

1. Overview

This quick start guide describes how to use the RX Capacitive Touch Evaluation System.

2. Contents

This guide includes the following items. If you notice any problem with the contents of your kit, please contact your local Renesas Electronics office or sales representative.

- Capacitive Touch Evaluation RX130 CPU Board (CPU part name: R5F51305ADFN)
- Capacitive Touch Evaluation application boards
 - Self-Capacitance Buttons / Wheels / Slider Board
 - Mutual-Capacitance Button / Proximity Sensor Board
- USB Cable
- Quick Start Guide (Japanese and English versions)
- User license agreement (Japanese and English version)
- CE Marking Documentation (English version)

Instructions and other related files for this product can be downloaded from the Renesas Website URL.

<http://www.renesas.com/rssk/touch/>

3. Usage Instructions

3.1 Connections

- ① Connect both CN1 and CN2 headers on the application board to the corresponding CN1 and CN2 connectors on the CPU board. Make sure both headers are inserted to match the direction and number of pin numbers and the pins are fully inserted into the sockets.
- ② Insert the mini B plug end of the USB cable included in the kit into the CN6 pin on the CPU board, and insert the opposite side of the cable into the USB port on the PC.

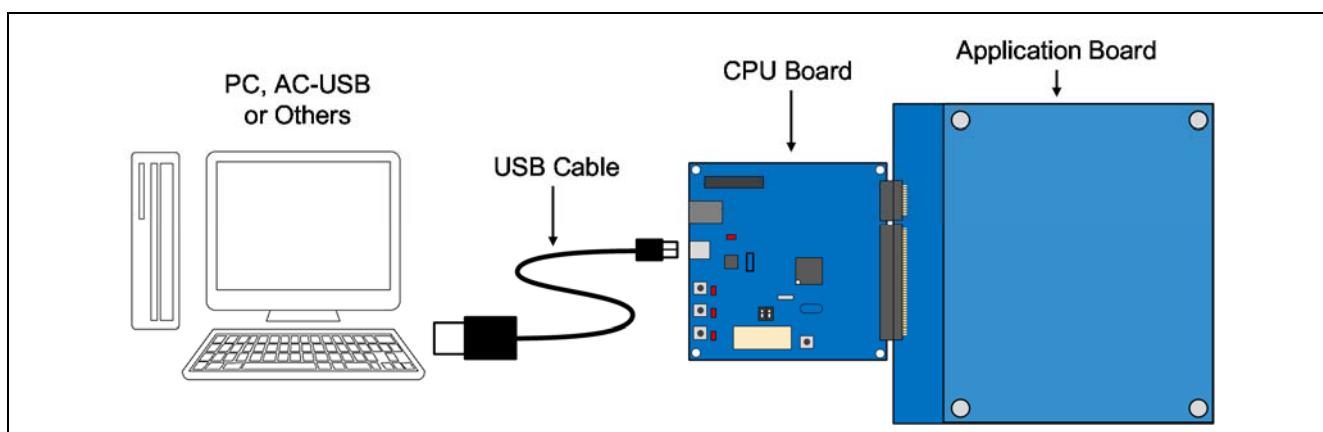


Figure3-1 System Connection Diagram

- ③ **PC operation:** The USB serial port driver is automatically installed the first time it is connected to the PC (when using Windows7). Note: Do not remove the USB cable during driver installation.

After the driver auto-install is complete, download the driver that corresponds to your operating system from the FTDI website below, and install it manually.

<http://www.ftdichip.com/Drivers/VCP.htm>

④ **CPU board operation:** When the USB cable is connected, the CPU board automatically recognizes the connected application board and starts the corresponding demo program. The demo program can be identified by the LEDs on the CPU board.

- LED1: Mutual-Capacitance Button / Proximity Sensor Board
- LED2: Self-Capacitance Buttons / Wheels / Slider Board

If the LEDs don't illuminate in response to touch panel operations, make sure the switch and jumpers on the CPU board are set as shown in Figure 3-2. After confirming the correct settings, press the reset button (SW2) to restart operations and check the LEDs again.

