US082-SSC3224EVZ

Evaluation Board for High-End 24-Bit Sensor Signal Conditioner

Introduction

This document provides quick-start instructions for the US082-SSC3224EVZ board, including setting up and programming the board.

Important: To ensure correct setup of the US082-SSC3224EVZ board, complete the steps in the order listed in Quick Start Procedure.

Contents

1. Board Information

Visit the US082-SSC3224EVZ product page for more information about the board and how to acquire the product.

1.1 Acquiring the Board

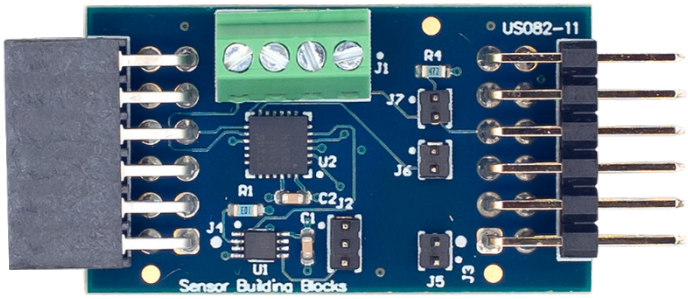

Figure 1. US082-SSC3224EVZ Board

Part Number	Description
US082-SSC3224EVZ	High-End 24-Bit Sensor Signal Conditioner Evaluation Board

1.2 Board Contents

The US082-SSC3224EVZ board integrates the ZSSC3224, a high-precision sensor signal conditioning IC designed for high-resolution sensor module applications. The ZSSC3224 can perform offset, span, and 1st and 2nd order temperature compensation of the measured signal. Developed for correction of resistive bridge or absolute voltage sensors, it can also provide a corrected temperature output measured with an internal sensor.

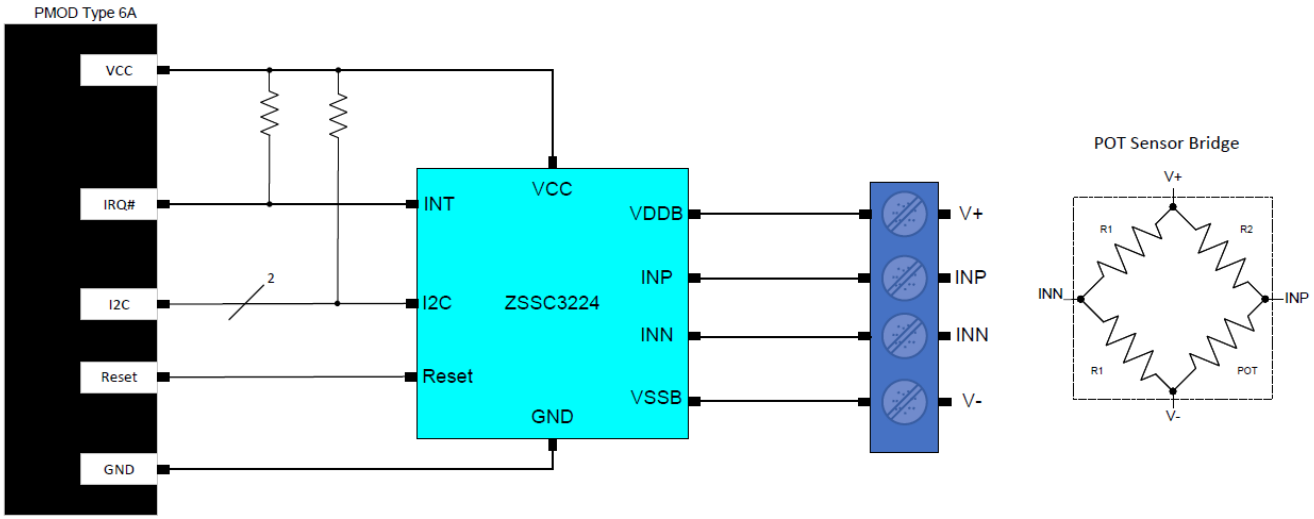

Figure 2. US082-SSC3224EVZ Block Diagram

R1: 1.6kΩ, R2: 4.2kΩ, POT: 10kΩ

1.2.1 Hardware Requirements

To setup and configure the US082-SSC3224EVZ board, the following hardware is recommended or required:

