How to use the demo software

Overview

This manual is intended for users who are new to the RPR-0720-EVK. It describes how to install the software, check operation, and set values in detail.

For detailed product specifications, please refer to the product specifications.

1 How to install the software

1． Copy "BD37311CH_v1.0.0.1_beta.zip" to your computer.

2． Unzip the folder and execute "setup.exe".

3． Follow the prompts to perform the installation. "Sensor Application" software will be installed.

4． The software installation process is completed.

Notes.

・Please execute with an administrator account.

・If that doesn't work, check the status of your security settings.

・The program will remain in the location where you opened the exe file, so move it to a local disk before using it.

2 How to install the USB driver

1． Copy "Drivers.zip" to your computer.

2． Unzip "Drivers.zip".

3． Insert the USB demo board into the USB port.
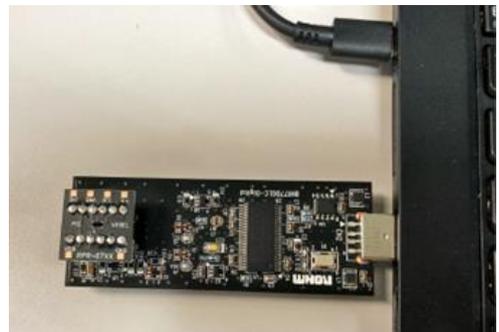
4． Search "Computer Management" in "Type here to search" and click Open.
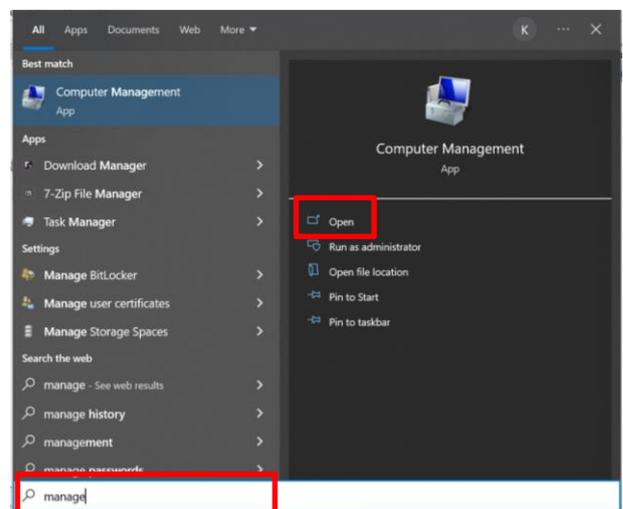
5． Select "Device Management".
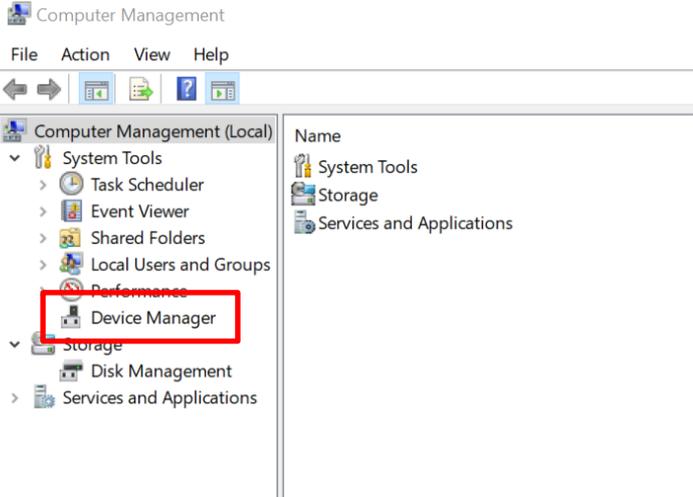
6． Select "Universal Serial Bus (USB) Controller".

