

W5200 Power Down Mode Application Note

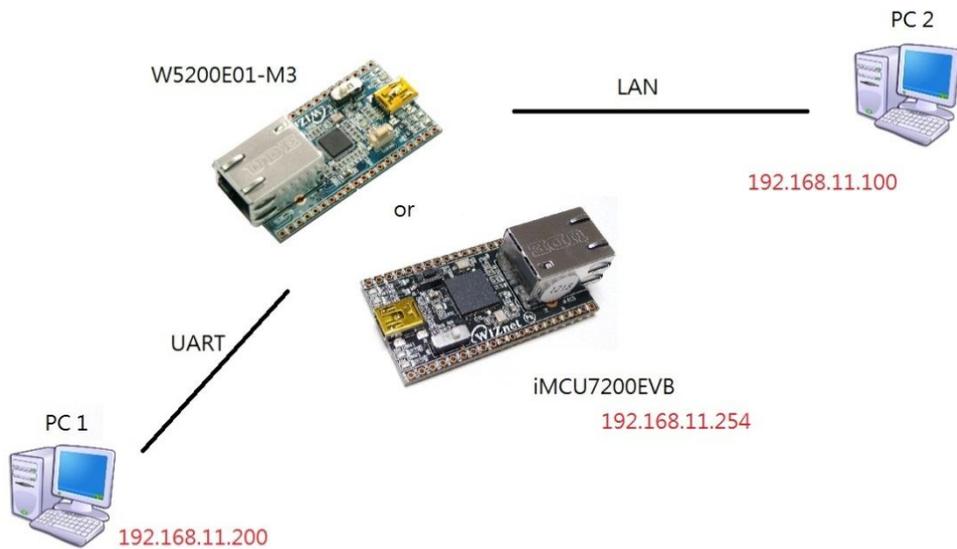
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W5200 and W7200 provide two attractive functions, such as Power Down Mode and Wake-up ON LAN. However, these two functions are not able to be used at the same time. If Power Down Mode is activate, PHY on Chip will be turned off and stop operating. And then the device in Power Down Mode cannot handle WOL magic packet for Wake-up ON LAN. It means Wake-up ON LAN will stop operating as well.

Generally, Power Down Mode can control on and off of PHY operation to save the power consumption. Wake-up ON LAN controls MCU mode by switching sleep mode and normal mode. When W5200 gets WOL magic packet, Wake-up ON LAN will issue an interrupt(through W5200) into MCU in sleep mode.

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1. Diagram



2. W5200E01-M3_PWDN Sample Code

```
if (strcmp(choice,"7")== 0)
{
    bTreat = (bool)SET;
    if((IINCHIP_READ(PHY)&0x08) == 0x00){
        SerialPutString("\r\nEnabling...\r\n");
        GPIO_SetBits(GPIOB, WIZ_PWDN);
        Delay_ms(500);
    }
    if((IINCHIP_READ(PHY)&0x08) == 0x08)
        SerialPutString("\r\nEnabled PHY Power Down!!!\r\n");
    } else{
        SerialPutString("\r\nAlready Enabled!!!\r\n");
    }
}
```

After choice the number of 7, if PHY register is equal to disable power down mode(0x00), GPIO will set to enable power down mode. Otherwise PHY register is already set to enable.

```
if (strcmp(choice,"8")== 0)
{
    bTreat = (bool)SET;
    if((IINCHIP_READ(PHY)&0x08) == 0x08){
        SerialPutString("\r\nDisabling...\r\n");
        GPIO_ResetBits(GPIOB, WIZ_PWDN);
        Delay_ms(3000);
    }
    if((IINCHIP_READ(PHY)&0x08) == 0x00)
        SerialPutString("\r\nDisabled PHY Power Down!!!\r\n");
    } else{
        SerialPutString("\r\nAlready Disabled!!!\r\n");
    }
}
```

After choice the number of 8, if PHY register is equal to enable power down mode(0x08), GPIO will set to disable power down mode. Otherwise PHY register is already set to disable.