- EK-RA6M4
- USB micro-B cable (provided with the EK-RA6M4)
- PC running Windows 10/11 with at least one USB port
- Potentiometer (this demo uses a 10kΩ POT)
- SSC Communication Board (for calibration)
- US082-SSCALINTRPEVZ (for calibration)
- US082-INTERPEVZ
- Resistors for sensor bridge

1.2.2 Software Requirements

The following software is required or recommended:

- e² Studio 2024-01 or later
  - RA Flexible Software Package (FSP) 5.0.0 or later
  - GCC Arm Embedded 13.2.1.arm-13-7
  - Sample code files (available on the US082-SSC3224EVZ product page)
- J-Link RTT Viewer
- ZSSC3224 Evaluation Software (available on the ZSSC3224 product page)

2. Calibration Procedure

Follow the calibration procedure steps in the evaluation kit manual available on the ZSSC3224 product page.

3. Sensor Bridge Configuration

For this demo, the sensor bridge is wired as shown in Figure 2.

4. Quick Start Procedure

Complete the following quick-start procedure steps in the order listed.

4.1 Install e² Studio

Install the latest version of the e² Studio and the RA Flexible Software Package (FSP).

4.2 Kit Hardware Connection

Use the following steps to set up the kit's hardware connections.

1. Ensure that the MCU development kit has at least one Type 6A Pmod.
   a. For the EK-RA6M4, if no Type 6A Pmod is available, ensure that the kit can use the US082-INTERPEVZ interposer board. Insert the board into the MCU connector before adding any sensor boards.
2. Mount the J5, J6, and J7 jumpers on the US082-SSC3224EVZ.
3. Setup a sensor bridge as shown in Figure 2.
4. Connect the sensor bridge to the US082-SSC3224EVZ as shown in Figure 3.

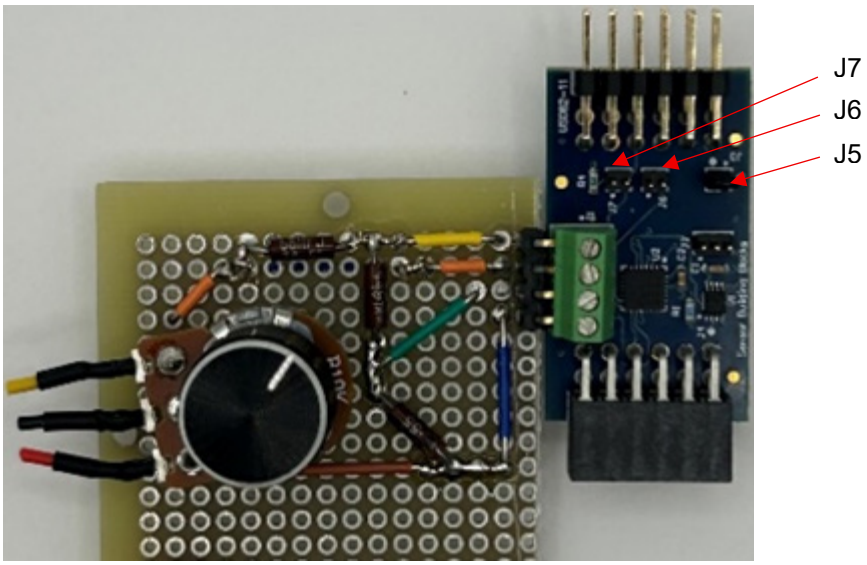

Figure 3. Sensor Bridge Setup

5. Plug the US082-SSC3224EVZ board into the US082-INTERPEVZ on the PMOD1 connector. Ensure all pins are properly aligned (see Figure 4).
6. Connect the EK-RA6M4 to the computer using the USB micro-B cable.