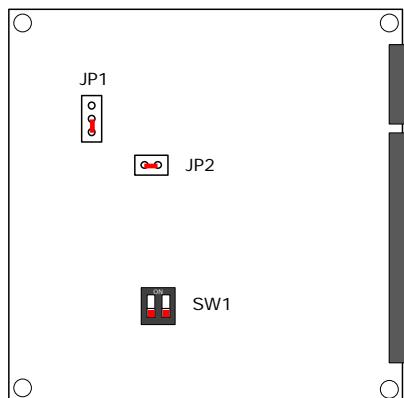


Figure 3-2 CPU Board Jumper/Switch Settings

3.2 Demo Program Operations

① Mutual-Capacitance Button / Proximity Sensor Board

Touch button input is enabled when the proximity sensor starts to respond.

- After the USB cable is connected, the application board will illuminate the LEDs in sequence. Please do not touch the application board during this initial adjustment of the touch sensors.
- When initial adjustments are complete, all LEDs will turn off.
- Moving a hand close to the surface of the application board will illuminate all LEDs, indicating touch button input is enabled.
- Each LED will turn on or turn off, accordingly, each time touch button input occurs.
- If no touch button input occurs for a period of 5 seconds, all LEDs will turn off and touch button input will be disabled.

② Self-Capacitance Buttons / Wheels / Slider Board

The LEDs indicate electrode touch positions.

- After the USB cable is connected, various LEDs on the application board will turn on. This is part of the touch sensor initial adjustment period—please do not touch the board at this time.
- When initial adjustments are complete, all LEDs will turn off.
- Moving a finger around the wheel (electrodes) will illuminate the associated LEDs.
- Sliding a finger up and down the slider (electrodes) will illuminate the associated LEDs.
- Pushing a button will illuminate the LED at the top of the button.

3.3 Software Preparation

The following software is required to evaluate touch functions using Workbench6, the integrated development environment (IDE) for capacitive touch. The Workbench6 installation package and the Visual studio 2012 Run Time Library are available at the Renesas product website. Please obtain Microsoft .NET framework4 from the Microsoft homepage if necessary. (Microsoft .NET framework4 may already be installed in Windows7.)

- 1) Workbench6 installation package
- 2) Visual studio 2012Run Time Library (32-bit)
- 3) Microsoft .NET framework 4

In order to use the Workbench6 functions to auto-create source code, reflect parameter adjustment result to the source code, and download the program to the MCU, you will need to obtain the Renesas CC-RX compiler, the CS+ integrated development environment and other software, as well as the E1 emulator debugger.

For more details, refer to the Workbench6 User's Manual.

3.4 Software Installation

1) Install Workbench6

First, execute the Setup.msi downloaded from the product URL. This will start up the Workbench6 installer. Follow the instructions in the start-up window to complete the installation.

2) Install Run Timer Library

Next, install the Visual studio 2012 Run Time Library (32-bit). Note: even if you are using a 64-bit version OS, please install the 32-bit Visual studio 2012 Run Time Library. The library is available at the following URL.

<http://www.microsoft.com/ja-jp/download/details.aspx?id=30679>

3) Install .NET Framework

Finally, install Microsoft .NET framework 4 or later version, available at the following URL.

<http://www.microsoft.com/ja-jp/download/details.aspx?id=17851>

3.5 How to Start and Use Workbench6

The  icon will appear on the PC desktop after Workbench6 is installed. Click the icon to start the integrated development environment. The following window will appear when Workbench is launched.



Figure3-3 Workbench6 Start-up Window

Click **Tuning Window** to show the initial tuning window screen.

