RKX-EVK-001 and ROHM EVK EVB

ROHM EVK HW User's Guide

The ROHM EVK is an easy-to-use platform that allows evaluation of ROHM products. The evaluation kit is based on the Infineon CY8CKIT-059 Prototyping Kit featuring an integrated SoC based on the ARM® Cortex®-M3 CPU with powerful analog and digital peripherals. The ROHM EVK comes with a highly configurable RKX-A3-EVK-001 that provides an easy-to-use hardware interface between the MCU and the variety of Digital ROHM devices in a plug-and-play fashion. Finally, the ROHM EVK GUI SW, a powerful Windows-based desktop application, provides an intuitive Graphical User Interface capable of displaying and logging the real-time device data, and configuring the device functions through a graphical register editor, to name a few.

This user guide describes the ROHM EVK HW. For the ROHM EVK SW, please refer to the ROHM EVK SW User's Guide.

Definitions

ROHM EVK	Provides the full range of software, hardware and the firmware used for device evaluation purposes.
ROHM EVK HW	ROHM EVK EVB connected to RKX-EVK-001 board
RKX-EVK-001	RKX-A3-EVK-001 + CY8CKIT-059 Prototyping Kit
RKX-A3- EVK-001	Adapter board specifically designed to easily interface with the ROHM EVK Evaluation Board and development platforms
ROHM EVK EVB	Accelerometer evaluation board or ADC evaluation board
Accelerometer EVB	Evaluation board with an accelerometer
ADC EVB	Evaluation board with an ADC
ROHM EVK SW	Provides the full range of the software for device evaluation purposes consisting of ROHM EVK GUI SW and RKX EVK FW
ROHM EVK GUI SW	ROHM device evaluation software with a graphical user interface running on Windows OS
ROHM EVK FW	Proprietary firmware running on microcontroller-based host adapters

Acronyms

ADC	A/D Converter
GUI	Graphical User Interface
PSoC	Programmable SoC (System on Chip)

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1 ROHM EVK HW Overview

1.1 ROHM EVK HW Contents

The RKX-EVK-001 sales package comes with the RKX-EVK-001, one micro-USB cable (3.3'), and one 14-position ribbon cable (1.5') by default. (Figure 1)

The RKX-EVK-001 is designed to work seamlessly with the Accelerometer EVB (e. g. KX132-1211-EVK-001) and ADC EVB (BU79100G-LA-EVK-001) that can be purchased separately. (Figure 2)

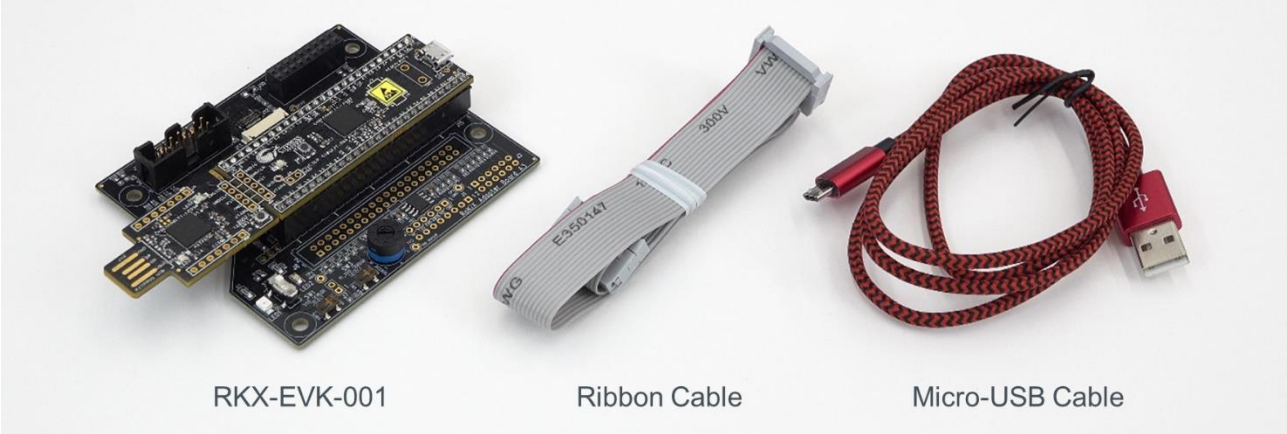


Figure 1. RKX-EVK-001 sales package

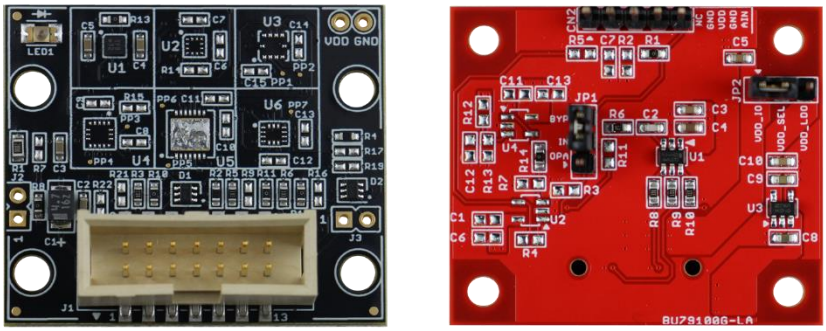


Figure 2. Accelerometer EVB and ADC EVB

1.2 System Level Block Diagram

The main components of the RKX- EVK-001 are the host platform (Infineon CY8CKIT-059) and the RKX-A3-EVK-001. The RKX- EVK-001 is designed to be interfaced seamlessly with the Accelerometer EVB and ADC EVB that can be purchased separately. The main purpose of the RKX-A3-EVK-001 is to provide a hardware interface between the host platform and the evaluation board. The Figure 3 shows the simplified high-level block diagram of the RKX-EVK-001.

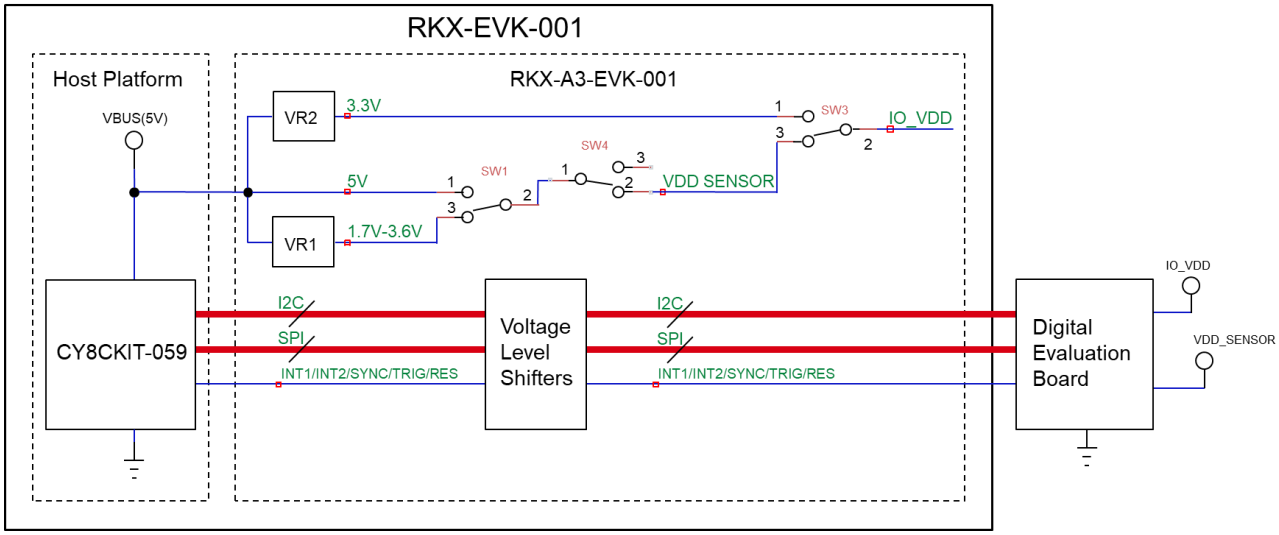


Figure 3. High Level Block Diagram of the RKX-EVK-001

1.3 RKX-A3-EVK-001

1.3.1 RKX-A3-EVK-001 Detailed Diagram

The RKX-A3-EVK-001 is designed to easily interface with ROHM products and numerous development platforms. By default, the board is populated to interface with the Infineon CY8CKIT-059 PSoC® prototyping platform and with ROHM standard evaluation boards featuring a 14-pin male header. However, with some hardware modifications, the board can also support additional host platforms such as the Arduino UNO R3 , and Raspberry Pi, and additional evaluation boards like the ROHM Sensor Shield Modules 5-pin digital or 4-pin analog boards. The Figure 4 and Table 1 show the main component of the RKX-A3-EVK-001.