※If you do not see the USB demo board plugged into the "Universal Serial Bus (USB) Controller", it may be recognized as an unknown device in "Other Devices".
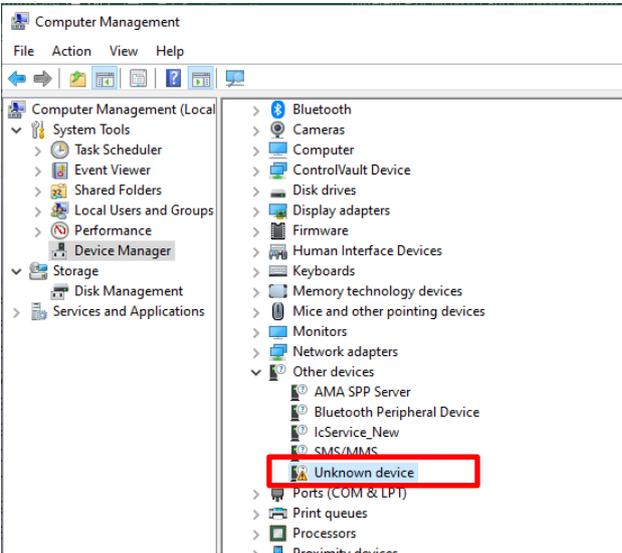
7. Right-click on the target device and select "Properties".
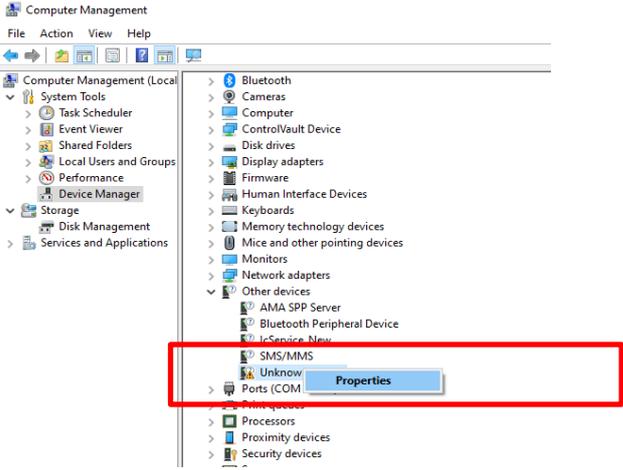
8. Click "Update Driver" and then "OK".
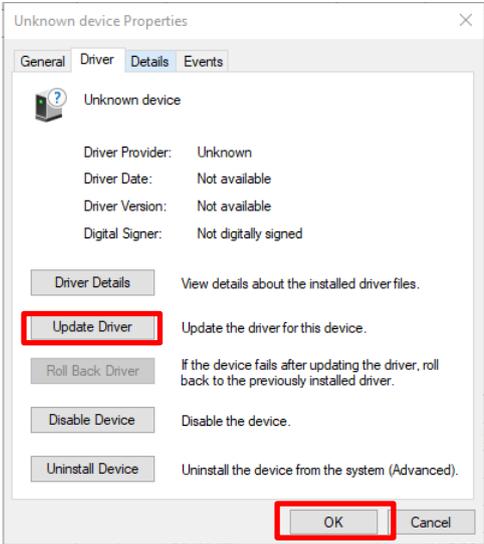
9. Click "Browse" under "Search for drivers in the following location".

No. 65QS010E Rev.002
2023.4
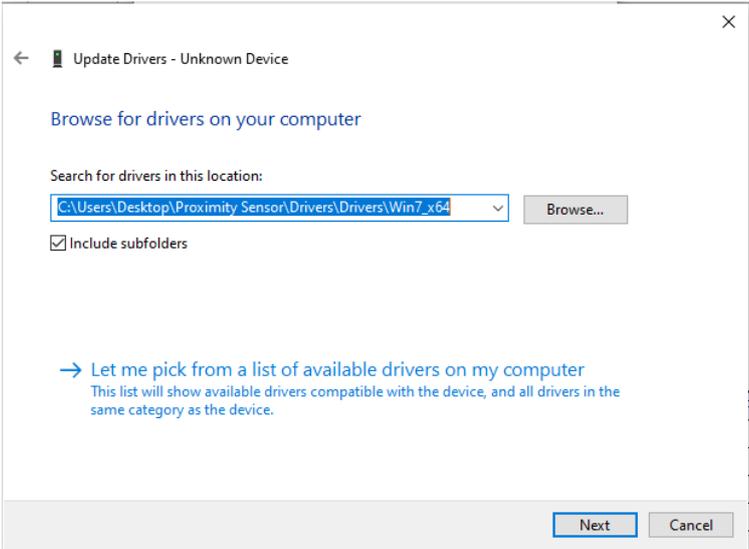
１０. Open the "Win7 x64" or "Win7 x84" folder in the copied "drivers" folder, and execute "Browse".
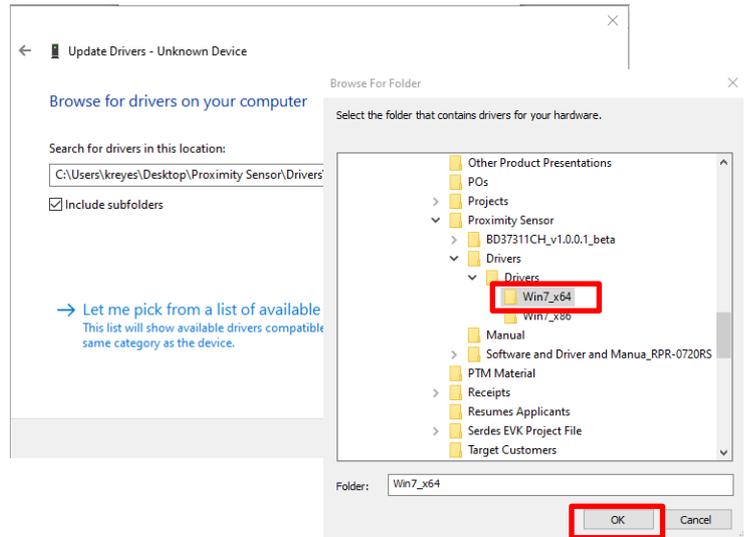
１１. The driver will be updated, click "Close.
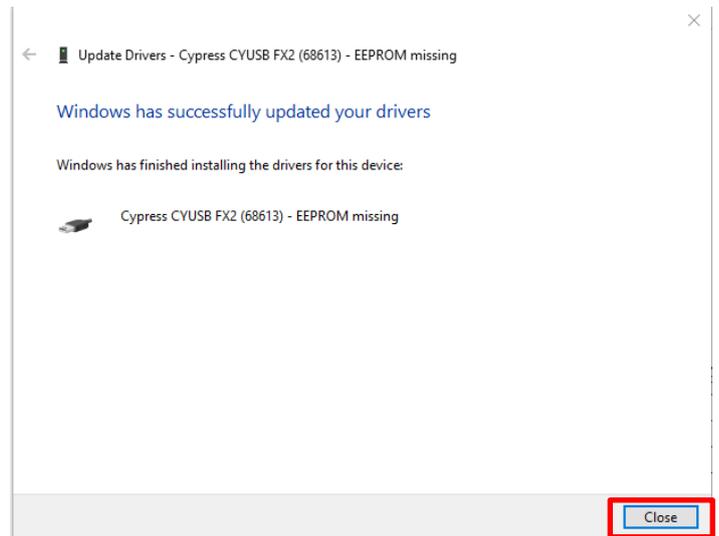
3 How to use the demo software

