RX62N

Implementation of DHCP client on M3S-T4-Tiny

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Introduction

This document explains implementation of DHCP (Dynamic Host Configuration Protocol) client on M3S-T4-Tiny. DHCP client is the program getting IP parameter (IP Address, subnet mask gateway address) from DHCP server.

This document has sample program which works on Renesas Starter Kit+ for RX62N (Hereafter, it is abbreviated as RSK).

function	product	website
TCP/IP	M3S-T4-Tiny	http://www.renesas.com/mw/t4

Target Device

RX62N

1. Confirm sample program working

1.1 Hardware setup

Please connect PC and RSK to same network. And the network needs some DHCP server.

1.2 Software setup

1.2.1 PC setup

The sample program will get IP parameter from DHCP server. Please setup PC to get IP parameter from DHCP server.

1.3 Execute sample program

Sample program is built at High-performance Embedded Workshop. “Ether.hws” is project file and user will double click this file to edit project. Sample program has already setup to work on RSK with E1 emulator. Please continue according to the display of the screen. When E1 completes connection to RSK, please set breakpoint to CloseTimer() function at “main_t4_sample.c” line 103. Please push “GO” button to execute sample program.

When sample program breaks, please confirm “tcpdp_env” structure including IP parameter from DHCP server.

If sample program failed DHCP configuration, sample program starts using default IP parameter”192.168.0.3” in “config_tcpudp.c”.

2. Specification of sample program

2.1 Data structure

[The structure DHCP data]

```
typedef struct _dhcp{
        unsigned char   ipaddr[4];
        unsigned char   maskaddr[4];
        unsigned char   gwaddr[4];
        unsigned char   dnsaddr[4];
        char            domain[20];
        unsigned char   macaddr[6];
}DHCP;
```

2.2 API reference

2.2.1 r_dhcp_open

Description

The application calls this function once before calling tcpudp_open(). This function is terminated with status completed process or abnormal termination (timeout, check parameter error). This function may need several seconds until process termination.

This function has second parameter needs work area for DHCP client. The work area requires 742 bytes RAM. User can use this work area after DHCP client process.

This function requires user definition function (get_timer(), reset_timer()) to check time out. The function get_timer() returns 10ms software timer value. The function reset_timer() resets 10ms software timer value.

Usage

```
#include “r_dhcp.h”

int r_dhcp_open(DHCP *dhcp, unsigned char *work, unsigned char *mac_addr);
```

Parameters

dhcp	output	pointer to result of DHCP client process
work	output	pointer to work RAM for DHCP client
mac_addr	input	pointer to MAC address

Return Value

0	normal terminations
-1	abnormal terminations

Remark

none

2.3 User definition function reference

2.3.1 reset_timer

Description

This function resets 10ms software timer value.

Usage

#include “r_dhcp.h”

void reset_timer(void);

Parameters

none

Return Value

none

Remark

none

2.3.2 get_timer

Description

This function returns 10ms software timer value.

Usage

#include “r_dhcp.h”

void get_timer(void);

Parameters

none

Return Value

10ms software timer value

Remark

none

Website and Support

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Revision Record

Rev.	Date	Description	
		Page	Summary
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General Precautions in the Handling of MPU/MCU Products

The following usage notes are applicable to all MPU/MCU products from Renesas. For detailed usage notes on the products covered by this manual, refer to the relevant sections of the manual. If the descriptions under General Precautions in the Handling of MPU/MCU Products and in the body of the manual differ from each other, the description in the body of the manual takes precedence.

1. Handling of Unused Pins
   Handle unused pins in accord with the directions given under Handling of Unused Pins in the manual.
   — The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible. Unused pins should be handled as described under Handling of Unused Pins in the manual.
2. Processing at Power-on
   The state of the product is undefined at the moment when power is supplied.
   — The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the moment when power is supplied.
   In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the moment when power is supplied until the reset process is completed.
   In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the moment when power is supplied until the power reaches the level at which resetting has been specified.
3. Prohibition of Access to Reserved Addresses
   Access to reserved addresses is prohibited.
   — The reserved addresses are provided for the possible future expansion of functions. Do not access these addresses; the correct operation of LSI is not guaranteed if they are accessed.
4. Clock Signals
   After applying a reset, only release the reset line after the operating clock signal has become stable. When switching the clock signal during program execution, wait until the target clock signal has stabilized.
   — When the clock signal is generated with an external resonator (or from an external oscillator) during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Moreover, when switching to a clock signal produced with an external resonator (or by an external oscillator) while program execution is in progress, wait until the target clock signal is stable.
5. Differences between Products
   Before changing from one product to another, i.e. to one with a different type number, confirm that the change will not lead to problems.
   — The characteristics of MPU/MCU in the same group but having different type numbers may differ because of the differences in internal memory capacity and layout pattern. When changing to products of different type numbers, implement a system-evaluation test for each of the products.

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