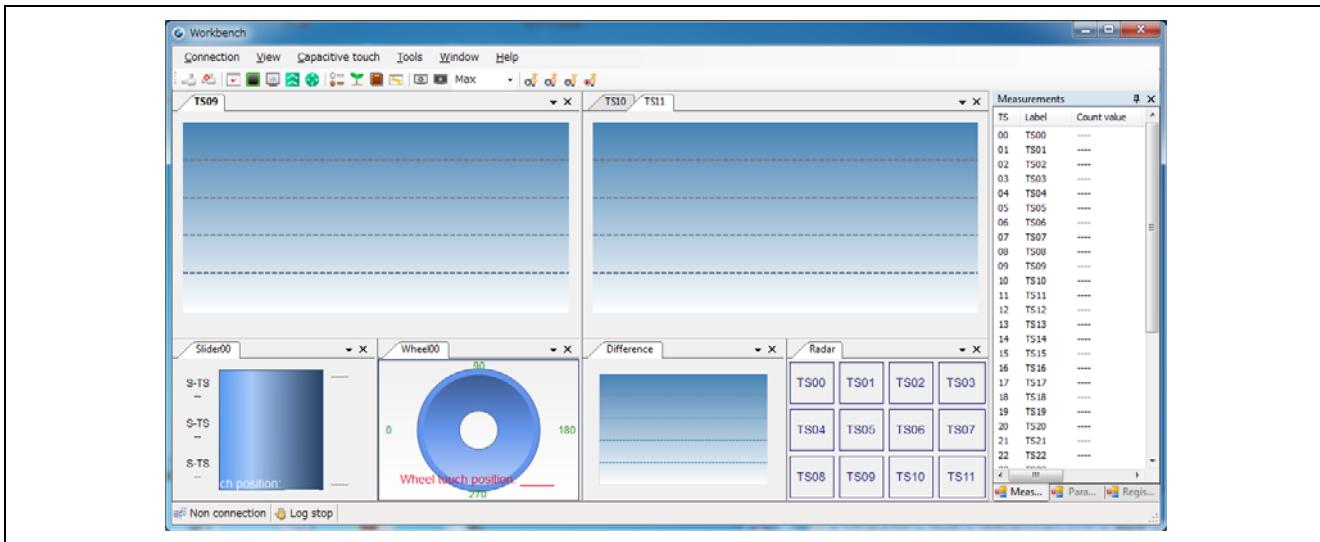


Figure3-4 Initial Screen of Tuning Window

From the tool bar, select **Connection**→[**Serial port connection**]; when the Setup serial port window opens, select **COMxx:USB Serial Port(COMxx)**. ("xx" differs according to the user PC.) If **USB Serial Port** does not appear, please confirm to make sure the driver is correctly installed and the boards and USB cables are correctly connected. Select **38400 bps** as the Baud rate. After the settings on both sides are complete, click **OK**.

Next, under **CapacitiveTouch**, select [Start monitor]. This will allow you to confirm the touch position of each key, the wheel, and the slider in real time. For more details on how to use these functions, please refer to the Workbench6 manual.

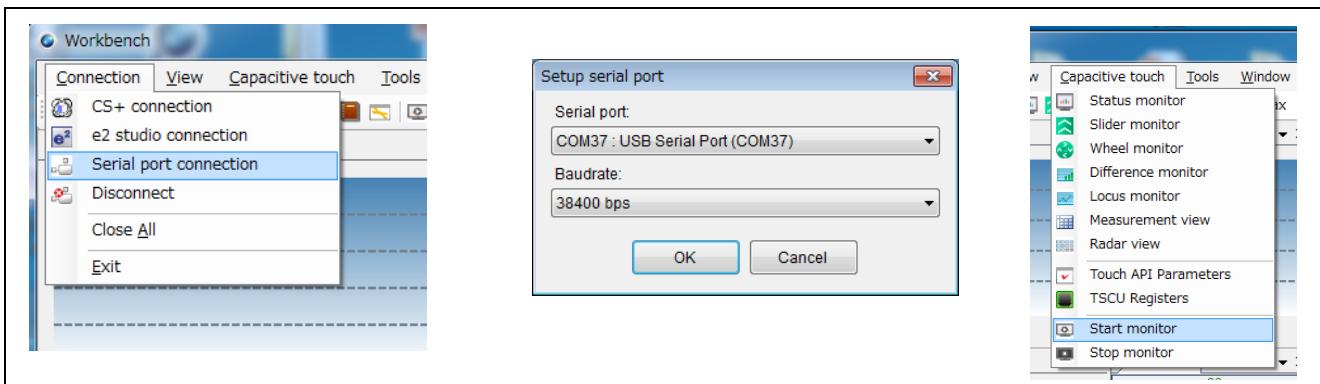


Figure3-5 Board and Workbench6: from connection to measurement

4. Support

Online tech support and other information is available here: <http://www.renesas.com/>

You can also send technical inquiries to the following email addresses:

Japan site: csc@renesas.com

Global site: csc@renesas.com

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