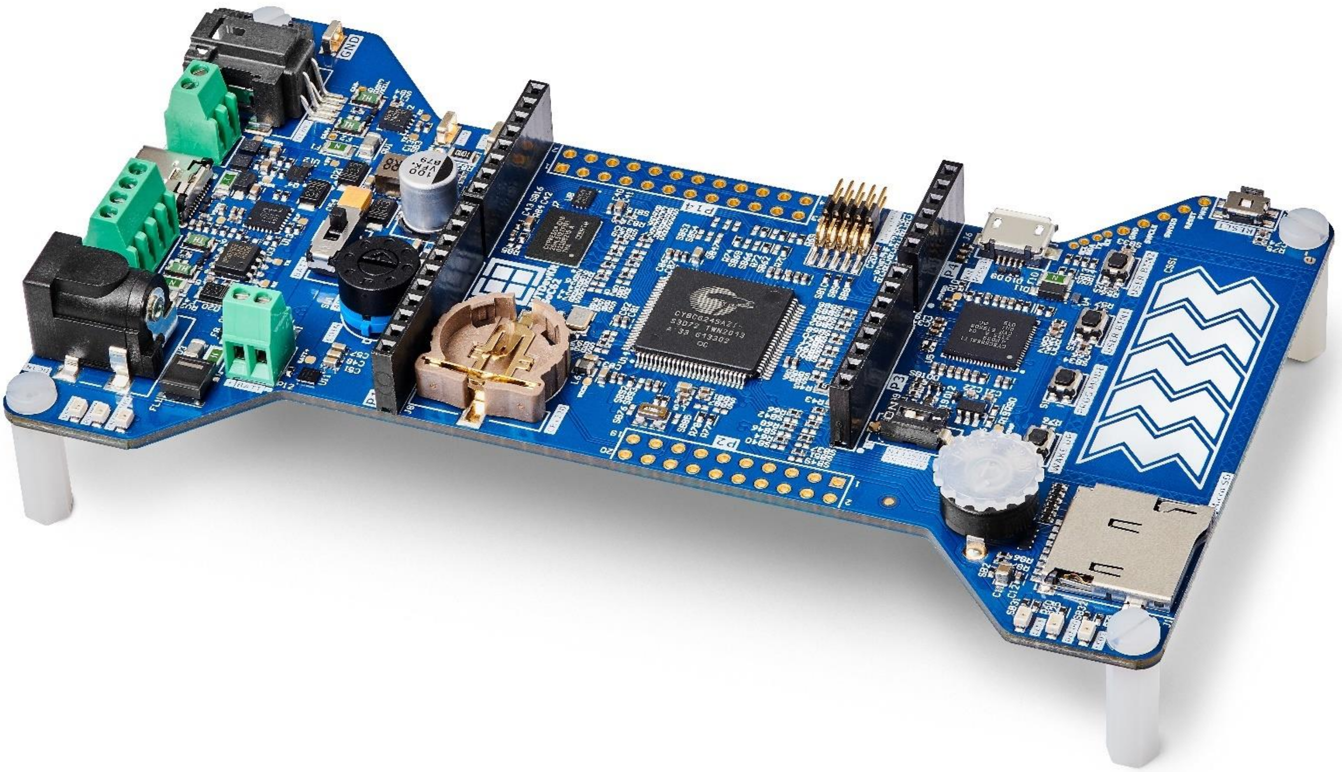
RDK2 User Manual



Versions

Version	Date	Rationale
0.1	September 20, 2021	First draft. Author: GDR
0.2	October 21, 2021	Pre-Release. Author: GDR
1.0	November 18, 2021	Release. Author: GDR
1.1	May 5, 2022	Known Issues added. Author: GDR
1.2	July 20, 2022	Power distribution diagram [Fig.4] extended. Author: GDR
2.0	February 16, 2023	The template is updated, the information about software and hardware is added. Author: KOA
2.1	May , 2023	Update of the software workflow. Author: KOA

Legal Disclaimer

The evaluation board is for testing purposes only and, because it has limited functions and limited resilience, is not suitable for permanent use under real conditions. If the evaluation board is nevertheless used under real conditions, this is done at one's responsibility; any liability of Rutronik is insofar excluded.