The kit is now ready to use.

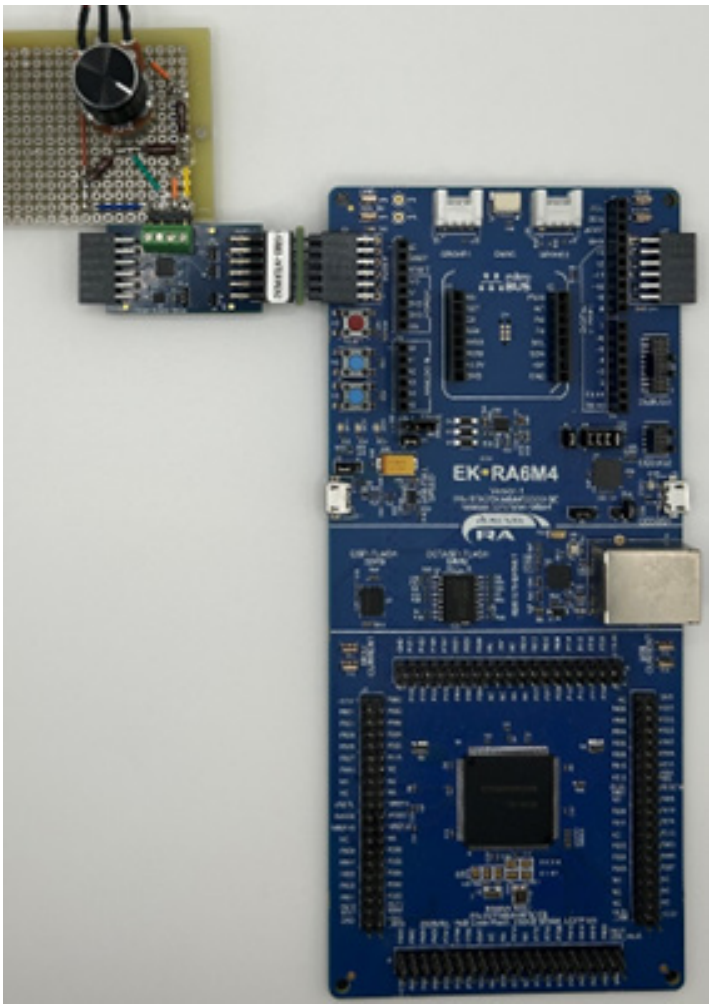

Figure 4. US082-SSC3224EVZ with EK-RA6M4 MCU Kit

5. Board Testing

5.1 Programming the Renesas Development Board

1. Open the sample project in e^2 studio.

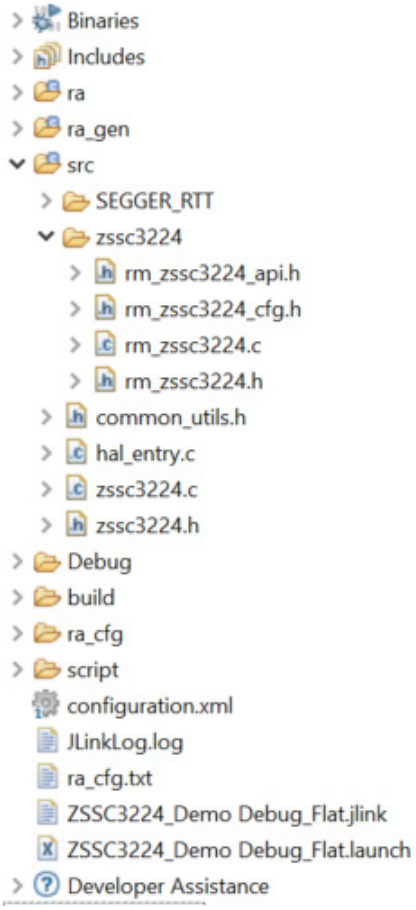

Figure 5. ZSSC3224 Project Structure

2. Click the Build icon.