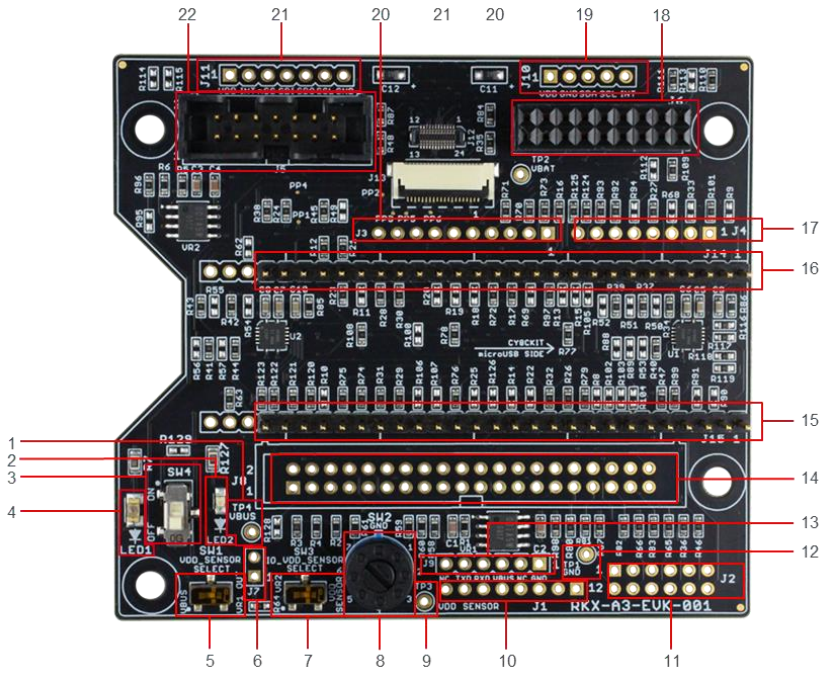


Figure 4. RKX-A3-EVK-001 Main Features

Table 1. RKX-A3-EVK-001 Main Features

1	TP4 - Test Point 4 for VBUS (Host) input voltage measurement	12	TP1 - Test Point 1 for GND reference voltage measurements
2	LED2 - Orange LED is ON when VDD_SENSOR voltage is ON	13	J9 - Raspberry Pi 6-pin debug header
3	SW4 - Switch that connects VDD_SENSOR to VBUS/VR1_OUT	14	J8 - Raspberry Pi 40-pin dual-row header
4	LED1 - Green LED is ON when VBUS (Host) Voltage is provided	15	J15 - Infineon CY8CKIT-059 compatible header
5	SW1 - VDD_SENSOR select switch (VBUS or VR1_OUT)	16	J14 - Infineon CY8CKIT-059 compatible header
6.	J7 / R64 - VDD_Sensor current measurement header/bypass.	17	J4 - Arduino UNO R3 Compatible Digital Header (bottom mount)
7	SW3 - IO_VDD Select switch (VDD_SENSOR of VR2_OUT)	18	J6 - ROHM EVK EVB compatible header
8	SW2 - 7-position rotary switch to configure VR1_OUT voltage: 1 = 3.3V, 2 = 3.0V, 3 = 2.8V, 4 = 2.5V, 5 = 1.8V, 6 = 1.7V, 7 = 3.6V	19	J10 - ROHM Sensor Module 5-Pin Digital / 4-Pin Analog Header
9	TP3 - Test Point 3 for VDD_SENSOR voltage measurement.	20	J3 – Arduino UNO R3 Compatible Digital Header (bottom mount)
10	J1 - Arduino UNO R3 Compatible Power Header (bottom mount)	21	J11 - ROHM 7-Pin Digital Sensor (SPI) Header
11	J2 - Arduino UNO R3 Compatible Analog Header (bottom mount, even-numbered pins).	22	J5 - ROHM EVK EVB ribbon cable compatible header

1.3.2 Input / Output Power Configuration

1.3.2.1 VDD_SENSOR Select

The RKX-A3-EVK-001 gives users the flexibility to test sensors at different VDD and IO_VDD input voltages as well as providing a way to interface sensors with both 5V platforms (e.g., Arduino UNO R3, or Infineon CY8CKIT-059) and 3.3V platforms (e.g., Raspberry Pi).

The VDD Sensor Select circuitry is shown in Figure 5. When the RKX-A3-EVK-001 is connected to a host platform, the input voltage to the board is supplied on VBUS net and the green LED (LED1) will be ON. The VBUS voltage is then supplied as an input to the Voltage Regulator (VR1) and is connected to the Single Poll Double Throw (SPDT) switch SW1. The purpose of the SW1 is to select the VDD voltage to the sensor that will be connected to the RKX-A3-EVK-001 (VDD_SENSOR). One option for the VDD_SENSOR is the actual VBUS voltage. The second option is the output voltage from the VR1 voltage regulator (VR1_OUT). The default configuration of the RKX-A3-EVK-001 is to select the output voltage from the VR1 voltage regulator.

NOTE: Care must be taken when switch SW1 is moved left to select VBUS voltage. For platforms like CY8CKIT-059 Prototyping Kit and Arduino UNO R3, the VBUS voltage can be as high as 5V. Since many sensors including KX132-1211, are rated to 3.6V VDD max, overvoltage and potential permanent damage may be done in cases when the 5V VBUS voltage is connected to VDD_SENSOR.

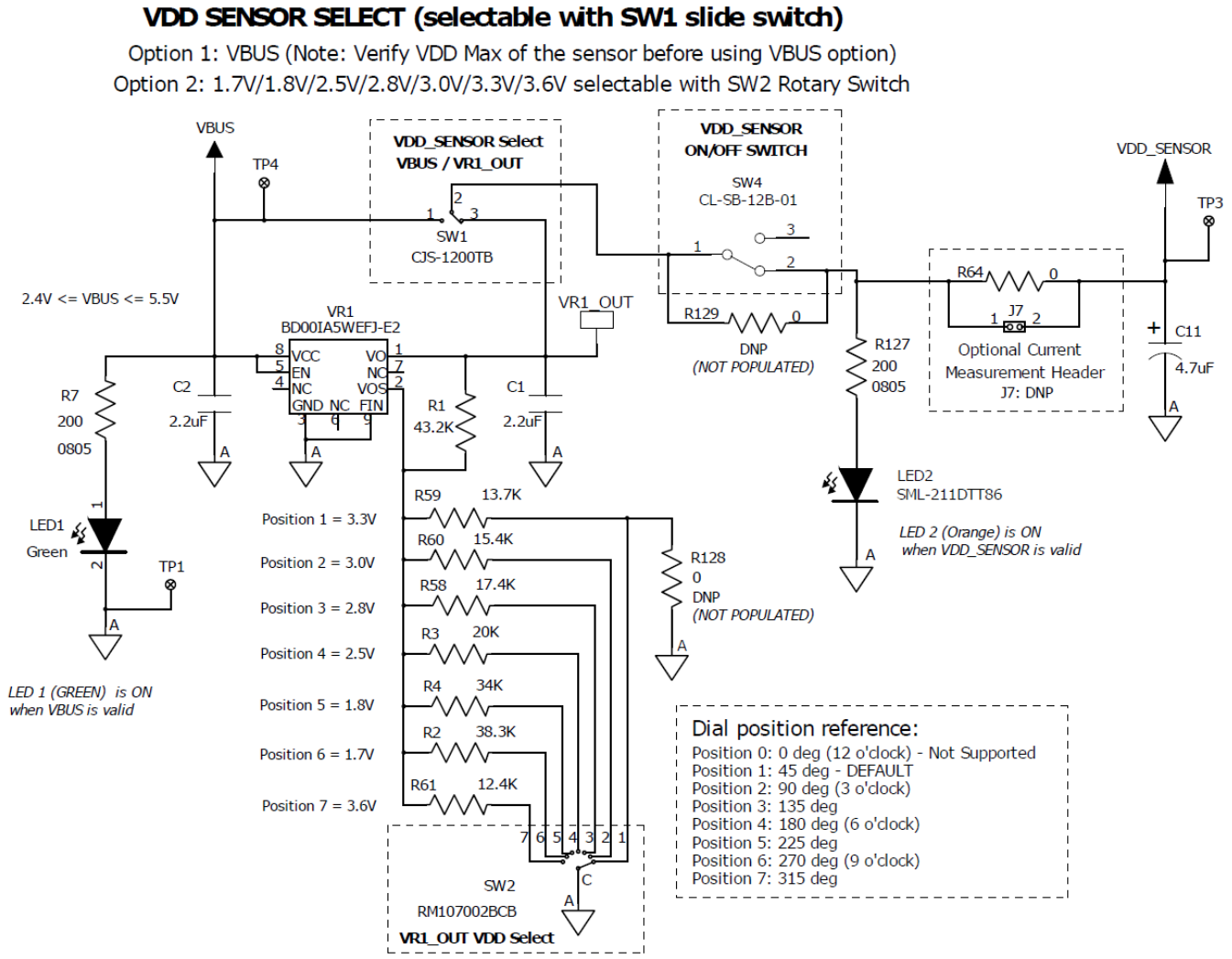


Figure 5. RKX-A3-EVK-001 VDD Sensor Select

The VR1 voltage regulator is a variable output Low Dropout (LDO) linear voltage regulator. The output voltage of the VR1 is selected via rotary switch SW2. The SW2 switch has 7 positions as indicated on the schematic and on the printed circuit board itself. The switch SW2 can be rotated with a small flat screwdriver. By default, the RKX-A3-EVK-001 is shipped with switch SW2 in Position 1. See Table 2 for details on how to select the output voltage using SW2.