Table of Contents

Overview

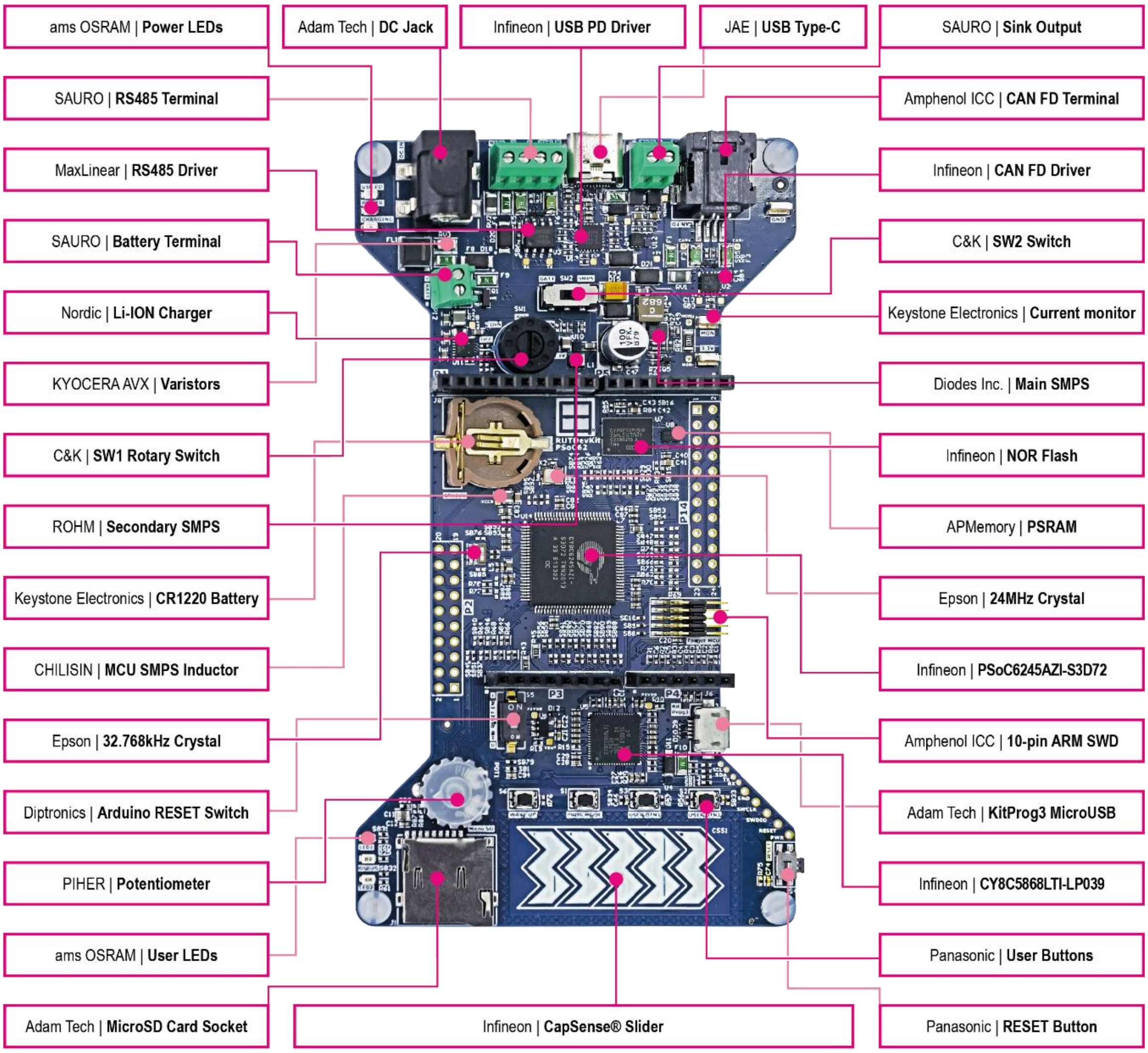
Features

RDK2 is a development board used by firmware and hardware designers to develop their products. RDK2 was designed by Rutronik to promote outstanding products selected only from their suppliers.