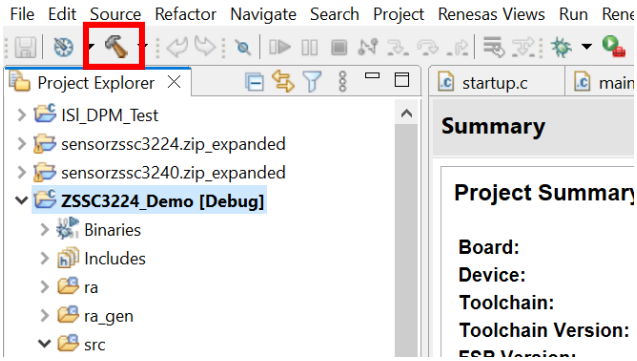

Figure 6. Project Build

3. From the menu bar, select **Run** → **Debug Configurations**.

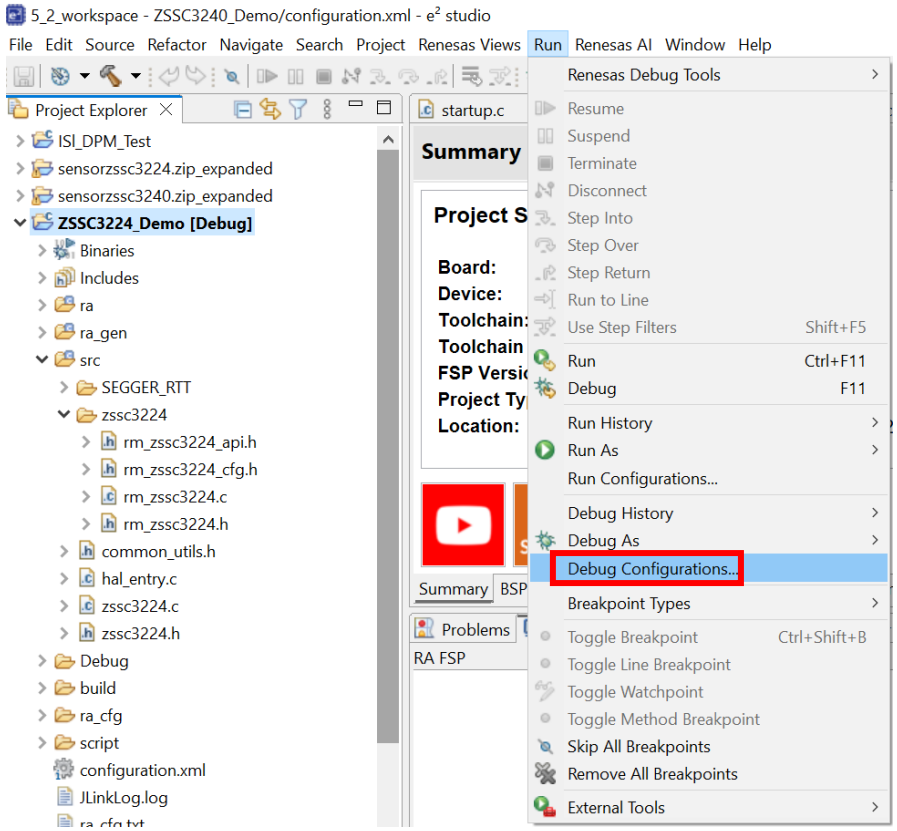

Figure 7. Debug Configurations

4. Select **Renesas DGB Hardware Debugging** → **ZSSC3224_Demo_Debug_Flat** (see Figure 8).
5. Click the **Debug** button.