3. Configuration

IAR Embedded Workbench



Type.h

If the module is W5200E01-M3, the definition of W7200 is disable.

```
#define __DEF_W5200__
//#define __DEF_W7200__
```

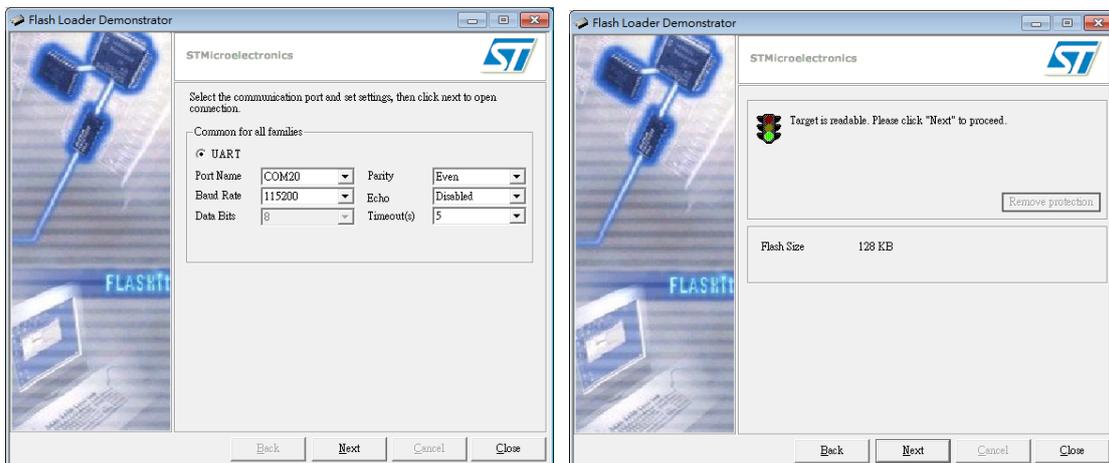
If the module is iMCU7200EVB, the definition of W5200 is disable.

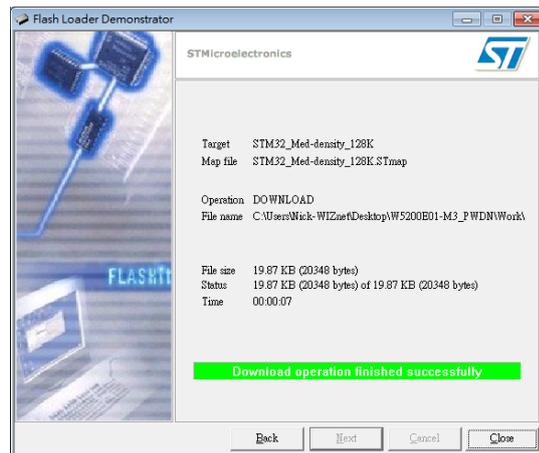
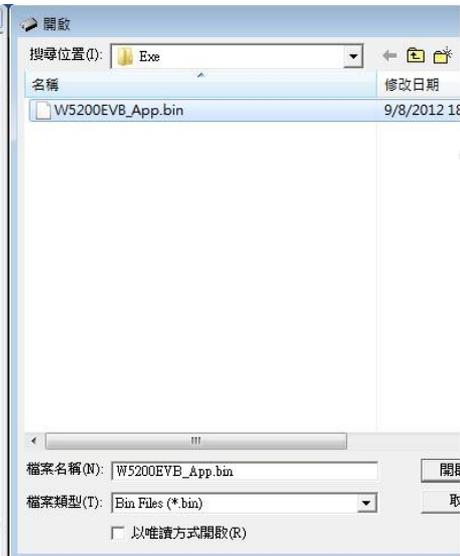
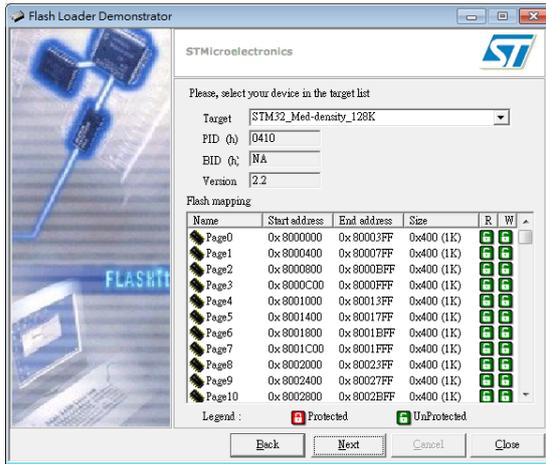
```
//#define __DEF_W5200__
#define __DEF_W7200__
```

