RX Family

CTSU 3D Gesture Demo Set Evaluation Tool '3D Monitor'

Introduction

This application note explains how to use "3D Monitor," a 3D Gesture Demo Set evaluation tool.

Target Devices

Windows®10

Related Documents

1. RX Family CTSU 3D Gesture Demo Set Sample Software (R01AN4101EJ)

Contents

1.   Overview

3D Monitor is an application that communicates with the 3D Gesture Demo Set via a COM port.

Using 3D Monitor allows the user to display 3D Gesture Demo Set operations in real time.

3D Monitor supports the following functions.

- 3D Gesture Demo Set connection via a COM port
- Numerical display of 4-electrode count and reference values, graphical display of the difference between values
- Numerical and graphical display of 3D position calculation results
- Display of gesture recognition results
- Display of noise environment judgment results
- Saving a communication log
- Preparation of header file for values measured previous to 3D position calculation API (i.e. "pre-measured values")

2.   Operating Environment

This application runs on Windows®10 devices.

3.   Installation

Installation is not necessary.

4.　Operations

4.1　3D Monitor Operations

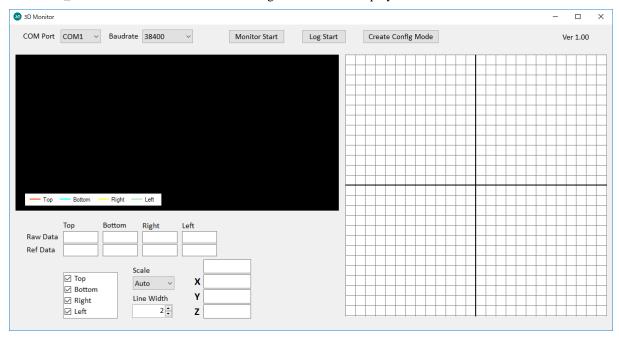Execute 3D_Monitor.exe. The screen shown in Figure 4.1 will be displayed.

Figure 4.1　3D Monitor Startup

4.2　Connecting the 3D Gesture Demo Set

1. Connect the 3D Gesture Demo Set and select the COM Port. If there are multiple COM Ports, confirm the port in device manager and select the COM port number of the USB Serial Port (COMx).

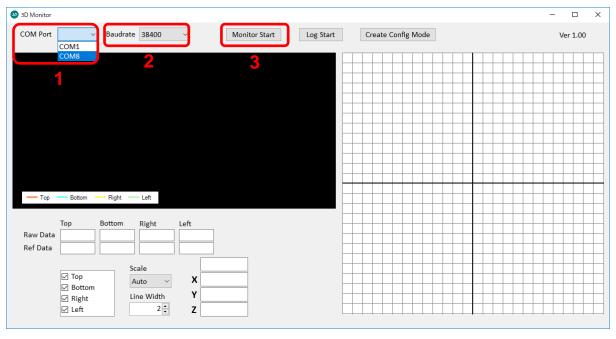2. Set the baudrate to the default value of 38400.

3. Press Monitor Start.

Figure 4.2　3D Gesture Demo Set Connection

4.3   3D Monitor Display

Figure 4.3 shows the 3D Monitor operation screen.

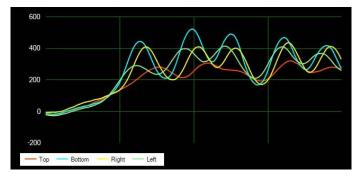

Figure 4.3   3D Monitor Operation Screen

Each display item is described below.

- 4-electrode count and reference values (numerical)

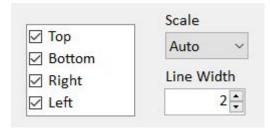|	Top	Bottom	Right	Left
Raw Data	39114	39989	40268	42291
Ref Data	39374	40224	40542	42544

Raw data indicates the current count value, Ref Data is the reference value.