Table 2. Switch SW2 Voltage Select for different Switch Positions

SW2 position	1	2	3	4	5	6	7
VR1_OUT	3.3V (default)	3.0V	2.8V	2.5V	1.8V	1.7V	3.6V

Following the voltage path from VBUS to the switch SW1 (from left-to-right in Figure 5), next comes switch SW4 (VDD_SENSOR ON/OFF switch). The purpose of the switch SW4 is to disconnect the VDD_SENSOR from the input voltage (VBUS). This can be useful when an evaluation board needs to be unplugged and re-plugged again. By default, the switch SW4 is on the ON position (UP position when looked from above). When the RKX-A3-EVK-001 is connected to a host platform, and the switch SW4 is turned ON, the orange LED (LED2) will be ON. If the switch SW1 is connected to the output of the VR1 voltage regulator (VR1_OUT), the brightness of the orange LED will be proportional to the VR1_OUT voltage

output. At default position of the switch SW2 (3.3V) the LED light will be bright and when the output voltage is selected to 1.8V or 1.7V using the switch SW2, the LED2 light will be dim. If the orange LED (LED2) is completely OFF and the green led (LED1) is ON, please ensure the switch SW2 is not turned to an intermediate position and is at one of the 7 positions shown in Table 2.

1.3.2.2 IO_VDD Sensor Select and VR2 Voltage Regulator

The RKX-A3-EVK-001 provides flexibility for selecting the IO_VDD source for the connected sensors independent of the VDD_SENSOR if desired. As shown in Figure 6, the selection is made using the Single Poll Double Throw (SPDT) switch SW3. The default option for IO_VDD is to be connected to the VDD_SENSOR rail. In this case, the IO_VDD voltage will follow the VDD_SENSOR voltage. The alternative selection of the SW3 switch would connect IO_VDD rail to the output of the VR2 voltage regulator.

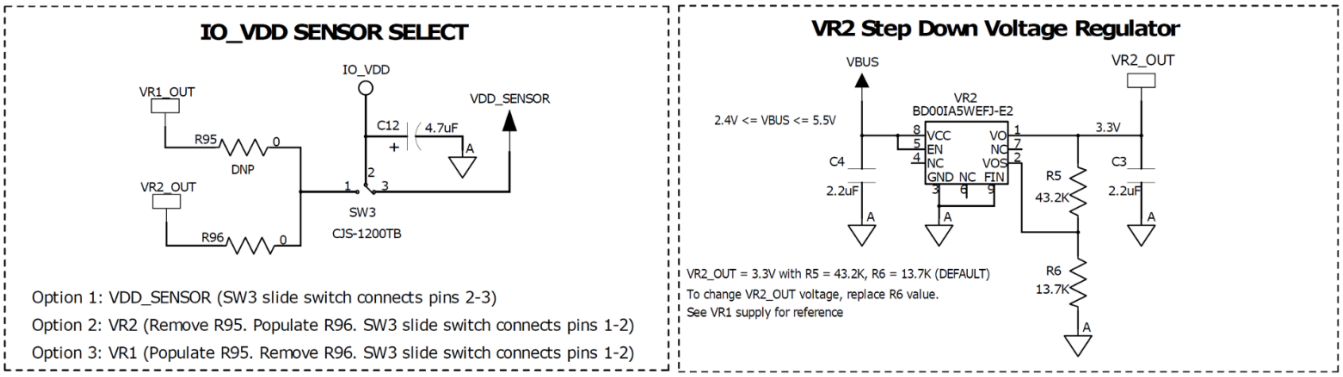


Figure 6. IO_VDD Sensor Select and VR2 Voltage Regulator

The VR2 voltage regulator is also a variable output Low Dropout (LDO) linear voltage regulator. By default, it is configured to output 3.3V using the preset values of R5 and R6 feedback resistors. However, the user can modify the output of the VR2 voltage regulator if desired by replacing the R6 resistor (13.7k) with another value (Table 3).

Table 3. Voltage Regulator (VR2) Output Option

VR2_OUT	3.3V (default)	3.0V	2.8V	2.5V	1.8V	1.7V	3.6V
R6	13.7k	15.4k	17.4k	20k	34k	38.3k	12.4k
R5	43.2k	43.2k	43.2k	43.2k	43.2k	43.2k	43.2k

1.3.2.3 External Power Supply Connection

In some cases, it may be required to provide an external voltage source for the VDD_SENSOR. To accomplish this, please remove the R64 zero-ohm resistor. The positive terminal of the external power supply can then be attached to the test point TP3 and negative terminal can be attached to any GND location on the RKX-A3-EVK-001. One such convenient location is a test point TP1 shown in Figure 7.

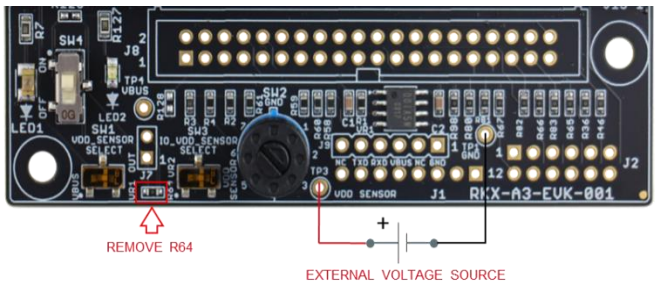


Figure 7. External Voltage Source Recommended Connection

1.3.3 VDD_SENSOR Current Measurements

The RKX-A3-EVK-001 provides a convenient way to measure the current supplied on the VDD_SENSOR power rail for testing and evaluation purposes. In order to measure the VDD_SENSOR current, it is recommended to remove the R64 zero-ohm resistor and to connect a current meter across the J2 header that can be optionally populated for such a test.

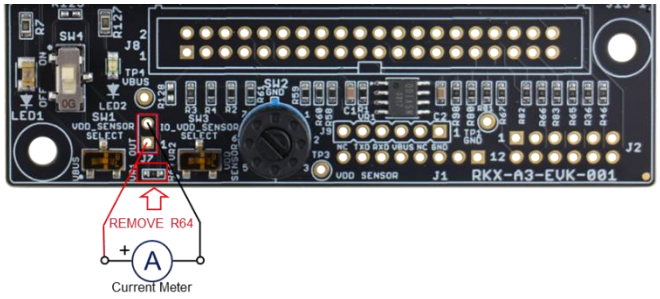


Figure 8. VDD_SENSOR Current Measurement Recommended Connections

1.3.4 IO_VDD Voltage Level Shifters

The RKX-A3-EVK-001 comes with a pair of voltage level shifters (U1, U2) by default that are designated to shift the voltage levels of all digital I/O pins from the voltage level supported by the host platform (VBUS) and I/O Voltage provided to a sensor (IO_VDD) and vice-versa (Figure 9). This allows seamless interfacing between such platforms as the Infineon CY8CKIT-059 and Arduino UNO R3, where the I/O voltage can be as high as 5V with many sensors that are limited to IO_VDD voltage of 3.6V or lower. Please note the following information regarding the voltage level shifters:

- The acceptable input voltage range on the host side (B-side) is 2.3V to 5.5V
- The acceptable input voltage range on the device side (A-side) is 1.65V to 3.6V
- There is an internal 10k pull-up resistor on each side (A and B) of the level shifter.
- Level shifters have been verified to support I^{2}C communication (up to 1000kHz) and SPI communication (up to 10MHz) with sensors. For I^{2}C communication, it is recommended to have additional pull-up resistors on SDA and SCL lines for faster transient switching. In many cases, there will be pull-up resistors on the evaluation board that come with the sensor. However, in other cases, it is recommended to populate 2.7k resistor at locations R88 (SDA) and R89 (SCL) on the RKX-A3-EVK-001. Once connected, the effective resistance would be 2.1k on each signal level (2.7k || 10k = 2.1k), which is a sufficient value for all sensors at all VDD voltages.
- It is possible to bypass the onboard level shifters if needed. This can be accomplished from removing the zero-ohm resistors on A and B sides of the level shifter and connecting level shifter bypass resistors (R50-R57).