1．Click the "Search" icon at the bottom right of your desktop.
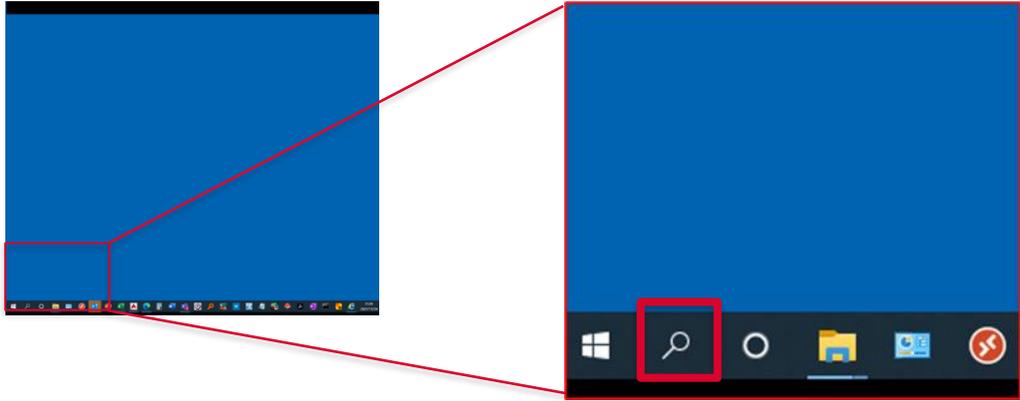
2．Type Sensor Application, and click Open SensorApplication App.
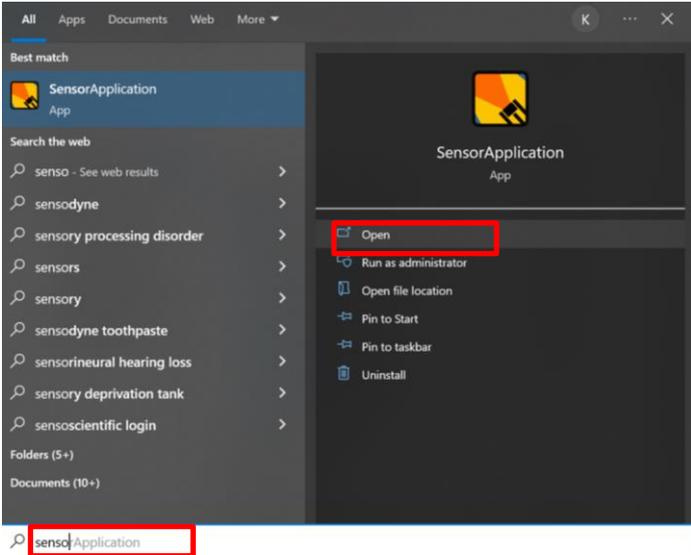
3．Plug the demo unit into the USB port of your PC.

