RX Family

R20AN0311EJ0106
Rev.1.06
Nov 30, 2016

Interface conversion module for Ethernet Driver and Embedded system M3S-T4-Tiny

Firmware Integration Technology

Introduction

This application note explains the software information about to convert the Embedded TCP/IP Library M3S-T4-Tiny (T4) user defined functions to the RX Family Ethernet Driver Interface (This module).

T4 supports Ethernet communication. T4 is divided TCP/IP process and Ethernet control, and user can custom the parts of Ethernet control. This module provides the source code fitting T4 to RX Family Ethernet driver.

For about T4, please refer to the following URL.

https://www.renesas.com/mw/t4

This module and T4 are provided as FIT Module. Please refer to the URL to understand FIT outline.

FIT: Firmware Integration Technology.

https://www.renesas.com/en-us/solutions/rx-applications/fit.html

Target Device

RX Family

Contents

1. Overview

This module includes the following files.

Table 1 file/folder structure

file/folder name	description
r20an0311ej0106-rx-t4.pdf	Application note
reference_documents	
r01an1723eu0111_rx.pdf	how to build into the e² studio
r01an1826ej0102_rx.pdf	how to build into the CS+
FITModules	
r_t4_driver_rx_v1.06.xml	FIT plug-in XML
r_t4_driver_rx_v1.06.zip	FIT plug-in ZIP
configuration (r_config)	
r_t4_driver_rx_config.h	configuration file(default)
FIT Module (r_t4_driver_rx)	
document(doc)	
english (en)	
r20an0311ej0106-rx-t4.pdf	Application note (English) (this document)
japanese(ja)	
r20an0311jj0106-rx-t4.pdf	Application note (Japanese)
configuration refer reference (ref)	
r_t4_driver_rx_config_reference.h	configuration file(template)
source code(src)	
readme (readme.txt)	readme

2. API Information

This API adheres to the Renesas API naming standards.

2.1 Hardware Requirements

None

2.2 Software Requirements

This FIT Module is dependent upon the following packages:

- r_bsp
- r_sys_time_rx
- r_t4_rx
- r_ether_rx

2.3 Supported Toolchains

This driver is tested and works with the following toolchain:

- Renesas RX Toolchain v.2.05.00

2.4 Header Files

All API calls and their supporting interface definitions are located in r_t4_itcpip.h

2.5 Integer Types

This project uses ANSI C99.

2.6 Configuration Overview

The configuration options in this module are specified in r_t4_driver_rx_config.h. The option names and setting values are listed in the table below.

Table 2 configuration options

Configuration options in r_t4_driver_rx_config.h	
None	---

2.7 API Data Structure

No structures in the APIs using.

2.8 Return Values

None

2.9 Adding Driver to Your Project

Please refer to the Adding Firmware Integration Technology Modules to Projects (r01an1723eu0111_rx.pdf, for e2 studio) or the Adding Firmware Integration Technology Modules to CS+ Projects (r01an1826ej0102_rx.pdf).

3. Relation about T4 modules

This figure shows 2 cases of T4 software stack.