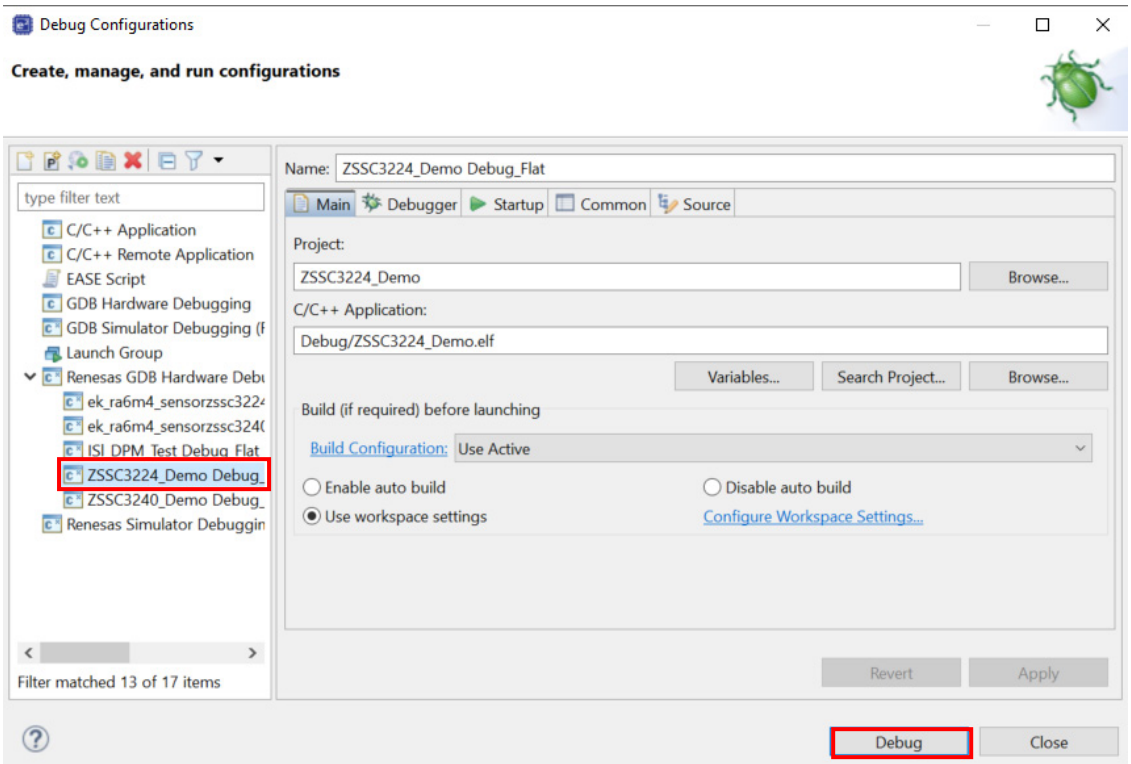

Figure 8. Start Debug Mode

6. Click the **Play** button to run the code.

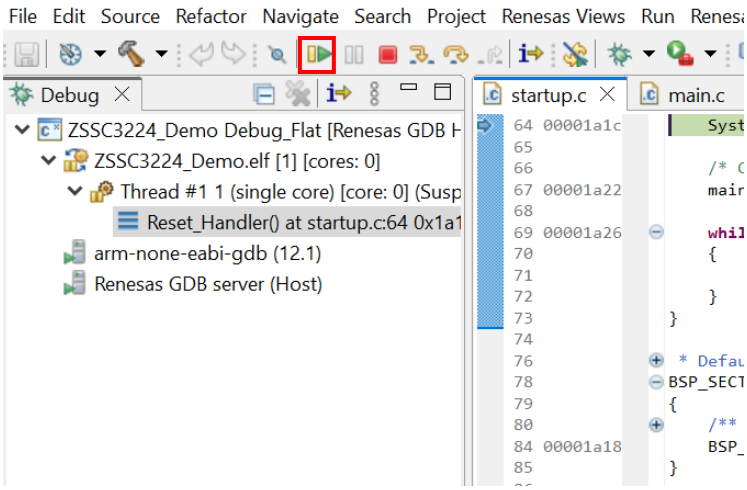

Figure 9. Running the Code

5.2 Using RTT Viewer

1. Close e^2 studio.
2. Open the J-Link RTT Viewer (see Figure 10).
3. Unplug the EK-RA6M4 from your PC, then plug it back in.
4. Press **S3** on the EK-RA6M4.
5. Click **File** → **Connect**