Flash Loader Demonstrator

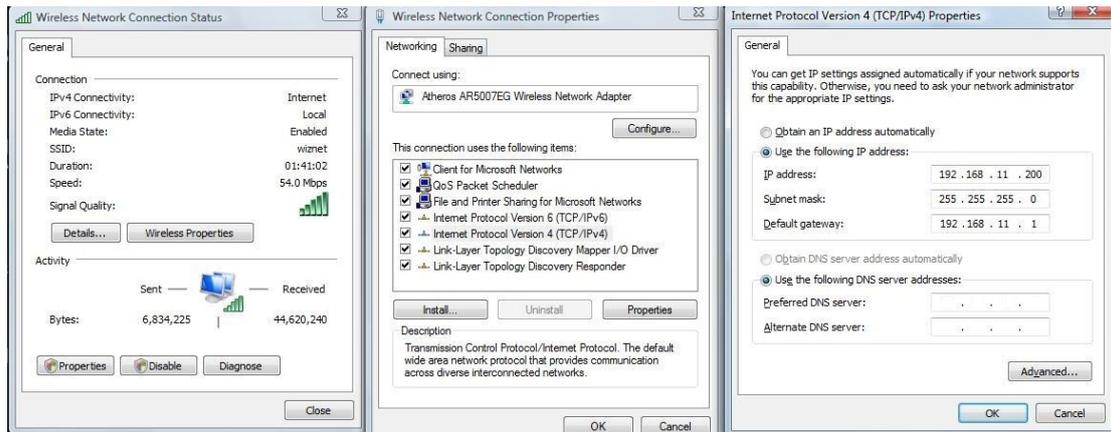


Open the Flash Loader Demo software to program into iMCU7200EVB or W5200E01-M3. The program step as follows:





PC1 Static IP



Serial terminal Program

Serial port COM20 opened

MAC[0]: 0x 0

MAC[1]: 0x 8

MAC[2]: 0xdc

MAC[3]: 0x11

MAC[4]: 0x22

MAC[5]: 0x33

W5200E01-M3

Network Configuration Information

MAC : 00.08.DC.11.22.33

IP : 192.168.11.254

SN : 255.255.255.0

GW : 192.168.11.1

DNS server : 168.126.63.1

SMTP Client using W5200

===== STM32-Discovery =====

This Application is basic example of UART interface with
Windows Hyper Terminal.

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APPLICATION MENU :

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- 1 - Set LD1 on
- 2 - Set LD1 off
- 3 - Show network setting
- 4 - Set network setting
- 5 - Run TCP Loopback
- 6 - Run UDP Loopback
- 7 - Enable PHY Power Down
- 8 - Disable PHY Power Down

Enter your choice : |

For the W5200E01-M3_PWDN program is default to disable PHY power down mode.
PHY Power Down means that control the ethernet PHY. So, PWDN enable means
W5200 can not send&receive any packets.

4. Set network setting

Enter your choice : 4

MAC address : 00:08:DC:16:5F:AE

IP address : 192.168.1.200

Subnet mask : 255.255.255.0

Gateway address : 192.168.1.1

DNS address : 168.126.63.1

Mac : 00:08:DC:16:5F:AE

IP : 192.168.1.200

SN : 255.255.255.0

GW : 192.168.1.1

DNS server : 168.126.63.1

===== STM32-Discovery =====

This Application is basic example of UART interface with
Windows Hyper Terminal.

7. Enable PHY Power Down

```
Enter your choice : 7
```

```
Enabling...
```

```
Enabled PHY Power Down!!!
```

8. Disable PHY Power Down

```
Enter your choice : 8
```

```
Disabling...
```

```
Disabled PHY Power Down!!!
```

5. Ping test

PC 1 ping to iMCU7200EVB(192.168.11.254). If PC1 use the serial terminal program to change the W5200 from 8. Disable PHY Power Down to 7. Enable PHY Power Down, PC 1 cannot ping the iMCU7200EVB and show the message “Request timed out”.

```
C:\Users\Nick-WIZnet>ping 192.168.11.254 -t
Pinging 192.168.11.254 with 32 bytes of data:
Reply from 192.168.11.254: bytes=32 time<1ms TTL=128
Request timed out.
```

Conversely, If PC1 uses the serial terminal program to change the W5200 from 7. Enable PHY Power Down to 8. Disable PHY Power Down, PC 1 can ping the iMCU7200EVB again.

```
Request timed out.
Reply from 192.168.11.254: bytes=32 time=2ms TTL=128
Reply from 192.168.11.254: bytes=32 time=1ms TTL=128
Reply from 192.168.11.254: bytes=32 time=1ms TTL=128
Reply from 192.168.11.254: bytes=32 time=1ms TTL=128
Reply from 192.168.11.254: bytes=32 time<1ms TTL=128
Reply from 192.168.11.254: bytes=32 time<1ms TTL=128
Reply from 192.168.11.254: bytes=32 time=1ms TTL=128
Reply from 192.168.11.254: bytes=32 time=1ms TTL=128
Reply from 192.168.11.254: bytes=32 time=1ms TTL=128
Reply from 192.168.11.254: bytes=32 time=2ms TTL=128
Reply from 192.168.11.254: bytes=32 time=1ms TTL=128
Reply from 192.168.11.254: bytes=32 time<1ms TTL=128
```