directory Information (section 4) and double click NUC240_SPI_ENC28J60.uvproj.
2. Enter Keil compile mode
    a. Build
    b. Download
    c. Start/Stop debug session
3. Enter debug mode
    a. Run

6 Revision History

Date	Revision	Description
Sept. 17, 2019	1.00	1. Initially issued.

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