The USB Status in the lower right corner of the screen will change from NG to OK.
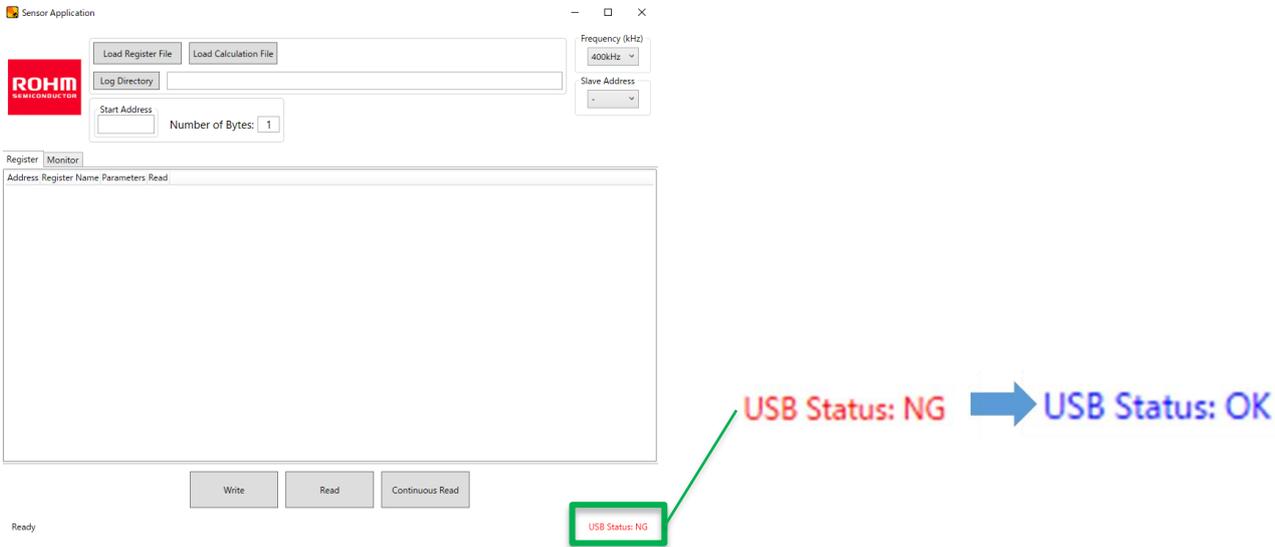
4．Click "Load Register File".

Select " BD37311CH_Rev.＊" in "BD37311CH_v1.0.0.1_beta" folder we sent and click "Open". The register setting screen is displayed. (※Please use the latest version of Rev as it may be updated.)
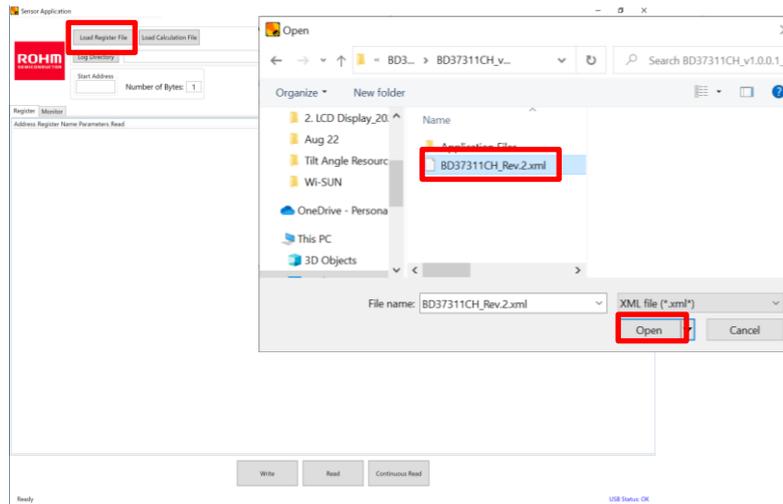
5．Click "Load Calculation File".

Select "calculation.lux" in "BD37311CH_v1.0.0.1_beta" folder we sent and click "Open".
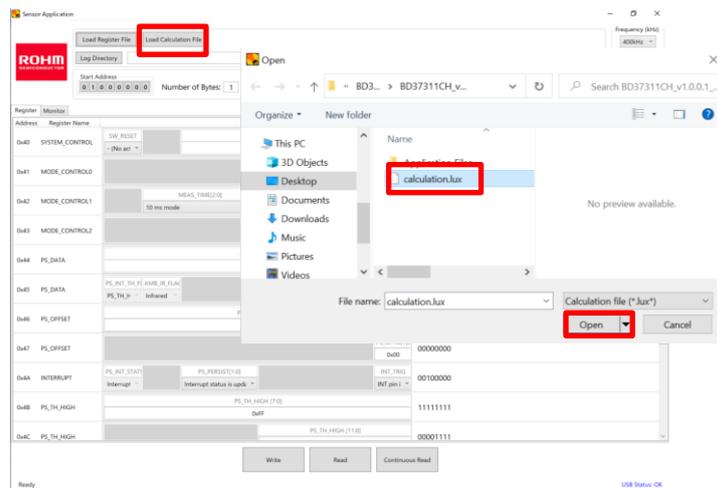
6．Specify the storage location of the output data.

