RX130 Group

RX Capacitive Touch Evaluation System Sample Code for e^{2}studio

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Rev.1.02
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Introduction

This document covers the sample code for use with the e^2 studio in RX Capacitive Touch Evaluation System. Using the sample code requires separately installing e^2 studio. It requires separately installing Workbench6 When connecting to Workbench6.

Target Device

RX130 Group (R5F51305ADFN)

Contents

1. Specifications

It is the sample code that added LED illumination processing to CTSU API (CTSU: Capacitive Touch Sensing Unit) which outputted from Workbench6.

2. Operation Confirmation Conditions

The sample code accompanying this application note has been run and confirmed under the conditions below.

Table 2.1 Operation Confirmation Conditions

Item	Contents
MCU Used	R5F51305ADFN
Operating frequency	32MHz (Supplied from HOCO)
Operating Voltage	5.0V
Integrated development environment	e2 studio Ver5.3.0.023
C compiler	RX Compiler CC-RX V2.06.00
Endian	Little Endian
Processor mode	Single-chip mode
Sample code version	1.02
Board used	Renesas RX Capacitive Touch Evaluation System (Product No. : RTK0EG0003S02001BJ) • RX130 CPU Board (Product No. : RTK0EG0004C01002J) • Mutual-Capacitance Matrix Key / Proximity Sensor Board (Product No. : RTK0EG0006B01002J) • Self-Capacitance Buttons / Wheels / Slider Board (Product No. : RTK0EG0007B01002J)
Integrated development environment for Renesas Capacitive Touch	Workbench6 V1.06.00
CTSU API version	2017/01/30-0A

3. Sample Code

Sample code can be downloaded from the Renesas Electronics website.

4. Reference Documents

User’s Manual: Hardware

RX130 Group User’s Manual: Hardware Rev.1.00 (R01UH0560EJ)
The latest version can be downloaded from the Renesas Electronics website.

Technical Update/Technical News

The latest information can be downloaded from the Renesas Electronics website.

User’s Manual: Development Tools

RX C/C++ Compiler CC-RX User's Manual (R20UT3248EJ)
The latest version can be downloaded from the Renesas Electronics website.

Workbench6 V1.06.00 User's Manual (R20UT3986EJ)
The latest version can be downloaded from the Renesas Electronics website.

Website and Support

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

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Revision History

		Description	
Rev.	**Date**	**Page**	**Summary**
1.00	Mar. 09, 2016	-	First edition issued
1.01	Aug. 09, 2016	2	Table 2.1 Revised operation confirmation conditions
		3	Revised reference documents
1.02	Feb. 20, 2017	2	Table 2.1 Revised operation confirmation conditions
		3	Revised reference documents

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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