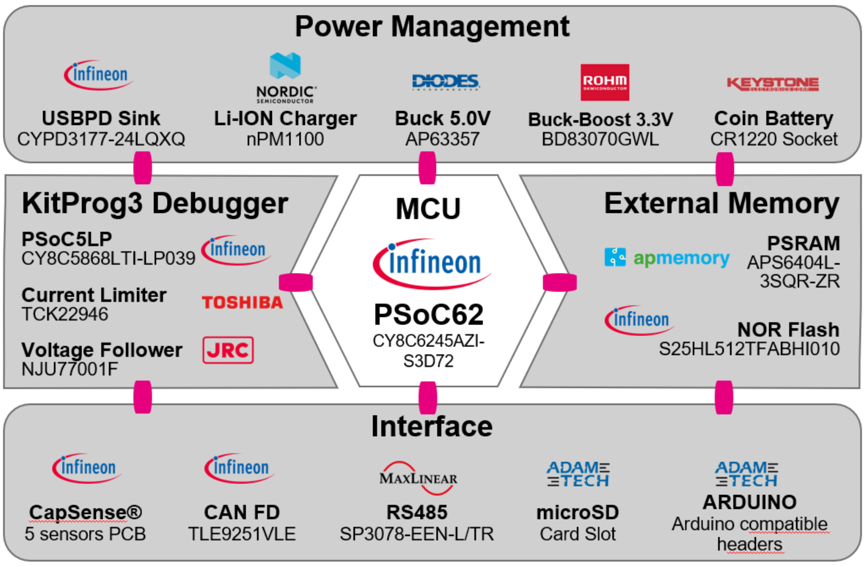
Key features of RDK2:

- Infineon (Cypress) CY8C6245AZI-S3D72 Cortex®-M0+ and Cortex®-M4F 512KB Flash 256KB SRAM high-performance, ultra-low-power microcontroller.
- On-board debugger KitProg3 with I2C and UART USB bridge.
- On-board capacitive slider based on CapSense® CSD, CSX technologies.
- APMemory External QSPI 64Mbit PSRAM Memory APS6404L-3SQR-ZR.
- Infineon External QSPI 512Mbit Semper NOR Flash S25HL512TFABHI010.
- Infineon (Cypress) Stand-alone USB Power Delivery Sink controller CYPD3177.
- Nordic Semiconductor Li-ION Battery charger with nPM1100.
- Switching mode power supplies AP63357 from Diodes Inc. and BD83070GWL from ROHM.
- JAE USB Type-C connector interfaces with the microcontroller.
- Infineon CAN FD driver TLE9251VLE.
- MaxLinear RS485 driver SP3078EEN-L/TR.
- ADAM-TECH MicroSD card socket.
- Keystone Electronics Corp. CR1220 coin battery socket for RTC and low power applications.
- Keystone Electronics Corp. current monitoring shunt resistor.
- Panasonic mechanical SMD tactile buttons and OSRAM SMD LEDs.
- All CY8C6245AZI-S3D72 GPIOs are available at P2 and P14 headers.
- TOSHIBA Power MOSFETs SSM6J507NU and current limiters TCK22946G.
- NJR low power amplifier NJU77001F.
- 10-pin Amphenol ICC SWD header for J-Link.
- AVX multilayer ceramic transient voltage suppressors.
- Passive components from Samsung EM, Yageo, ASJ.
- Arduino compatible headers from ADAM-TECH.
- Arduino IoT, RF shields optimized board shape.
- The USB cable for debugging from ASSMAN.

Component Placement



Block Diagram



Delivery Set

The delivery set of RDK2 includes:

- RDK2 development board.
- On-board debugger KitProg3 with I2C and UART USB bridge.
- CAN FD cable.
- USB Micro-B plug to USB-A plug cable to connect the board to PC.

Applicable Boards

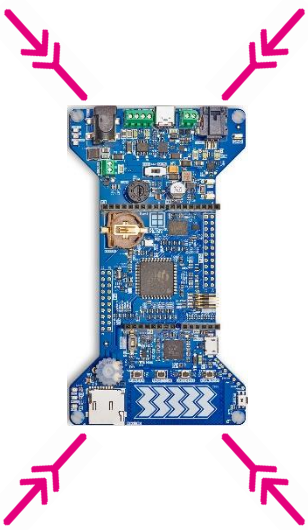
The following Rutronik System Solution boards are compatible with RDK2 and can be connected to it to provide the additional functionality.

CO2

Evaluation of CO_2, relative humidity and temperature sensors provided by Infineon and Sensirion.
More details see here.

HMS ANYBUS

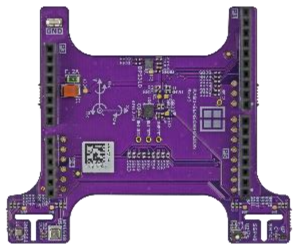
Testing the connectivity to all major fieldbuses and Industrial Ethernet networks and IoT standards.
More details see here.



