R-IN32M3-EC

Driver/Middleware Set for R-IN32M3-EC IAR KickStart Kit Release Note

R01AN4600EJ0316
Rev.3.1.6
Jul 31, 2019

Summary

Thank you for using Driver/Middleware Set for R-IN32M3-EC IAR KickStart Kit.

This document describes the package contents and operating environment of this product.

Please be sure to read before use.

For details on how to use each sample software, middleware etc, please refer to the related documents below.

Related documents

R18UZ0013EJ****	R-IN32M3-EC Development Tools Startup Manual
R18UZ0011EJ****	R-IN32M3 Series Programming Manual (OS edition)
R18UZ0009EJ****	R-IN32M3 Series Programming Manual (Driver edition)

Last four digits of document number (described as ****) indicate version information of each document.

Please download the latest document from our web site and refer to it.

Contents

1. Introduction

Driver/Middleware Set for R-IN32M3-EC IAR KickStart Kit is a software package that collects various sample applications, libraries, middleware, peripheral function drivers that can be used for developing applications using R-IN32M3-EC.

2. Package contents

The sample applications, libraries, middleware, and peripheral function drivers included in this package are shown below.

- Sample application

No.	Sample application name
1	CAN sample
2	EEP writer
3	EtherCAT
4	EtherCAT SSC
5	Interval timer sample
6	OS sample
7	OS-less sample
8	Version get sample

- Library

No.	Library name
1	HW-RTOS library

- Middleware

No.	Middleware name
1	EEPROM control
2	Parallel flash ROM control
3	Serial flash ROM control

- Peripheral function driver

No.	Driver name
1	CAN
2	CSI
3	DMAC
4	IIC
5	Serial Flash MEMC
6	Timer (32bit timer TAUJ2)
7	UART
8	WDT

3. Folder structure

Folder structure of this package is shown below.

```
TOP
|
+-- r-in32m3-iar_samplesoft
    +-- CMSIS << Cortex Microcontroller Software Interface Standard >>
    |    +-- include
    |
    +-- Device << Device dependent files >>
        +-- Renesas
            +-- RIN32M3  << R-IN32M3 dependent files >>
                +-- Include << Include directory >>
                +-- Library << Library directory >>
                +-- Source << Source directory >>
                    |
                    +-- Driver         << Driver directory >>
                    +-- Middleware << Middleware directory >>
                    +-- Project        << Project directory >>
                    |   |
                    |   +-- can_sample
                    |   +-- eep_writer
                    |   +-- EtherCAT
                    |   +-- EtherCAT_SSC
                    |   +-- interval_timer
                    |   +-- os_sample
                    |   +-- osless_sample
                    |   +-- version_get_sample
                    |
                    +-- Templates << Startup file and others >>
                        +-- IAR       << IAR compiler dependent files >>
```

4. Operating environment

The operating environment of this package is shown below.

- Target device

  R-IN32M3-EC

- Target board

  R-IN32M3-EC IAR KickStart Kit

- Development environment
  - Compiler

    IAR Embedded Workbench for Arm 7.80.4 (IAR Systems)
  - Debugger

    IAR Embedded Workbench for Arm 7.80.4 (IAR Systems)
  - ICE

    I-jet / JTAGjet-Trace (IAR Systems)

5. Change history

Version	Changes
V3.1.6 (Mar 20, 2019)	Package Version : 3.1.6 Driver Version : 1.0.4 HWOS Version : 2.0.3 [Changes-1] Include\RIN32M3_CL.h Include\RIN32M3_EC.h Source\Driver\wdt\wdt.c - Correction of inconsistencies with the user manual
V3.1.5 (Nov 27, 2018)	Package Version : 3.1.5 Driver Version : 1.0.3 HWOS Version : 2.0.3 [Changes-1] Source\Driver\iic\iic.c - Modify setting the high/low level width of SCLn. [Changes-2] Source\Project\EtherCAT\main.c Source\Project\EtherCAT_SSC\RenesasSDK\main.c - Add condition of EEPROM check. [Changes-3] Source\Project\EtherCAT_SSC\RenesasSDK\main.c Source\Project\EtherCAT_SSC\RenesasSDK\kernel_cfg.h Source\Project\EtherCAT_SSC\RenesasSDK\kernel_cfg.c Source\Project\EtherCAT_SSC\RenesasSDK\renesashw.c - Change EtherCAT Interrupt process from HW-ISR to software ISR [Changes-4] Source\Project\EtherCAT_SSC\RenesasSDK\renesashw.h Source\Project\EtherCAT_SSC\RenesasSDK\renesashw.c - Delete obsolete SSC function [Changes-5] Source\Project\EtherCAT\ESI\EEPROM.bin Source\Project\EtherCAT\ESI\Renesas R-IN32M3.xml Source\Project\EtherCAT_SSC\CONFIG\Renesas_R-IN32M3-EC.xml - Modify ESC configuration value of SII
V3.1.4 (Jun 16, 2017)	Package Version : 3.1.4 Driver Version : 1.0.2 HWOS Version : 2.0.3 [Changes-1] Include/RIN32M3_EC.h