Click "Load Directory". Select the folder where you saved the output data and click Select Folder.
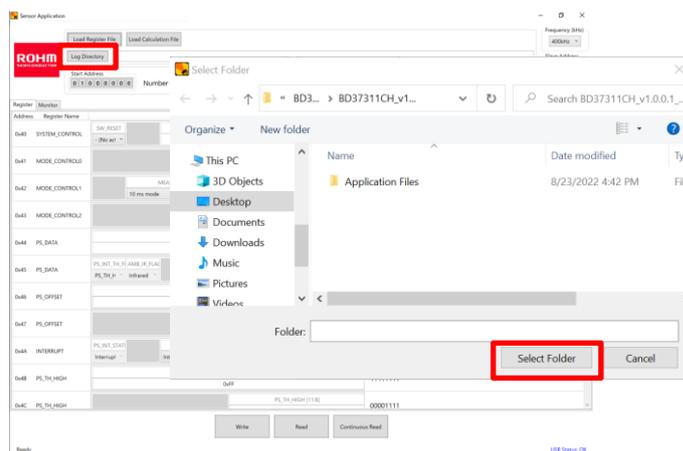
7．Select "0x39" for Slave Address.
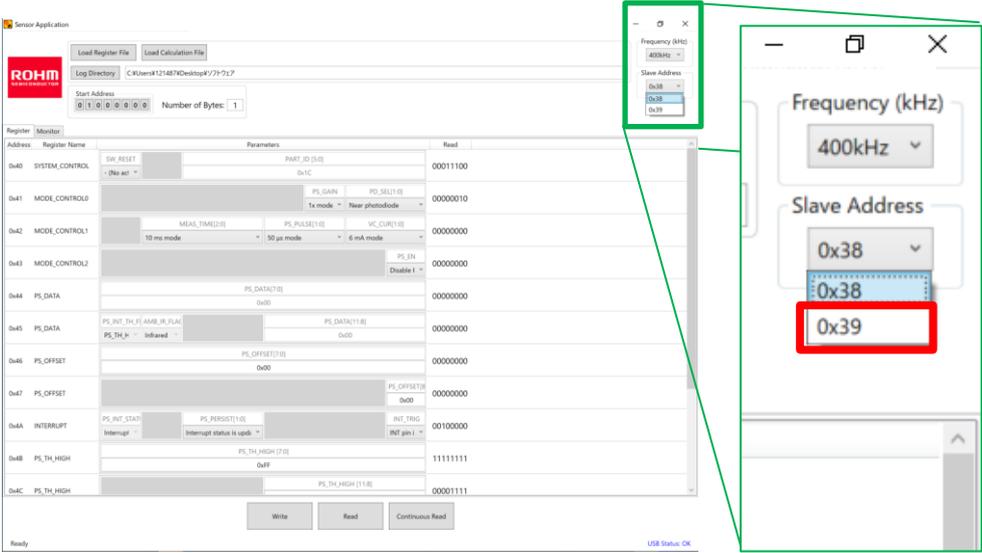
8．Enter "14" for Number of Bytes.
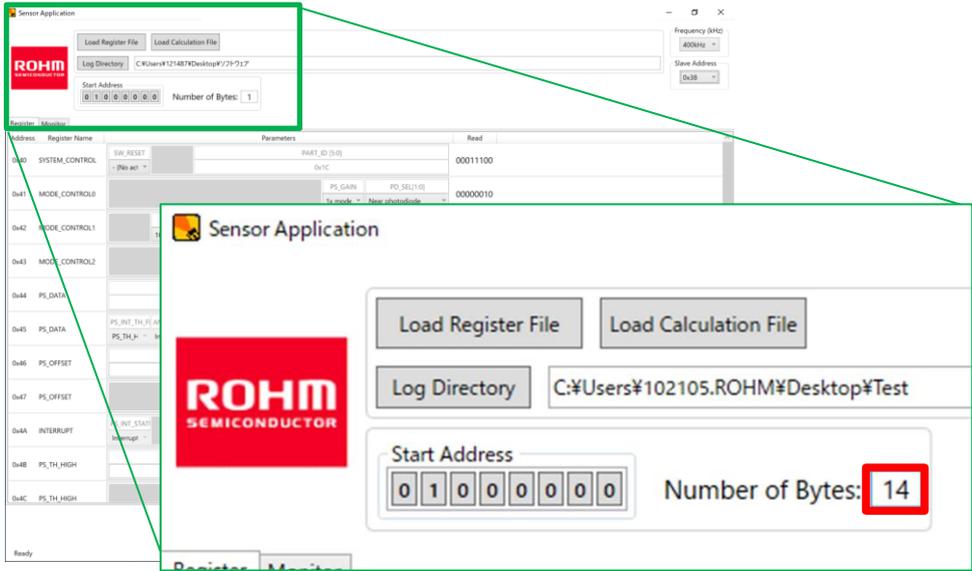
9. Set each register.