Text to Speech

Testing Epson Text to Speech solution.
More details see here.

Sensor Fusion



Evaluation of sensors (pressure, indoor air quality, temperature, humidity, accelerometer and gyroscope) provided by Infineon, Sensirion and Bosch.
More details see here.

Hardware

Microcontroller

PSoC® 6 is an MCU platform built specially for Internet of Things applications.

Its 32-bit dual CPU includes:

- the main 150-MHz Arm® Cortex®-M4F CPU with single-cycle multiply, floating point, and memory protection unit (MPU);
- the secondary 100-MHz Cortex-M0+ CPU with single-cycle multiply and MPU.

The memory includes:

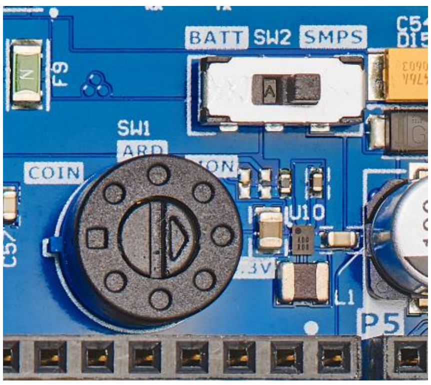
- 512 KB application flash, 32 KB auxiliary flash, and 32 KB supervisory flash; read-while-write support. Two 8 KB flash caches (one for each CPU).
- 256 KB SRAM with programmable power control and retention granularity.
- 64 KB ROM providing code for several system-level functions.
- One-time-programmable 1 Kb eFuse array.

CapSense is supported in PSoC 6 MCU through a CapSense sigma-delta (CSD) hardware block. It provides best-in-class signal-to-noise ratio, liquid tolerance, and proximity sensing. It enables dynamic usage of both self and mutual sensing.

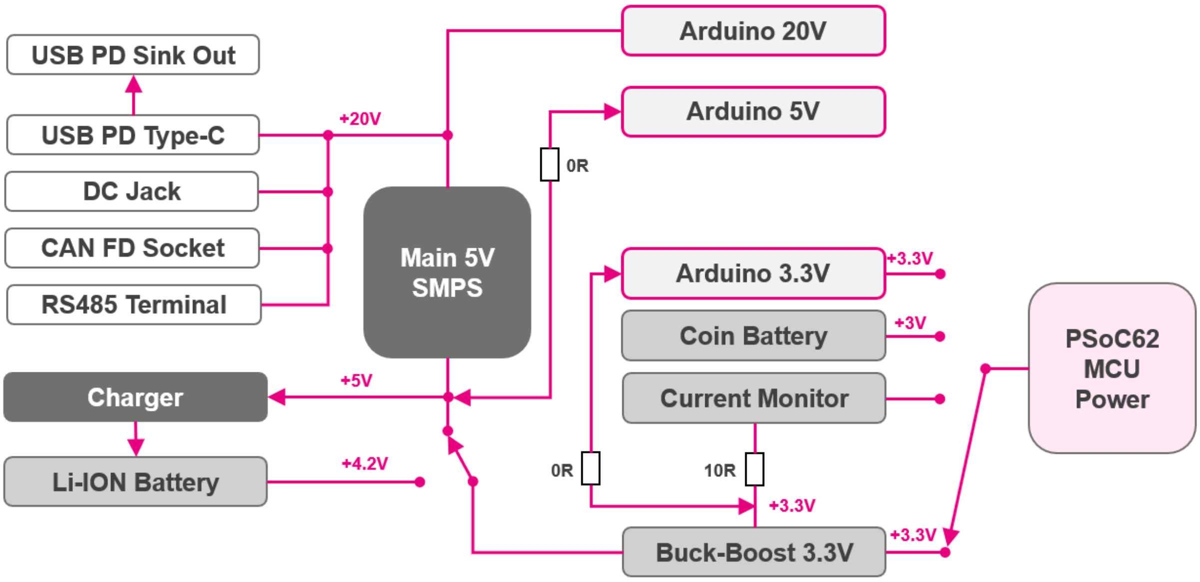
Power Sources

Six power sources are available in RDK2:

1. KitProg3 USB port.
2. 5V SMPS powered from CAN FD, RS485, DC Jack, and USB Type C interfaces.
3. CR1220 coin battery socket.
4. Arduino connectors – configured using R43 and R45 0R 0402 resistors.
5. Li-ion Battery.
6. Current monitor TP17, only if R82 is removed.