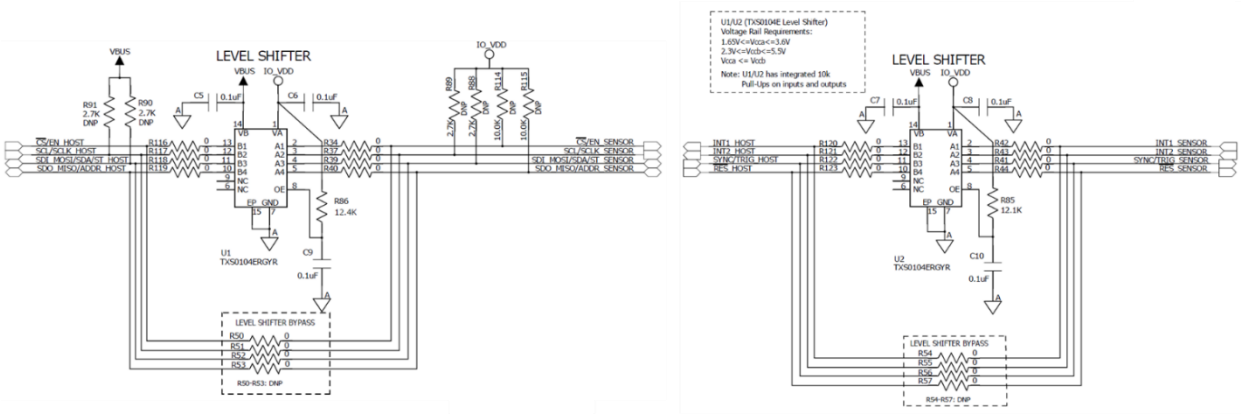


Figure 9. Voltage Level Shifters for I/O Signals

2 Interface with Evaluation Boards

2.1 Physical Interfacing with ROHM EVK EVB

The RKX-A3-EVK-001 comes with pair of headers that provides an easy way to connect to the standard ROHM EVK EVB that come with a 14-pin male header. One header is a J5 14-pin male header, and another header is a J6 18-pin female header (Figure 10).

NOTE: The 18-pin female header J6 is mechanically and electrically compatible with the 14-pin male header found on ROHM EVK EVB and simplify alignment of both connectors relatively to each other. The pins 1, 2 & 17, 18 on J6 are not connected electrically.

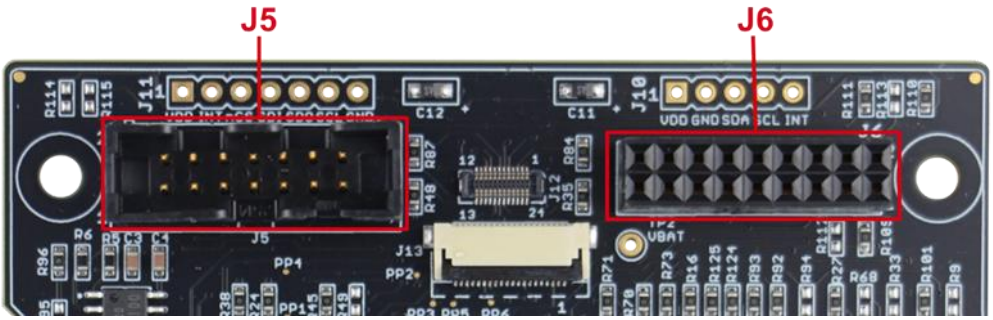


Figure 10. ROHM EVK EVB Interface Headers

Thus, there are two ways to conveniently connect the standard ROHM EVK EVB to the RKX-A3-EVK-001 - one is using the 14-pin ribbon cable plugged into J5 14-pin male header and another is by plugging the evaluation board directly into J6 18-pin female header of Figure 11.

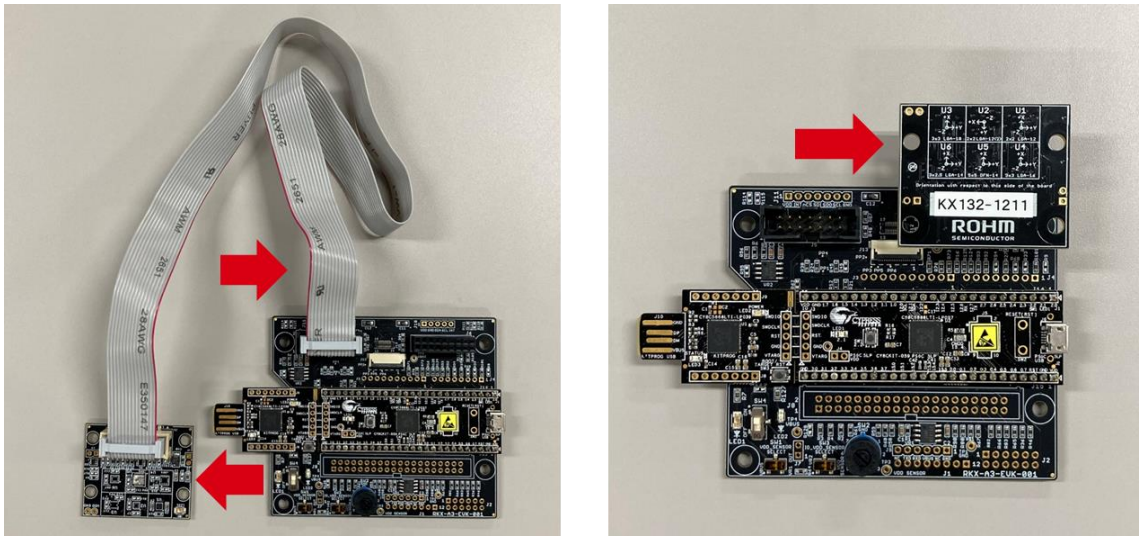


Figure 11. Interface with ROHM EVK EVB

3 Interface with host platforms

The RKX-A3-EVK-001 is designed to provide an easy hardware interface between ROHM devices and numerous development platforms. Table 4 shows the list of host platforms that can be directly interfaced with the RKX-A3-EVK-001 via compatible headers. Note, that in order to interface with any given host platform, the proper hardware modifications may be required, including populating headers, and populating / removing certain zero-ohm resistors. By default, the RKX-A3-EVK-001 is factory populated to support the Infineon CY8CKIT-059 PSoC® 5LP Prototyping kit out of the box.

Table 4. List of Compatible Host Platforms

Vendor	Platform Name	RKX-A3-EVK-001 HW Interface	Populated on the board?
Infineon	CY8CKIT-059 (PSoC 5LP)	J14, J15 (26 – pin headers)	Yes
		Various 0-ohm resistors*	Yes
	CY8CKIT-049 (PSoC 4)	J14, J15 (22 – pin headers)	No
		Various 0-ohm resistors*	No
	CY8CKIT-044 (PSoC 4M)	J14, J15 (29 – pin headers)	No
		Various 0-ohm resistors*	No
	CY8CKIT-042-BLE (PSoC4 BLE)	J1, J2, J3, J4 Arduino Compatible Headers	No
		Various 0-ohm resistors*	Yes
	CY8CKIT-042 (PSoC 4) CY8CKIT-062-BLE (PSoC 6 BLE)	J1, J2, J3, J4 Arduino Compatible Headers	No
		Various 0-ohm resistors*	Yes
	CY8CKIT-043 (PSoC 4M)	J1, J2, J3, J4 Arduino Compatible Headers	No
		Various 0-ohm resistors*	No
Arduino	Arduino UNO R3	J1, J2, J3, J4 Arduino Compatible Headers	No
		Various 0-ohm resistors*	Yes
Raspberry Pi	Pi 1 Model A+ / B+ Pi 2 Model B Pi 3 Model B / B+	J8 40-pin Header	No

* See RKX-A3-EVK-001 schematic (4.2) for details.

3.1 Infineon CY8CKIT-059 Prototyping Kit

3.1.1 Overview

As was previously described, the RKX-EVK-001 uses the Infineon CY8CKIT-059 Prototyping Kit as the target host adapter platform due to the numerous advantages it offers including high performance, mixture of onboard digital and analog peripherals, support for Full Speed USB 2.0 connectivity, easy to use IDE with free license, and the low cost.

Figure 12. Infineon CY8CKIT-059 Prototyping Kit

When Infineon CY8CKIT-059 Prototyping Kit is shipped as part of the RKX-EVK-001, it comes pre-loaded with custom firmware, two 26-pin female headers soldered at locations J1 & J2, and is plugged into the RKX-A3-EVK-001 compatible male header J14 & J15 to provide the plug-and-play functionality straight out of the box (Figure 13).