Please set the red frame in the "Reference" below.

* Please check the usability of the sample submitted this time with this setting.

We will contact you as soon as the corrected sample is ready.

10. Click "Write" to write the register to the product.

11. Click "Continuous Read" to start measurement.

Click on the Monitor tab to display the output screen.
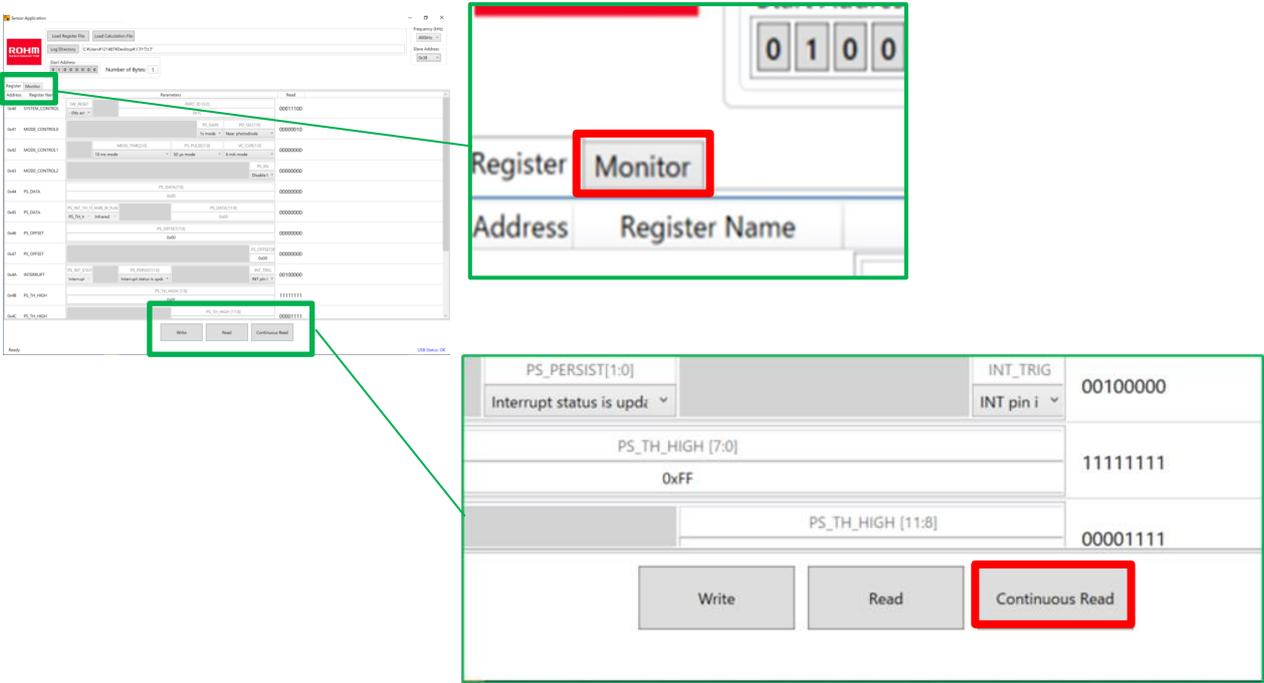
12.   The horizontal axis shows time, and the vertical axis shows sensor output.

        You can check the output change by bringing the object (finger, etc.) close to the product.

        Click "STOP" to stop the measurement and save the csv data in the desired folder.
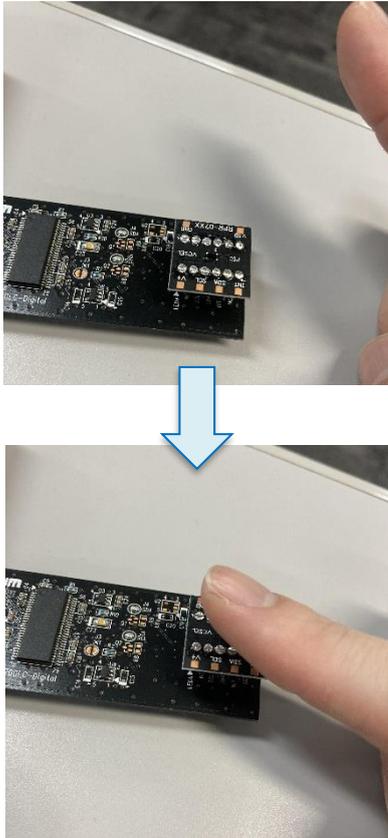
13.   Hover the pointer over the vertical axis to display the icon.