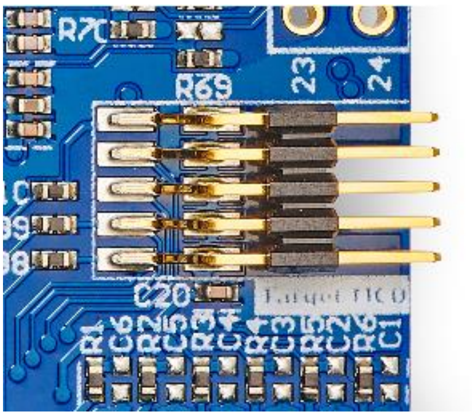
Using SW1 you can select between coin battery "**COIN**", Arduino headers "**ARD**", current Monitor "**MON**" and 3.3V SMPS "**3.3V**" power sources. With SW2 you can select **BATT** – Li-ION battery or 5V **SMPS** power sources. The available power sources are shown at the picture below.

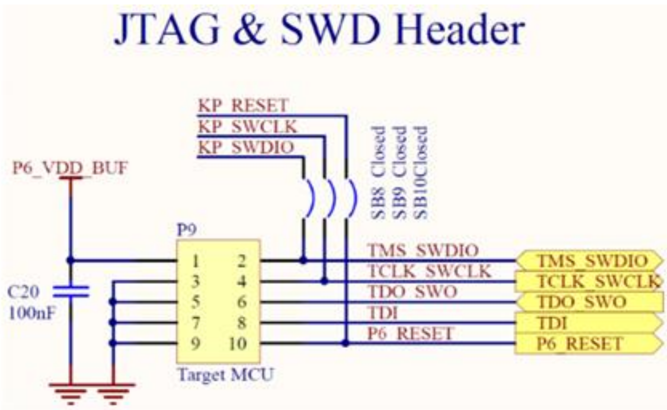


Power Distribution Diagram

Programming Using External Connector

Users may use third-party programming devices to connect the CY8C6245AZI-S3D72 target via the P9 SWD connector (10-pin, male, 1.27 mm pitch) that is shown below.

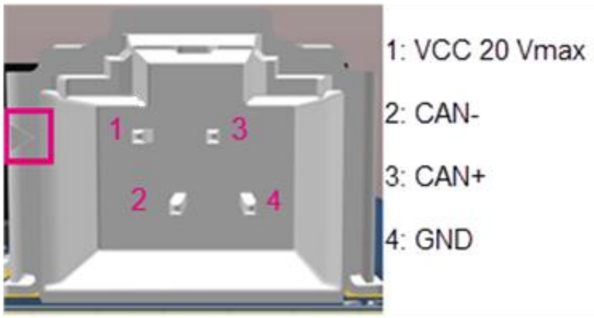




The onboard "KitProg3" debugger should not be powered while using an external JTAG connector.

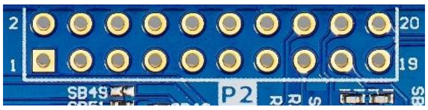
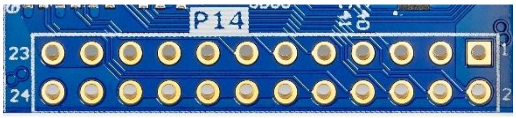
CAN FD Socket

Amphenol ICC Minitek MicroSpace™ provides a CAN FD connector (Part No.: 10142344-104KLF).



Spare GPIOs

All GPIOs of CY8C6245AZI-S3D72 MCU are available at sockets P2 and P14. Some may need to be configured using solder bridges.