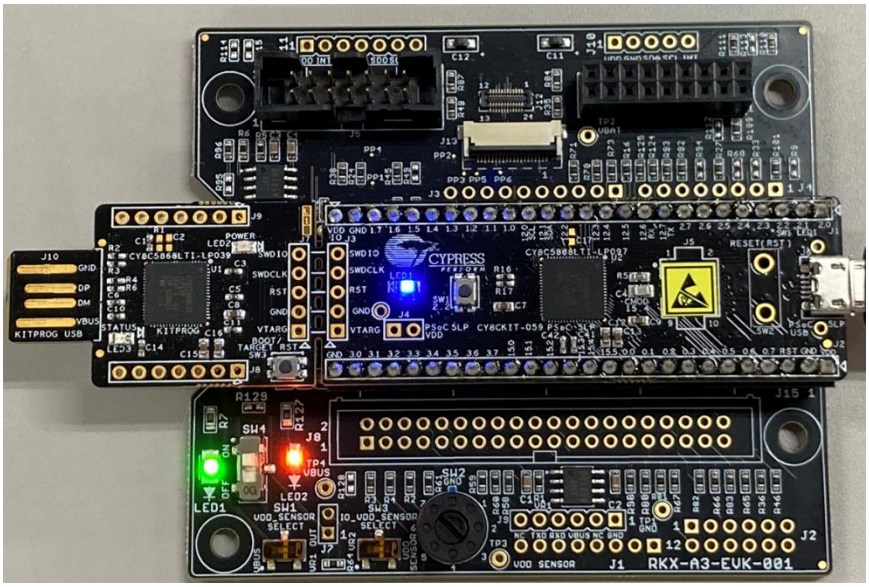


Figure 13. CY8CKIT-059 Plugged Directly in RKX-A3-EVK-001

NOTE: The following content (3.1.1.1 - 3.1.1.3) is provided directly from the manufacturer's website:
CY8CKIT-059 PSoC® 5LP Prototyping Kit with Onboard Programmer and Debugger (infineon.com)

3.1.1.1 Featuring PSoC™ 5LP

"The CY8CKIT-059 PSoC™ 5LP Prototyping Kit features the CY8C5888LTI-LP097 device from the PSoC™ 5LP family. PSoC™ 5LP is the industry's most integrated programmable SoC, combining high-precision and programmable analog and digital peripherals with an ARM Cortex-M3 CPU in a single chip. Process sensor signals with the 24-bit hardware DFB coprocessor, offload traditional CPU tasks to the CPLD-based Universal Digital Blocks and increase system performance with the peripheral-to-peripheral DMA controller. Integrate high-precision custom 20-bit Analog Front Ends with the Programmable Analog Blocks including opamps, PGAs, filters, comparators, SAR and Delta-Sigma ADCs and the industry's best CAPSENSE™ touch-sensing solution"

3.1.1.2 Design for Flexibility

"The kit provides access to all the PSoC™ 5LP device I/Os in a breadboard-compatible format. It features a micro-USB header for creating prototypes with Full Speed USB 2.0 connectivity. The kit is also designed with a convenient snappable form-factor, allowing users to separate the USB connector with the KitProg Programmer and Debugger from the target board to use them independently. Once done with the prototype, you're still left with a handy SWD programmer"

3.1.1.3 Low-Cost Programmer

"The kit includes Infineon's KitProg Programmer and Debugger. KitProg can program and debug the target PSoC™ 5LP device via SWD when using PSoC™ Creator or PSoC™ Programmer. It supports bridging over USB-UART and USB-I2C interfaces and also provides access to Micrium µC/Probe to read and write memory on the target device. When snapped away, this tiny USB board can be used as a KitProg programmer and debugger with any PSoC™ 3, PSoC™ 4 or PSoC™ 5LP device. The KitProg firmware is provided as a bootloader image that can be upgraded to develop custom applications for it."

3.1.2 Firmware Pinout

The interface between the Infineon PSoC microcontroller mounted on the CY8CKIT-059 Prototyping Kit (RKX-A3-EVK-001 headers J14, J15) and the sensors mounted on the evaluation board, and either plugged directly to J6 (18-pin receptacle header) or via ribbon cable plugged into J5 (14-pin male header) on the RKX-A3-EVK-001 is shown in Table 5.

Table 5. Physical Mapping of I/O Signals to the Infineon PSoC 5LP MCU

Function in Firmware	14-pin Male Header Pin J5	18-pin Receptacle Header Pin J6	RKX-A3-EVK-001 PSoC Headers Pin J14, J15	PSoC 5LP I/O Port	RKX-A3-EVK-001 Zero Ohm
Not used in firmware	2	4	J14-1	P2.0	R101
SPI (nCS)	2	4	J14-22	P1.5	R21
X_OUT	3	5	J15-21	P3.4	R108
Y_OUT	4	6	J15-20	P3.5	R31
SPI (SCLK)	5	7	J14-11	P12.5	R16
I2C (SCL)	5	7	J15-11	P0.0	R32
SPI (MOSI/SDI)	7	9	J14-23	P1.6	R12
I2C (SDA)	7	9	J15-10	P0.1	R26
SPI (MISO/SDO) / ADDR	9	11	J14-24	P1.7	R23
SYNC/TRIG	10	12	J14-4	P2.3	R99
INT1	11	13	J14-13	P12.3	R17
INT2	12	14	J14-5	P2.4	R27
nRES	13	15	J14-6	P2.5	R125
Z_OUT	14	16	J15-19	P3.6	R29

4 About RKX-A3-EVK-001

4.1 Board Information

- Board Size: 86.36 mm x 76.20 mm
- Board Thickness:
- Number of Layers: 4
- Material: FR-4 High Tg
- Copper Thickness: 1oz (35μm)