        The "+" icon allows you to expand the range, and the "-" icon allows you to decrease the range.

        The "x" icon is a range setting reset.

1 4 .   The value in response to reflected light is output on the vertical axis as a Count value (integer).

 With the default setting, the vertical axis varies according to the output.

If you want to fix the vertical axis

(1) Turn the scroll button of the mouse.

(2) Move the cursor to the upper left corner of the screen and press the zoom in button [⊕] or zoom out button [⊖] in the figure below.

The axis is fixed by either operation.

Once fixed, the axis can be adjusted by either scrolling, zooming in, or zooming out buttons.

The height of the axis can also be adjusted by dragging the axis.
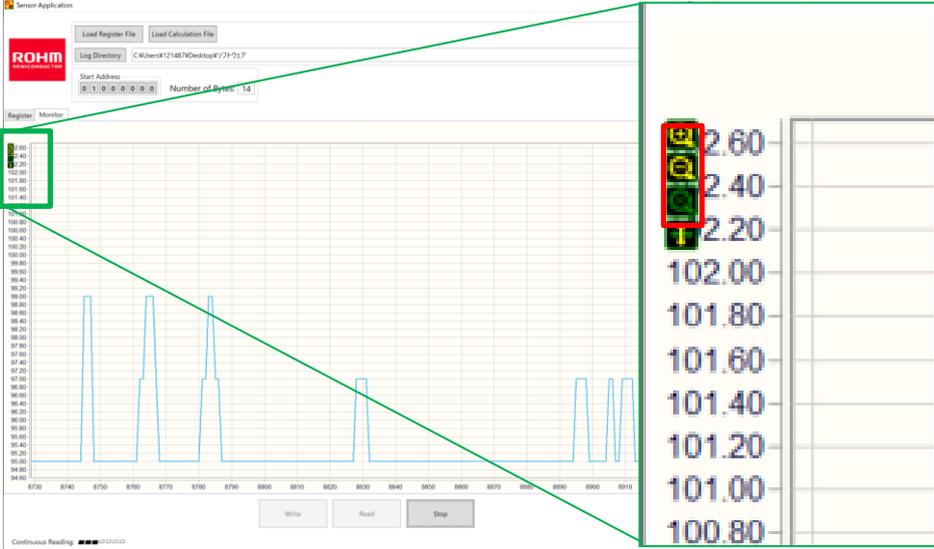
4 Details of register setting values

Sensor Application

Load Register File | Load Calculation File
Log Directory C:¥Users¥102105.ROHM¥Desktop¥Test

① Frequency (kHz) 400kHz
② Slave Address 0x39

③ Start Address 0 1 0 0 0 0 0 0 Number of Bytes: 1

*4

Register | Monitor

Address	Register Name	Parameters				Read
0x40	SYSTEM_CONTROL	SW_RESET — (No act ④	PART_ID [5:0] 0x1C ⑤	⑥		00011100
0x41	MODE_CONTROL0		PS_GAIN 1x mode ⑤	PD_SEL[1:0] Near photodiode ⑥		00000010
0x42	MODE_CONTROL1	MEAS_TIME[2:0] 10 ms mode ⑦	PS_PULSE[1:0] 50 µs mode ⑧	VC_CUR[1:0] 3 mA mode ⑨		00000000
0x43	MODE_CONTROL2			PS_EN Disable ⑩		00000000
0x44	PS_DATA	PS_DATA[7:0] 0x00				00000000
0x45	PS_DATA	PS_INT_TH_F PS_TH_H	AMB_IR_FLAG Infrared	PS_DATA[11:8] 0x00		00000000
0x46	PS_OFFSET	PS_OFFSET[7:0] 0x00 ⑪				00000000
0x47	PS_OFFSET			PS_OFFSET[8] 0x00		00000000
0x4A	INTERRUPT	PS_INT_STAT Interrupt	PS_PERSIST[1:0] Interrupt status is upda ⑫	INT_TRIG INT pin i ⑬		00100000
0x4B	PS_TH_HIGH	PS_TH_HIGH [7:0] 0xFF ⑭				11111111
0x4C	PS_TH_HIGH		PS_TH_HIGH [11:8] 0x0F			00001111
0x4D	PS_TH_LOW	PS_TH_LOW [7:0] 0x00 ⑮				00000000
0x4E	PS_TH_LOW		PS_TH_LOW [11:8] 0x00			00000000
0x92	MANUFACTURER_ID	MANUFACTURER_ID [7:0] 0xE0				11100000

Write Read Continuous Read

*1   *2   *3

Ready   USB Status: OK

① Frequency(kHz)

I2C communication frequency can be set.