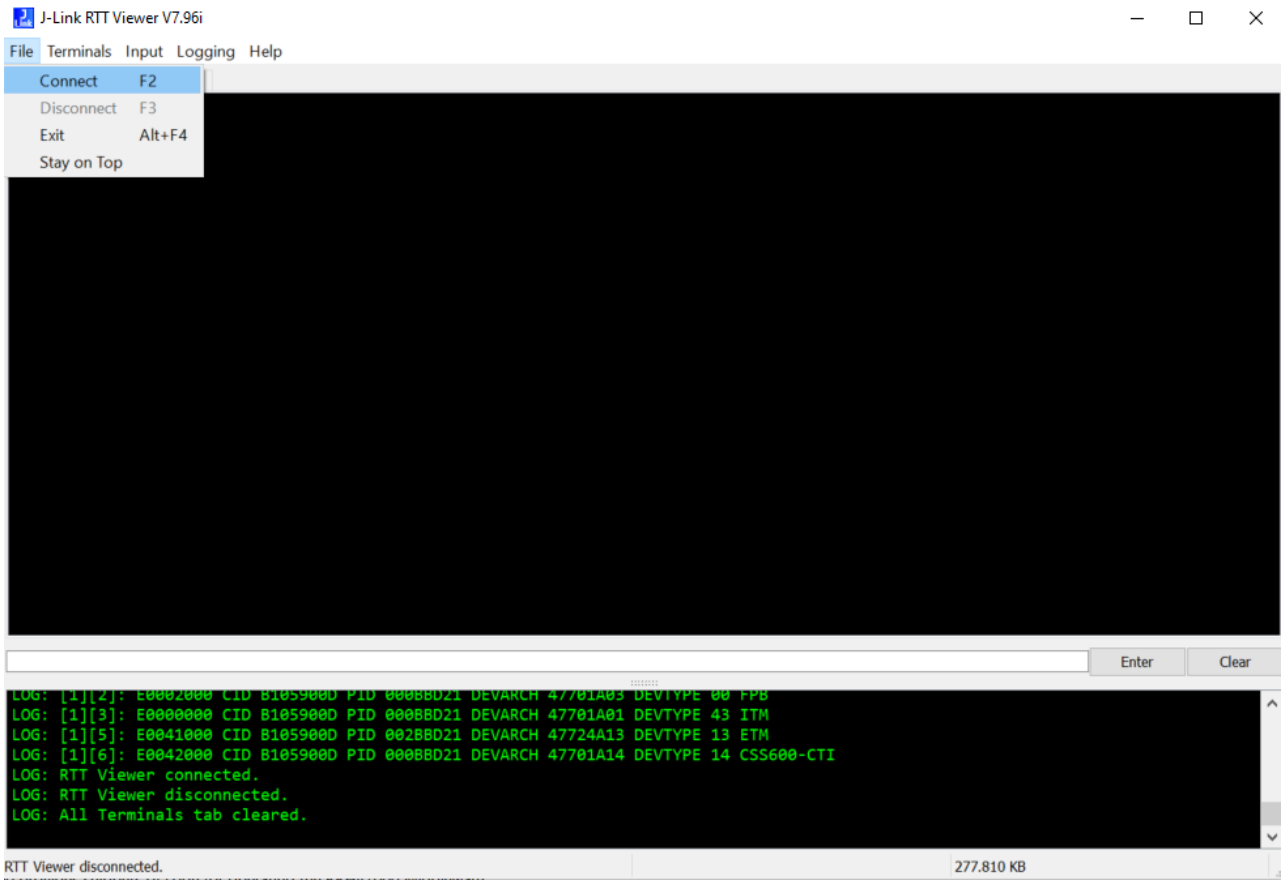

Figure 10. RTT Viewer

6. Ensure your configuration matches the configuration shown in Figure 11.
   a. Search Range: 0x20000000 0x8000.
7. Click **OK**.