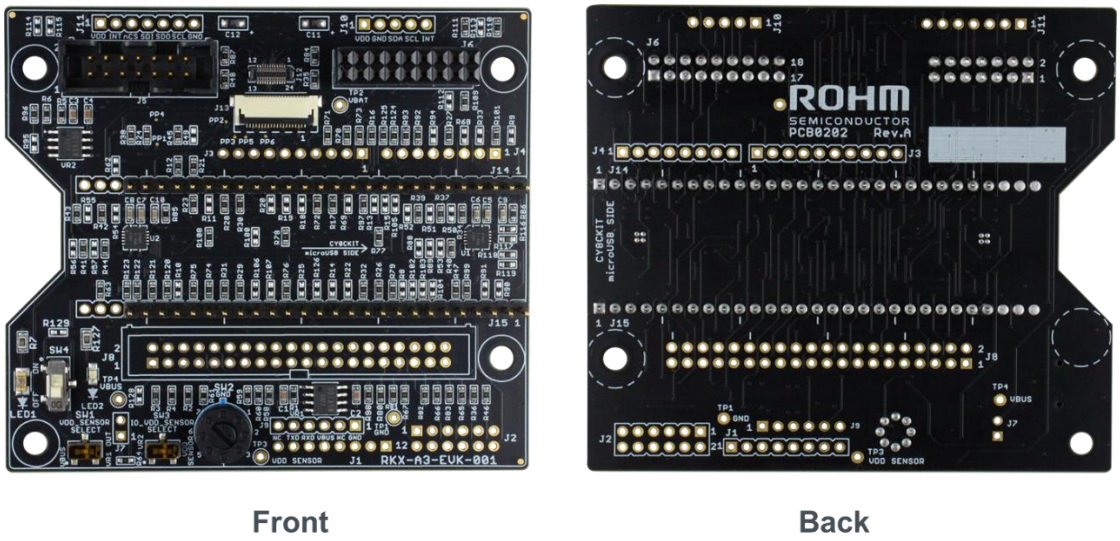
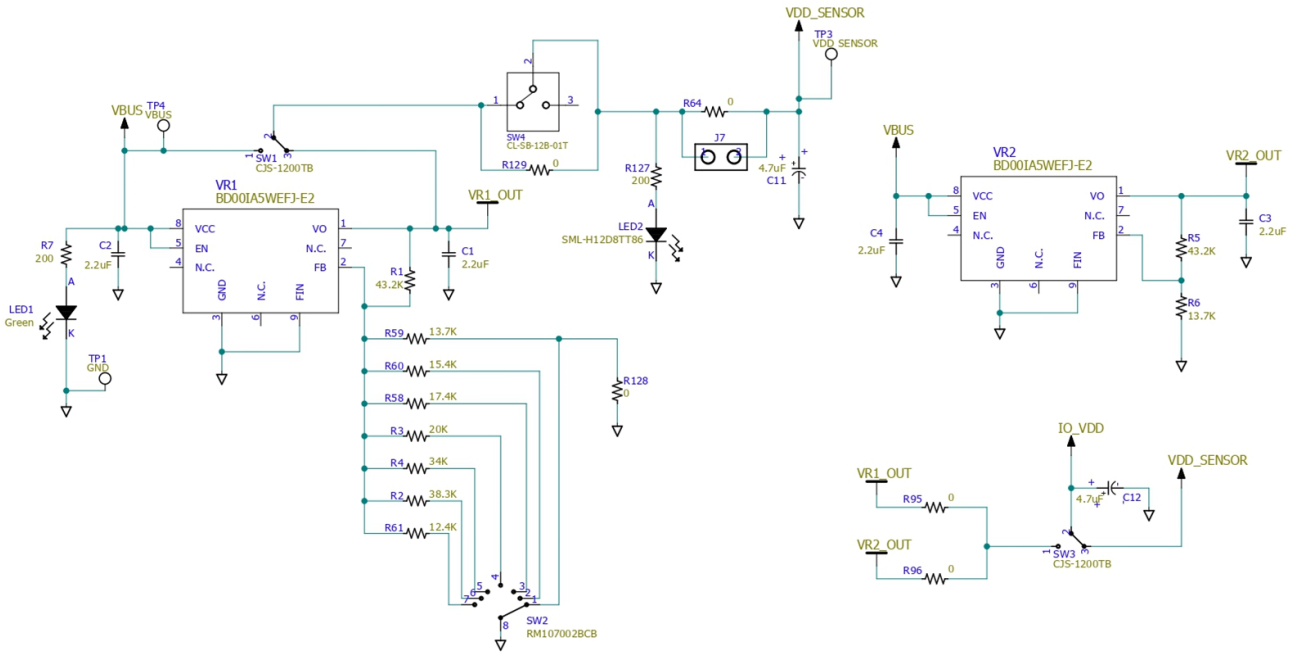
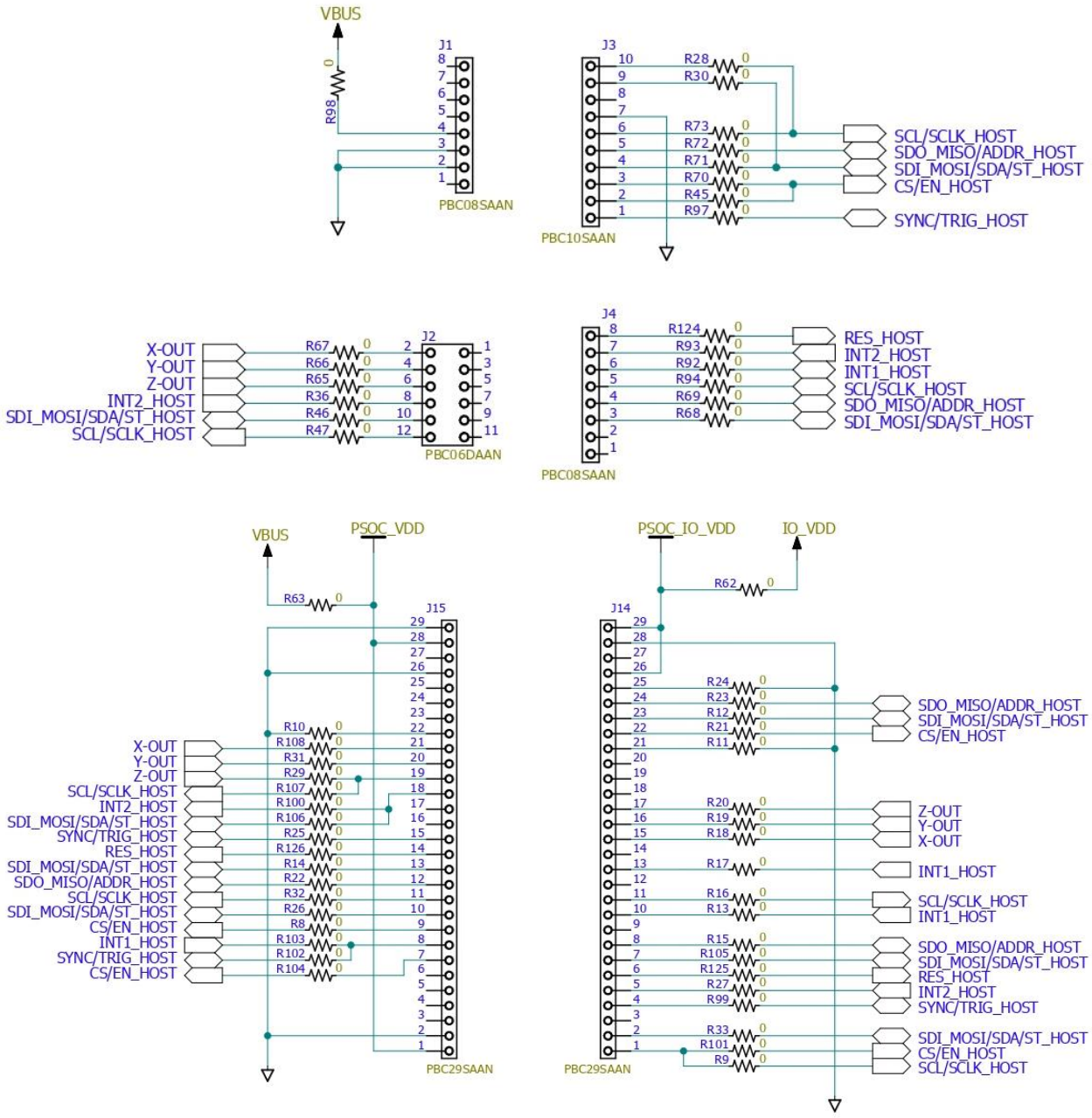