- Graph showing difference of current and reference values

The above graph shows the difference (reference value – count value) over time (for 200 times).
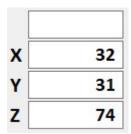
● Graph display settings

Select (check) the electrodes to be displayed in the graph.

"Scale" allows you to change the vertical axis scale, and "Line Width" allows you to adjust the width of the lines used in the graph.
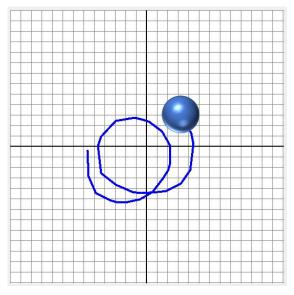
● 3D position calculation results (numerical)

When no gesture is detected, the result shows NO DATA. When a gesture is detected, a coordinate value is displayed.

When a noise environment is detected, the top line displays "NOISY."

● 3D position calculation results (graphical)

The graph displays the current 3D position with a ball and indicates the previous 50 3D positions with a blue line.

The center is X = 0 and Y = 0; the right side is the X plus direction, the left side the X minus direction. Similarly, the upper half is the Y plus direction, the lower half the Y minus direction.
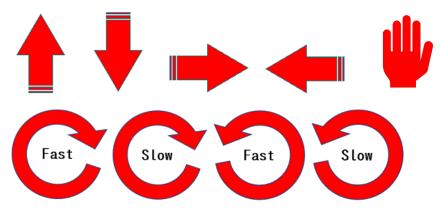
When Z is small, the ball is small; when Z is large the ball also becomes larger.

A detected noise environment is indicated in red.

When there is no detection, the display is blank.

● Gesture recognition results

Each of these symbols indicates a gesture recognition result.

The meanings, in the order they appear here, are as follows: back swipe, front swipe, right swipe, left swipe, approaching Z direction, clockwise (fast), clockwise (slow), counter clockwise (fast), counter clockwise (slow). When no movement is detected, the screen is blank.

4.4   Saving a Communication Log

Press the Log Start button to display the file selection screen.

Press the Save button to start saving a communication log.

Press the Log Stop button to stop saving a communication log.

4.5   Preparation of Header File for 3D Position Calculation API Pre-measured Values

For more information about previous measurements, please refer to related document #1 (listed under Introduction), sections 4.3 and 5.2.

Press the Create Config Mode button to switch the 3D position calculation results graph to the previous measurement setting and display the file selection screen.

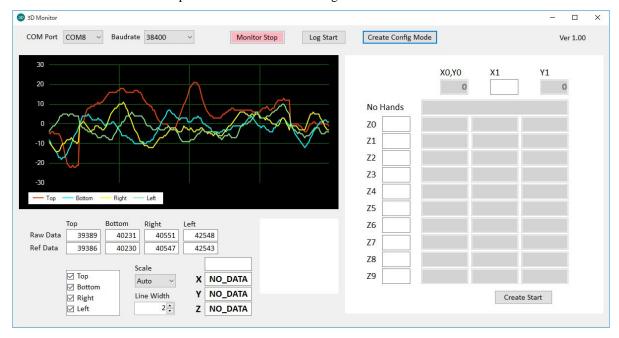Press the Save button to start the previous measurement setting.

Figure 4.4   Create Config Mode Screen

Enter the X position to be measured in the X1 column box.

Input the Z position to be measured, in ascending order, in boxes Z0 to Z9. If there are 10 positions to be measured, fill in all 10 boxes. If there are fewer than 10 measurement positions, leave the appropriate number of boxes empty. For example, if there are 7 measurement positions, leave boxes Z7, Z8 and Z9 empty.

After entering the above settings, press the Create Start button.

Next, follow the instructions displayed on the screen.

After completing the process, press the Create Config Mode button to switch to the 3D position calculation results graph.

Website and Support

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

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

All trademarks and registered trademarks are the property of their respective owners.

