NUC240 SPI接口驅動ENC28J60

NuMicro® 32 位系列微控制器範例代碼介紹

文件信息

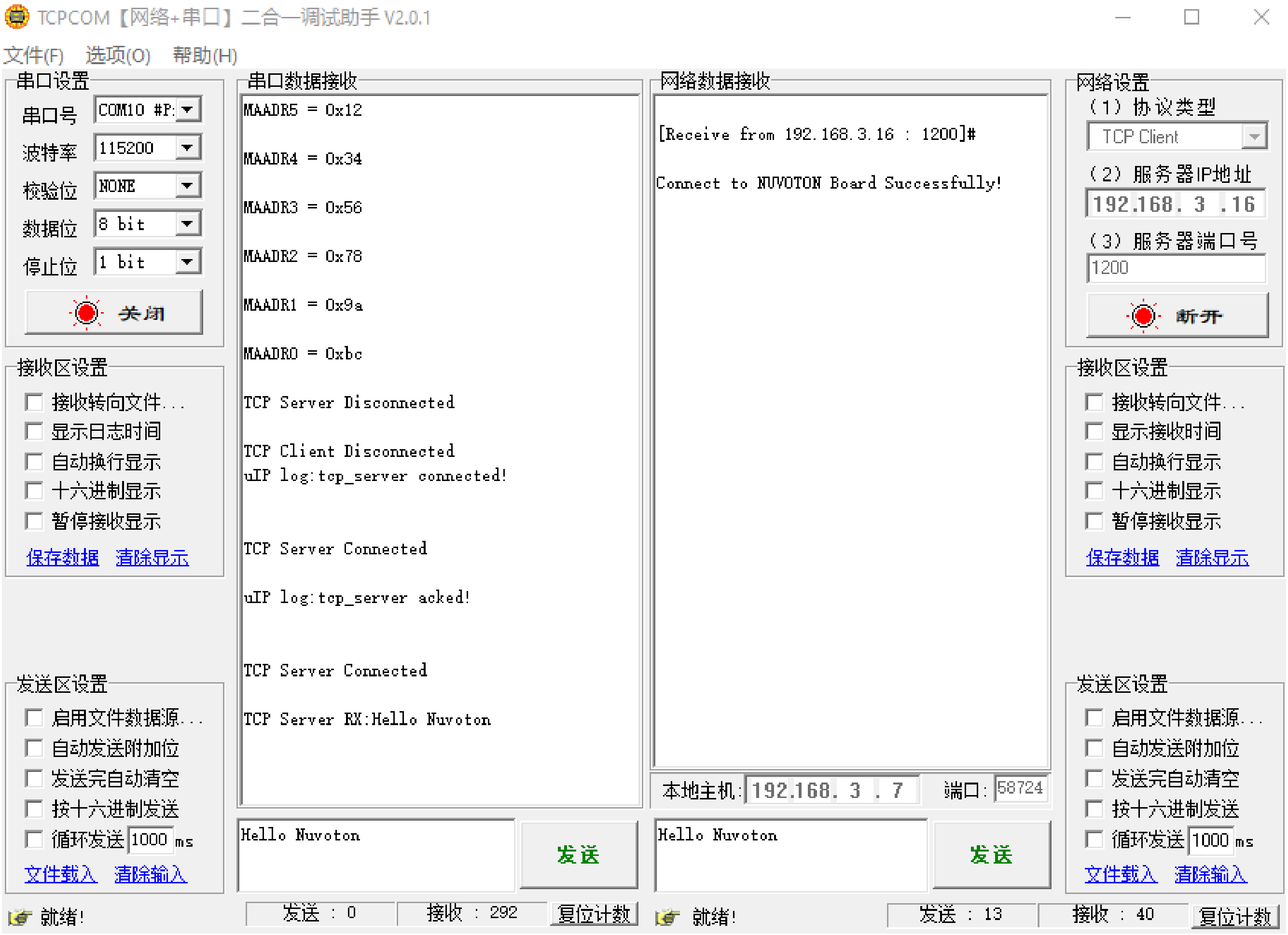
代碼簡述	本範例代碼使用 NUC240 驅動 ENC28J60，實現 uIP 功能
BSP 版本	NUC230_240_Series_BSP_CMSIS_V3.01.001
開發平臺	NuTiny-SDK-NUC240V

1 功能介紹

1.1 簡介

本範例代碼使用NUC240系列芯片，通過SPI2接口驅動ENC28J60以太網控制器，從而實現uIP功能。當ENC28J60模塊通過網線連接網絡後，用戶可以在同一網關下使用電腦工具串口及網絡助手工具查看執行結果。

1.2 執行結果



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
```

发送：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
发送：Hello Nuvoton
发送 : 13 接收 : 40

网络设置
（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 代碼介紹

初始化 ENC28J60 接口：

```
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 初始化及 IP 地址設置：

```
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 軟件與硬件環境

- **軟件環境**
  - BSP 版本
    - NUC230_240_Series_BSP_CMSIS_V3.01
  - IDE 版本
    - Keil uVersion 5.26
- **硬件環境**
  - 電路組件
    - NuTiny-SDK-NUC240V
    - ENC28J60 模組
  - 示意圖

硬件連接採用 NuTiny-SDK-NUC240V 與 ENC28J60 模組連接。

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 目錄信息

🗁 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 如何執行範例程序

1. 根據目錄信息章節進入 ExampleCode 路徑中的 KEIL 文件夾，雙擊 NUC240_SPI_ENC28J60.uvproj。
2. 進入編譯模式接口
   a. 編譯
   b. 下載代碼至內存
   c. 進入 / 離開除錯模式
3. 進入除錯模式接口
   a. 執行代碼

6 修訂紀錄

Date	Revision	Description
Sept. 17, 2019	1.00	1. 初始發佈.

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