Figure 14. RKX-A3-EVK-001

4.2 Schematic Diagram





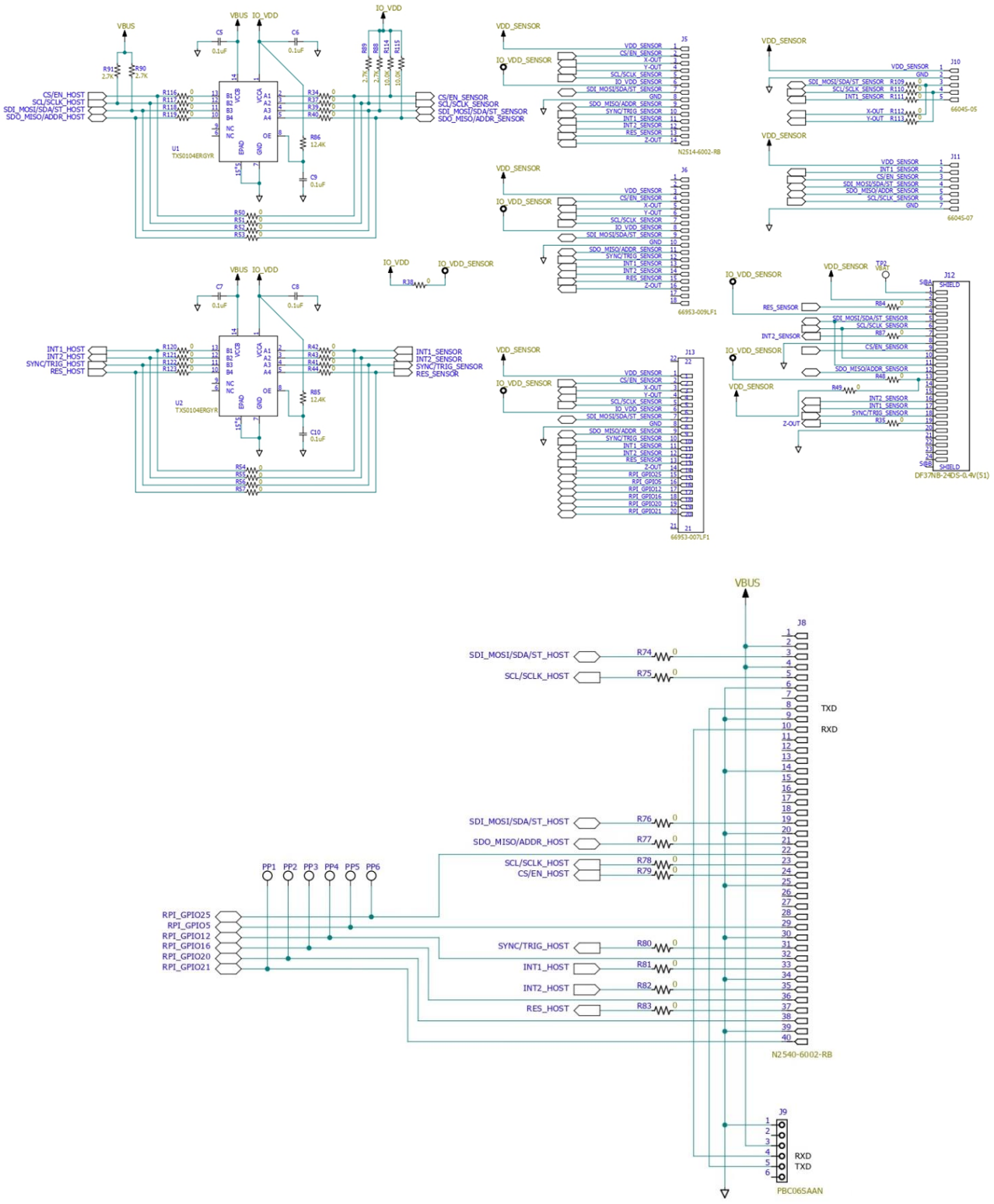


Figure 15. Schematic Diagram of RKX-A3-EVK-001

4.3 Bill of Materials

Table 6. Bill of Materials of RKX-A3-LA-EVK-001

Part	Size/Package	Value	Description	Quantity
C1, C2, C3, C4	1608M (0603)	2.2uF	Ceramic Capacitor	4
C5, C6, C7, C8, C9, C10	1608M (0603)	0.1uF	Ceramic Capacitor	6
C11, C12	2012M (0805)	4.7uF	Tantalum Capacitor	2
R1, R5	1608M (0603)	43.2kΩ	Resistor	2
R2	1608M (0603)	38.3kΩ	Resistor	1
R3	1608M (0603)	20kΩ	Resistor	1
R4	1608M (0603)	34kΩ	Resistor	1
R6, R59	1608M (0603)	13.7kΩ	Resistor	2
R7, R127	2012M (0805)	200Ω	Resistor	2
R12, R16, R17, R21, R23, R24, R26, R27, R28, R29, R30, R31, R32, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R63, R64, R65, R66, R67, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R87, R92, R93, R96, R97, R98, R99, R101, R108, R109, R110, R111, R116, R117, R118, R119, R120, R121, R122, R123, R124, R125	1608M (0603)	0Ω	Resistor	70
R58	1608M (0603)	17.4kΩ	Resistor	1
R60	1608M (0603)	15.4kΩ	Resistor	1
R61, R85, R86	1608M (0603)	12.4kΩ	Resistor	3
LED1	3020M (1208)	-	Green LED	1
LED2	2012M (0805)	-	Orange LED	1
VR1, VR2	HTSOP-J8	-	LDO	2
U1, U2	VQFN (14)	-	Voltage Level Translator	2
SW1, SW3	SPDT	-	Slide switch	2
SW2	SP7T	-	Switch Rotary	1
SW4	SPDT	-	Slide switch	1
J5	14pin	-	Connector	1
J6	14pin	-	Connector	1
J12	24pin	-	Connector	1
J13	20pin	-	Connector	1
J14, J15	26pin	-	Connector	2

4.4 Layout (Top View)

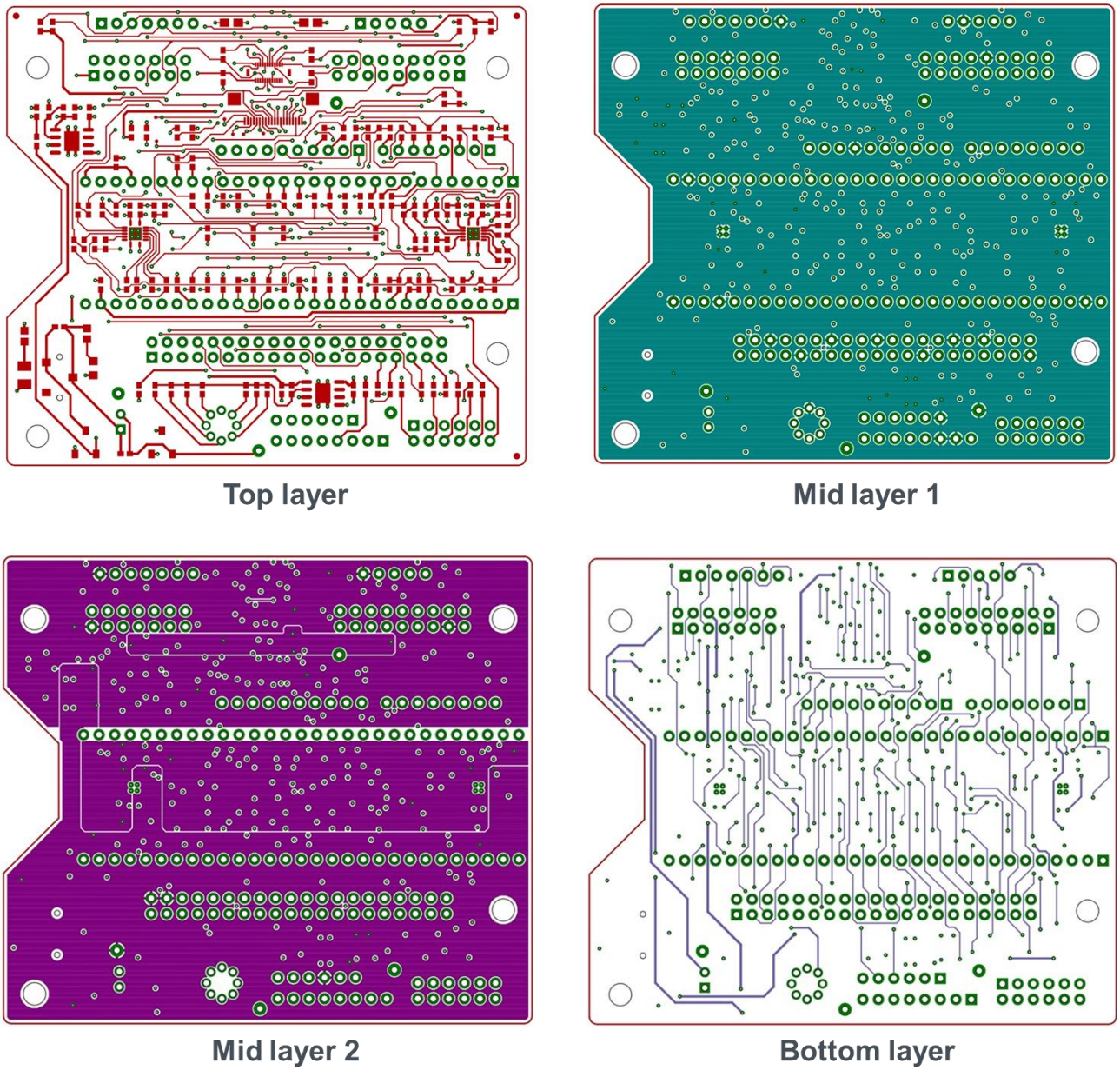


Figure 16. Layouts of RKX-A3-LA-EVK-001

5 Troubleshooting and known issues

In case of connection problems or an application crash, please check the error log file of the ROHM EVK GUI SW. The default path of this file is: `..\Documents\ROHM_EVK_v3\ROHM-EVK-GUI\errorlog.txt`

5.1 Communication Troubleshooting

5.1.1 RKX-EVK-001 Communication Issues

The communication between the ROHM EVK GUI SW and RXK-EVK-001 may not work for several reasons. The issue can be related to hardware, software, or both. The following steps can be used as a guidance to troubleshoot such issues.

5.1.1.1 "Status: EVK Disconnected" in ROHM EVK GUI SW Status Bar

Figure 17. Status Bar, Disconnected

This status means that the ROHM EVK GUI is not connected to the host adapter board.

NOTE: This error example issue is limited for RKX-EVK-001 connections.

If the text "Status: EVK Disconnected" appears in the Status bar, please check the following:

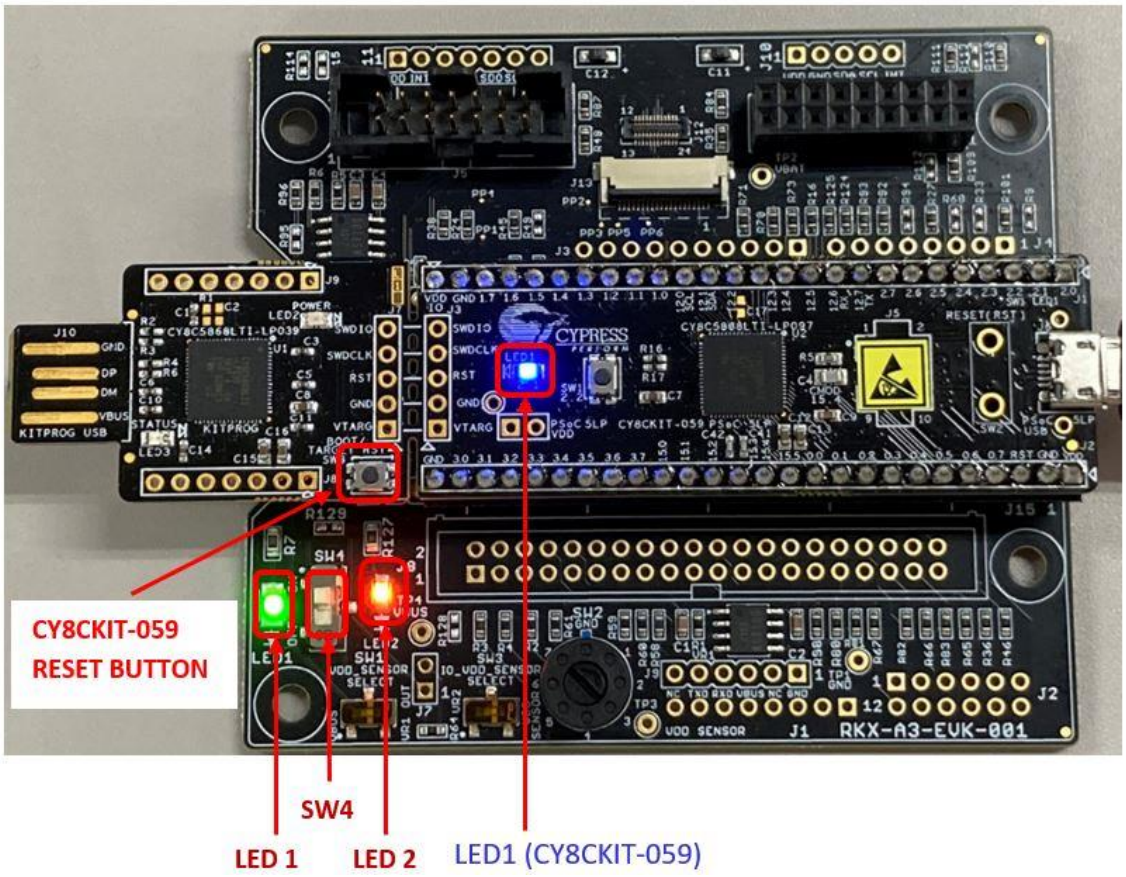


Figure 18. ROHM-EVK-001 status: LED1, SW4, LED2, LED1 (CY8CKIT-059) must be ON

1. The **blue** LED1 (CY8CKIT-059) should be constantly ON and not blinking (Figure 18)

- If the **blue** LED1 (CY8CKIT-059) is blinking, the CY8CKIT-059 is not programmed with the ROHM EVK FW. Please program the latest ROHM EVK FW. See (3.1 Firmware Update Procedure in ROHM EVK SW User's Guide) for details.
- If the **blue** LED1 (CY8CKIT-059) is turned OFF, please try the following:

  - Check that the micro-USB cable is securely connected to the CY8CKIT-059 Prototyping Kit and to the USB port on the PC.
  - Connect to a different USB port on the PC.
  - Replace the micro-USB cable with a new, high quality, USB certified cable.

2. The **green** LED1 (Figure 18).

  - If the **green** LED1 is OFF but the **blue** LED1 (CY8CKIT-059) is ON:
    - Ensure the CY8CKIT-059 Prototyping Kit is securely connected to the RKX-A3-EVK-001.

5.1.1.2 "Status: No data in stream" in ROHM EVK GUI SW Status Bar

This status means that the ROHM EVK GUI is not receiving any data from the device stream.

Figure 19. Status Bar, No data

NOTE: This error example issue is limited for RKX-EVK-001 connections.

If the connection status as indicated in the status bar says "No data in stream", the ROHM EVK GUI SW is not receiving any device data. To troubleshoot the issue, please check the following:

This example case is valid for RKX-EVK-001 with an EVB.

1. The orange LED2 should be ON (Figure 18). If the orange LED2 is OFF, check the following:

    - Check if the SW4 is in the ON position (i.e., moved up as seen from above) (Figure 18).
    - If the SW4 is ON, check that the 7-position rotary switch SW2 (Figure 4 and Table 1) is not stuck in the intermediate position. The switch can be turned with a small flat screwdriver (Table 1).

NOTE: When using the ROHM EVK GUI SW and the SW4 in the incorrect position, the Help menu item (1.3.9.4 About Host Adapter Board in ROHM EVK SW User's Guide) would still work properly because the information about the host adapter firmware is read out from the CY8CKIT-059 Prototyping Kit, not the sensor.

2. The orange LED2 is ON:

    - Check if the Stream selected corresponds to the sensor being tested (1.3.6 Stream – Menu in ROHM EVK SW User's Guide).

NOTE: The ROHM EVK GUI SW does not check the value of the WHO-AM-I register. Thus, while the stream for KX132-1211 would work for KX134-1211 and vice versa (although SI values in Raw Data setting will be incorrect), neither of those streams would work if KXTJ3 sensor is connected and vice-versa.

- Evaluation sensor board is securely connected to the ROHM EVK EVB either directly or with the ribbon cable (Figure 11).
- Press the CY8CKIT-059 Reset Button (Figure 18). Wait a few seconds. If the status changes to "Connected", press the "Streaming" button.
- Unplug the CY8CKIT-059 Prototyping Kit from the PC and plug it back in. Wait a few seconds. If the status changes to "Connected", press the "Streaming" button.
- Close the ROHM EVK GUI SW. Unplug the CY8CKIT-059 Prototyping Kit from the PC. Plug in the CY8CKIT-059 Prototyping Kit and restart the ROHM EVK GUI SW.

5.1.2 USB performance issues

- USB communication may miss device data samples – or the USB connection is lost randomly: Use good quality USB cables which are USB certified.
- USB performance is not good on all Windows machines. The root cause is yet unknown.

5.2 "EVK Mismatch" – state with the ROHM EVK GUI SW

This error means that the firmware version is not compatible with the board configuration.

NOTE: This error example issue is limited for RKX-EVK-001 connections.
For example, if the "EVK Mismatch" pop-up window appears you should check the "errorlog.txt".

If you can find following text in the errorlog.txt:
##########
[ERROR] EVK Mismatch - state detected:
"board_04ADC_10_RKX-EVK-001_spi_0" does not support the protocol version (2.0) of the firmware.
Supported protocol versions in board config: [
"2.4",
"3.1"
]
##########

5.3 ODR accuracy and Timestamping

- ROHM EVK GUI SW timestamping is done on a PC, and it is not accurate with high ODRs. This influences the delta time statistics.
- The real-time ODR shown in the ROHM EVK GUI SW may show fluctuating and be off the nominal ODR value. If the value is within ~10% of the nominal value, the behavior is normal and can be due to a combination of factors such as fluctuation of the actual sensor ODR due to internal oscillator jitter, as well as the timestamping error mentioned above. For cases where the ODR value is either significantly lower or higher than the nominal value, and "ODR has not reached the target value" pop-up window appears, see section (1.6.3 ODR has not reached the target value pop-up window in ROHM EVK SW User's Guide) for details.

5.4 .NET installation related problem

- If an error message shown in (Figure 20) appears, the Windows .NET installation is not up-to-date or working as expected. Please run the Windows update or install the required .Net version manually to resolve the issue.

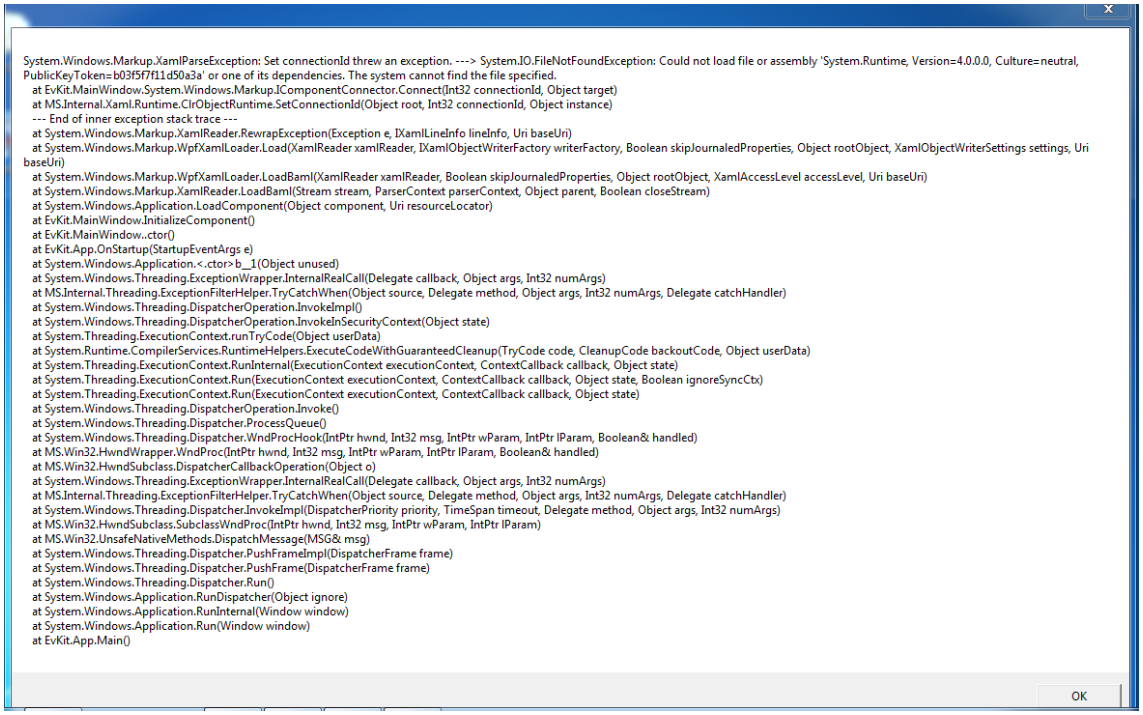


Figure 20.A Windows error message example which indicates that Windows .NET installation is out-of-date

5.5 Desktop shortcuts may not work properly

- Sometimes after installation the desktop shortcuts will not work. To overcome this, please uninstall and reinstall the application again to a different destination directory.

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