Revision History

Rev.	Date	Page	Description
			Summary
1.00	Mar 30, 2018	-	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.

    — 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.

Notice

1. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation or any other use of the circuits, software, and information in the design of your product or system. Renesas Electronics disclaims any and all liability for any losses and damages incurred by you or third parties arising from the use of these circuits, software, or information.

2. Renesas Electronics hereby expressly disclaims any warranties against and liability for infringement or any other claims involving patents, copyrights, or other intellectual property rights of third parties, by or arising from the use of Renesas Electronics products or technical information described in this document, including but not limited to, the product data, drawings, charts, programs, algorithms, and application examples.

3. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.

4. You shall not alter, modify, copy, or reverse engineer any Renesas Electronics product, whether in whole or in part. Renesas Electronics disclaims any and all liability for any losses or damages incurred by you or third parties arising from such alteration, modification, copying or reverse engineering.

5. Renesas Electronics products are classified according to the following two quality grades: "Standard" and "High Quality". The intended applications for each Renesas Electronics product depends on the product's quality grade, as indicated below.

    "Standard":   Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; industrial robots; etc.

    "High Quality":   Transportation equipment (automobiles, trains, ships, etc.); traffic control (traffic lights); large-scale communication equipment; key financial terminal systems; safety control equipment; etc.

    Unless expressly designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not intended or authorized for use in products or systems that may pose a direct threat to human life or bodily injury (artificial life support devices or systems; surgical implantations; etc.), or may cause serious property damage (space system; undersea repeaters; nuclear power control systems; aircraft control systems; key plant systems; military equipment; etc.). Renesas Electronics disclaims any and all liability for any damages or losses incurred by you or any third parties arising from the use of any Renesas Electronics product that is inconsistent with any Renesas Electronics data sheet, user's manual or other Renesas Electronics document.

6. When using Renesas Electronics products, refer to the latest product information (data sheets, user's manuals, application notes, "General Notes for Handling and Using Semiconductor Devices" in the reliability handbook, etc.), and ensure that usage conditions are within the ranges specified by Renesas Electronics with respect to maximum ratings, operating power supply voltage range, heat dissipation characteristics, installation, etc. Renesas Electronics disclaims any and all liability for any malfunctions, failure or accident arising out of the use of Renesas Electronics products outside of such specified ranges.

7. Although Renesas Electronics endeavors to improve the quality and reliability of Renesas Electronics products, semiconductor products have specific characteristics, such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Unless designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not subject to radiation resistance design. You are responsible for implementing safety measures to guard against the possibility of bodily injury, injury or damage caused by fire, and/or danger to the public in the event of a failure or malfunction of Renesas Electronics products, such as safety design for hardware and software, including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult and impractical, you are responsible for evaluating the safety of the final products or systems manufactured by you.

8. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. You are responsible for carefully and sufficiently investigating applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive, and using Renesas Electronics products in compliance with all these applicable laws and regulations. Renesas Electronics disclaims any and all liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.

9. Renesas Electronics products and technologies shall not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations. You shall comply with any applicable export control laws and regulations promulgated and administered by the governments of any countries asserting jurisdiction over the parties or transactions.

10. It is the responsibility of the buyer or distributor of Renesas Electronics products, or any other party who distributes, disposes of, or otherwise sells or transfers the product to a third party, to notify such third party in advance of the contents and conditions set forth in this document.

11. This document shall not be reprinted, reproduced or duplicated in any form, in whole or in part, without prior written consent of Renesas Electronics.

12. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products.

(Note 1)   "Renesas Electronics" as used in this document means Renesas Electronics Corporation and also includes its directly or indirectly controlled subsidiaries.

(Note 2)   "Renesas Electronics product(s)" means any product developed or manufactured by or for Renesas Electronics.

(Rev.4.0-1 November 2017)

RENESAS

Renesas Electronics Corporation

http://www.renesas.com