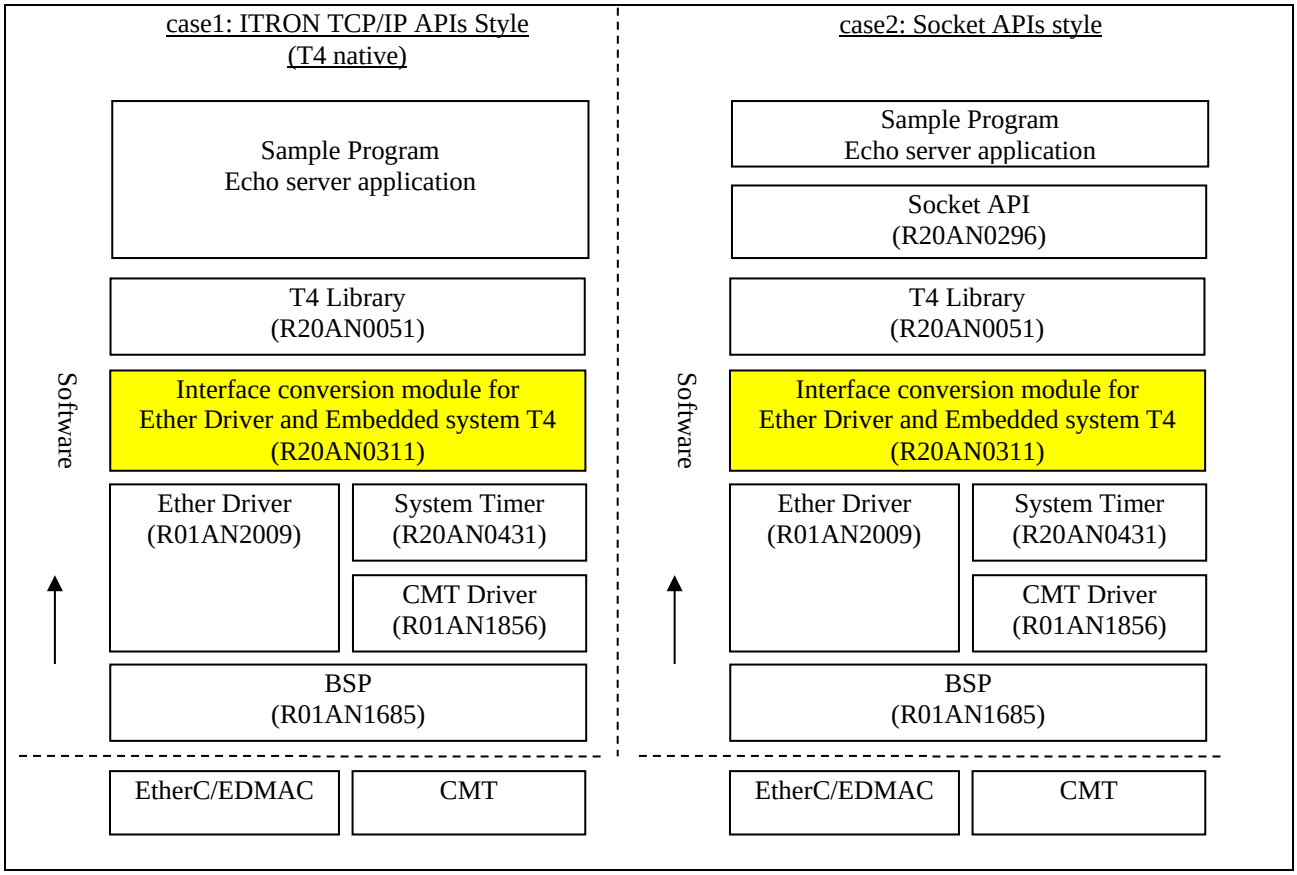

Figure 1 Relation about T4 modules

4. Specification about module

Please refer to the T4 user's manual (r20uw0031ejxxxx_t4tiny.pdf) and Ethernet Driver Interface Specification (r20uw0032ejxxxx_t4tiny.pdf). These documents are included to T4 FIT Module (R20AN0051).

In case, not be allocated from Systemtimer module, this module will stop.

Website and Support

Renesas Electronics Website
http://www.renesas.com/

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Revision History

		Description	
Rev.	**Date**	**Page**	**Summary**
1.06	Nov 30, 2016	−	Added lan_check_link(). Added register_callback_linklayer(). Dependence upon r_sys_time_rx module. Fixed Figure1.
1.05	Oct 01, 2016	−	Added Support MCUs(RX63N,RX65N).. Added the LinkProcess function execution (R_ETHER_LinkProcess()) during processing of the timer interrupt.
1.04	Apr 15, 2016	—	Fixed: count timing for 10ms tick software counter variable "tcpudp_time_cnt".
1.03	Dec 01, 2015	—	Added: get_random_number() Changed: - When transmit data size is lesser than 60 byte, lack size amount will be padded using zero-padding in lan_write().
1.02	Jan 05, 2015	—	Changed document Title. Added Support MCUs. Changed FITModule name.
1.01	Jul 01, 2014	—	Enabled multiplex interrupt in the following function, timer_interrupt() and lan_inthdr().
		1	Fixed Introduction.
		3	Fixed Section 2.2 , 2.3
		5	Fixed Figure 1 , and section 4
1.00	May 01, 2014	—	First edition issued

General Precautions in the Handling of Microprocessing Unit and Microcontroller Unit Products

The following usage notes are applicable to all Microprocessing unit and Microcontroller unit products from Renesas. For detailed usage notes on the products covered by this document, refer to the relevant sections of the document as well as any technical updates that have been issued for the products.

1. Handling of Unused Pins

   Handle unused pins in accordance 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 a product with a different part number, confirm that the change will not lead to problems.

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