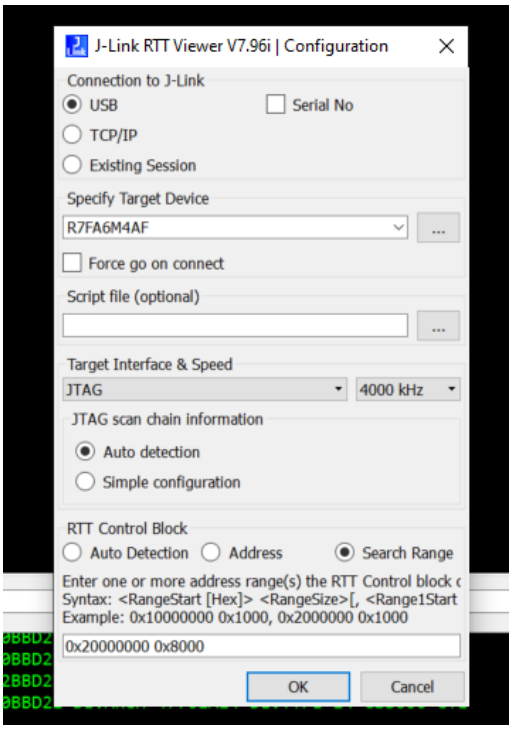

Figure 11. RTT Viewer Options

8. As you rotate the potentiometer you should see the following output in the “All Terminals” tab.

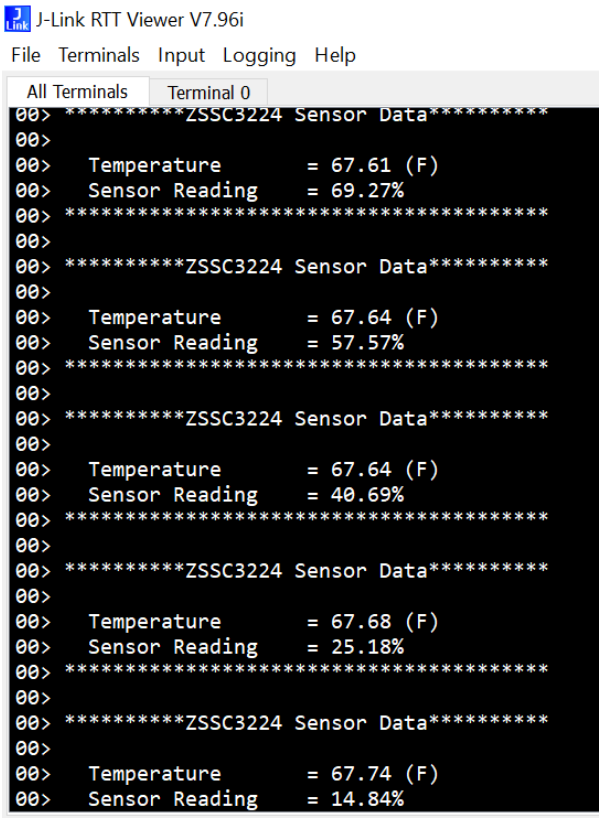

Figure 12. Demo Output

6. Revision History

Revision	Date	Description
1.00	Jul 2, 2025	Initial release.

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Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,
Koto-ku, Tokyo 135-0061, Japan
www.renesas.com

Contact Information

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