	Include/system_RIN32M3.h Source/Project/EtherCAT_SSC/CONFIG/Renesas_R-IN32M3-EC.xml Source/Project/EtherCAT_SSC/RenesasSDK/kernel_cfg.c Source/Project/EtherCAT_SSC/RenesasSDK/kernel_id.h Source/Project/EtherCAT_SSC/RenesasSDK/main.c Source/Project/EtherCAT_SSC/RenesasSDK/renesashw.c Source/Project/EtherCAT_SSC/RenesasSDK/renesashw.h - Support DC mode and Error LED pattern.
V3.1.3 (Oct 28, 2016)	Package Version : 3.1.3 Driver Version : 1.0.2 HWOS Version : 2.0.3 [Changes-1] /Library/IAR/libos.a: /Include/kernel.h /Include/system_RIN32M3.h - Modification of OS library and corresponding files.
V3.1.2 (Mar 11, 2016)	Package Version : 3.1.2 Driver Version : 1.0.2 HWOS Version : 2.0.2 [Changes-1] /Include/RIN32M3_EC.h /Include/RIN32M3_CL.h /Include/can/* /Source/Driver/can/* /Source/Project/can_sample - Add CAN controler driver and CAN sample software. [Changes-2] /Library/IAR/libos.a: - Modification of OS library
V3.1.1 (Dec 28, 2015)	Package Version : 3.1.1 Driver Version : 1.0.1 HWOS Version : 2.0.1 [Changes-1] /Include/csi/csi.h /Source/Driver/csi/csi.c The Initial mode is added at Reception/Transmission mode of CSI function. The default setting of this mode is set Initial mode.
V3.1.0 (Nov 30, 2015)	Package Version : 3.1.0 Driver Version : 1.0.0 HWOS Version : 2.0.1 The following type name of products correspond with "Revision 2" and the other type name of products with "Revision 1"

	- Revision 2 R-IN32M3-EC : MC-10287BF1-HN4-M1-A / MC-10287BF1-HN4-A R-IN32M3-CL : UPD60510BF1-HN4-A / UPD60510BF1-HN4-M1-A [Changes-1] /Include/RIN32M3_EC.h /Include/RIN32M3_CL.h following registers are added from "Revision 2" Please refer the "R-IN32M3 Series User's Manual Peripheral Functions" ETHSW10HDEN : ETHER SWITCH 10Mbps Half duplex mode setting register CPUBUSMD : CPU Bus mode register [Changes-2] There are two types of mapping files in this sample software. One is for "Revision 1" (CPU access area limitation *notice) The other is for "Revision 1" (no limitation) Mapping file for Revision 1 (Default) /Source/Templates/IAR/rev1 Mapping file for Revision 2 /Source/Templates/IAR/rev2 *notice Please refer below documentation http://documentation.renesas.com/doc/products/mpumcu/tu/tnrina001be.pdf
V3.0.1 (Aug 31, 2015)	Package Version : 3.0.1 Driver Version : 1.0.0 HWOS Version : 2.0.1 [Changes-1] /Library/IAR/libos.a: /Library/ARM/libos.a: /Library/GCC/libos.a: /Include/kernel.h: /Include/system_RIN32M3.h: - Modification of OS library and corresponding files.
V3.0.0 (May 11, 2015)	[Changes-1] /Library/IAR/libos.a: /Library/ARM/libos.a: /Library/GCC/libos.a: /Include/itron.h: /Include/kernel.h: /Include/hwos/hwos_hwfnc.h Modification of OS library and corresponding files. [Changes-2] Linker file of EtherCAT, EtherCAT_SSC, os_sample projecct Mapping avoidance to a specific address.

	[Changes-3] /Source/Templates/GCC/startup_RIN32M3.c -modify startup routine for GCC environment. [Changes-4] /Include/system_RIN32M3.h: /Source/Templates/system_RIN32M3.c: Add getversion function.
V2.1.5 (Feb 23, 2015)	[Appended] /Source/Project/EtherCAT_SSC/CONFIG/Renesas_R-IN32M3-EC.xml - Append Configuration File for EtherCAT Slave Stack Code Tool; Version="5.11" [Changes] /Source/Project/EtherCAT_SSC/RenesasSDK/main.c - Change the include file for SSC Tool ver.5.11. If use SSC Tool ver.5.10, change the include path in main.c.
V2.1.4 (Nov 25, 2014)	[Changes-1] - "IAR_flashloader" supports serial flash device "M25P16" for "R-IN32M3-EC Lite" Board. [Changes-2] /Include/RIN32M3_EC.h: /Include/RIN32M3_CL.h: - Add statistics register in EtherSwitch. [Changes-3] /Include/RIN32M3_EC.h: /EtherCAT/main.c /EtherCAT_SSC/main.c - Change register name; 0x6A0(SIPPHYMD to PHYMD), 0x6A4(SIPPHYPUS to PHYPUS) - Add check PHY status before internal PHY reset. [Changes-4] /EtherCAT/main.c: /EtherCAT_SSC/RenesasSDK/main.c: - Change the Port Setting.
V1.0.1 (Aug 26, 2014)	[Changes] /Source/Project/EtherCAT/ESI/Renesas R-IN32M3.xml: - Change the CoE Offline identify(0x1008). [Fixes] /Source/Project/EtherCAT/main.c: - Fix the AL Control event Mask Setting.
V1.0.0 (Apr 25, 2014)	First release

6. Website and Support

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

Inquiries
http://www.renesas.com/contact/

Revision history

Revision	Date	Page	Changes
3.1.6	Jul 31 2019	-	Update to package V 3.1.6
3.1.5	Dec 27 2018	-	First edition

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.

   — The characteristics of Microprocessing unit or Microcontroller unit products in the same group but having a different part number may differ in terms of the internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system-evaluation test for the given product.

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