② Slave Address

Slave address can be set. 0x39 should be specified for RPR-0720.

③ Start Address Number of bytes

You can specify the starting address for writing and the number of addresses.

For example, if you want to write only【0x42 MODE_CONTROL1】 ~ 【0x45 PS_DATA】,

Set 0x42→01000010 (binary number) of the start item to Start Address, and set 4 to Number of bytes

since it is the fourth item including that item.

For normal usage, use

Please use "Start Address: 01000000 Number of bytes: 14" and rewrite all items.

④ SW_RESET

Select "Perform software reset" and press "Write" to initialize the settings.

Notes: Do not use the "PS_GAIN" setting.

⑤ PS_GAIN

Adjusts the gain of the light-receiving sensitivity. 1x and 2x can be set.

When the reflectance of an object is low, the sensitivity can be adjusted by increasing the gain.

⑥ PD_SEL

・No Photodiode   : The photodetector area is not used.

・Near photodiode : The photodetector area on the Near side is used.

・Far Photodiode   : The photodetector area on the Far side is used.

・Both Photodiode : Use both Near and Far Photodetector   (Returns the sum of the Near and Far values)

Normally, either Near or Far setting is used.

RPR-0720 has two photosensitive areas, Near and Far, as shown below.

The Near setting is more sensitive because it is closer to the VCSEL light source, while the Far setting

tends to be less sensitive because it is farther from the light source.

Please select the setting according to the distance to the object and the reflectance to the object.

Light source   Near   Far
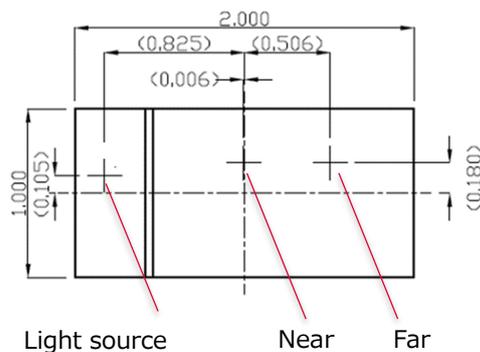
⑦ MEAS TIME

Sets the measurement cycle. (10、50、100、500、5,000msec)

⑧　PS_PULSE

The pulse width of VCSEL can be set. (50、100、200、400μsec)

⑨　VC_CUR

The current value of VCSEL can be set (3, 4, 5 mA)

⑩　PS_EN

The proximity function can be set to ON or OFF.

Select "Enable" for normal evaluation.

⑪　PS_OFFSET

The count value to be OFFSET can be set (binary number).

Can be set from 0~511Count.

⑫　PS_PERSIST

Interrupt function can be set.

Interrupt function is a function that raises a flag when a certain threshold value (HIGH or LOW) is exceeded or lowered.

Here, you can set the flagging conditions.

・Interrupt pin active at all values (normally not used)

・When the threshold is exceeded once, the interrupt pin becomes active.

・When the threshold is exceeded 4 times consecutively, the interrupt pin becomes active.

・When the threshold is exceeded for 16 consecutive times, the interrupt pin becomes active.

The user can select from the above four items.

In the RPR-0720, active = Low.

⑬　INI_TRIG

・Do not operate the INT pin

・The INT terminal is triggered by the measurement result of PS.

Two types of settings can be made.

⑭　PS_TH_HIGH

The HIGH threshold of the interrupt function can be set.

PS_TH_HIGH[7:0]: Set up to the 0~7th bit in binary.

PS_TH_HIGH[8:11]: Set up to the 8th~11th bit in binary.

⑮　PS_TH_LOW

The LOW threshold of the interrupt function can be set.

PS_TH_LOW[7:0]: Set up to the 0~7th bit in binary.

PS_TH_LOW[8:11]: Set up to the 8th~11th bit in binary.

After the above settings, press the Write button (*1) to write the register settings.

When the Read button (*2) is pressed, the measured value is displayed in binary at the Read column (*4).

Press the Continuous Read button (*3) to start acquiring measurement log data. (Real-time data observation is possible with Monitor). For other details, please refer to the product specifications.

5 Revision History

Rev.	Date	Details	Notes
1	2023/04/17	New	-
			-

Notes

1) The information contained herein is subject to change without notice.

2) Before you use our Products, please contact our sales representative and verify the latest specifications :

3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.
   Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Poducts beyond the rating specified by ROHM.

4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

5) The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM or any other parties. ROHM shall have no responsibility whatsoever for any dispute arising out of the use of such technical information.

6) The Products specified in this document are not designed to be radiation tolerant.

7) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative : transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.

8) Do not use our Products in applications requiring extremely high reliability, such as aerospace equipment, nuclear power control systems, and submarine repeaters.

9) ROHM shall have no responsibility for any damages or injury arising from non-compliance with the recommended usage conditions and specifications contained herein.

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