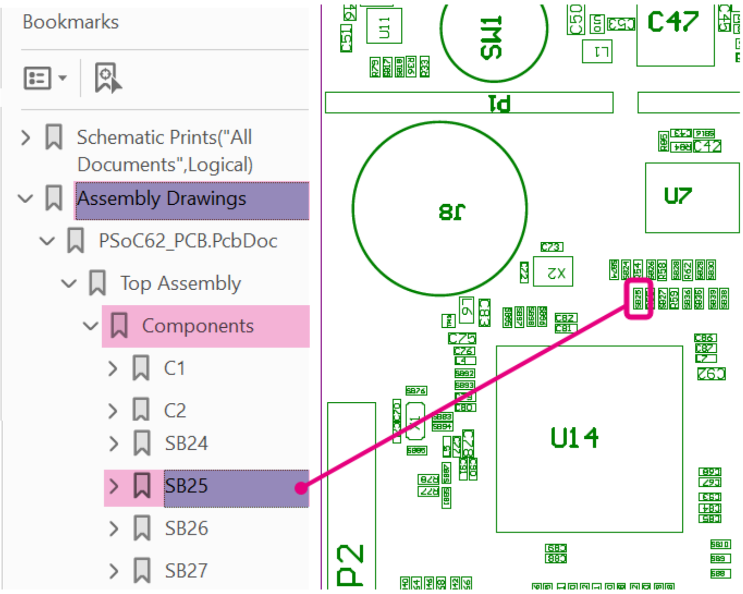
Socket P2 Pinout				Socket P14 Pinout			
							
Pin No.	Name	Name	Pin No.	Pin No.	Name	Name	Pin No.
1	P2.0	P2.4	2	1	P7.1	P9.2	2
3	P2.2	P2.3	4	3	P7.2	P9.0	4
5	P2.6	P2.1	6	5	P9.3	P7.7	6
7	P2.5	P11.6	8	7	P9.1	P7.3	8
9	P11.4	P11.2	10	9	P7.6	P7.0	10
11	P11.1	P11.3	12	11	P7.5	P5.0	12
13	P11.5	P11.7	14	13	P7.4	P6.2	14
15	P14.1	P14.0	16	15	P3.0	P6.6	16
17	P0.0	P0.1	18	17	P6.0	P5.1	18
19	P12.7	P12.6	20	19	P6.4	P6.3	20
				21	P3.1	P6.5	22
				23	P6.1	P6.7	24

Solder Bridges

Name	Circuit	Default	Name	Circuit	Default
SB1	Potentiometer output signal with P10.4	Closed	SB27	PSoC6 P11.4 with P2 header GPIO 9	Opened
SB2	Power for the microSD card interface	Closed	SB28	PSoC6 P11.3 with P2 header GPIO 12	Opened
SB3	+5V Power for the CAN FD driver	Closed	SB29	PSoC6 P11.1 with P2 header GPIO 11	Opened
SB4	+3.3V Power for the CAN FD driver	Closed	SB30	Flash SSEL Signal	Closed
SB5	120 Ohm termination for CAN FD connector	Opened	SB31	LED1 with PSoC6	Closed
SB6	Power for the RS485 Driver	Closed	SB32	LED2 with PSoC6	Closed
SB7	120 Ohm termination for RS485 terminal	Opened	SB33	USER_BTN2 with PSoC6	Closed
SB8	SWDIO signal with KitProg3	Closed	SB34	USER_BTN1 with PSoC6	Closed
SB10	RESET signal with KitProg3	Closed	SB35	PSoC6 P11.2 with P2 header GPIO 10	Opened
SB11	KitProg3 I2C SCL with PSoC6 MCU I2C SCL	Closed	SB36	PSRAM SSEL Signal	Closed
SB14	KitProg3 UART RX with PSoC6 MCU UART TX	Closed	SB37	PSoC6 P2.0 with P2 header GPIO 1	Opened
SB15	Power supply for the PSRAM IC	Closed	SB38	Arduino IO 4 with PSoC6	Closed
SB16	Power supply for the NOR Flash IC	Closed	SB39	PSRAM RESET signal	Opened
SB17	PSoC6 MCU I2C SDA with charger SDA	Closed	SB40	PSoC6 P2.1 with P2 header GPIO 6	Opened
SB18	PSoC6 MCU I2C SCL with charger SCL	Closed	SB41	PSoC6 P2.2 with P2 header GPIO 3	Opened
SB19	Target voltage follower input isolation	Closed	SB42	PSoC6 P2.3 with P2 header GPIO 4	Opened
SB20	3.3V SMPS Enable with VIN	Closed	SB43	PSoC6 P2.4 with P2 header GPIO 2	Opened
SB21	3.3V SMPS Enable with external signal (PMIC)	Opened	SB44	PSoC6 P9.0 with P14 header GPIO 4	Opened
SB22	PSoC6 MCU I2C SDA with USB PD IC SDA	Closed	SB46	PSoC6 P2.6 with P2 header GPIO 5	Opened
SB23	PSoC6 MCU I2C SDL with USB PD IC SDL	Closed	SB47	PSoC6 P9.1 with P14 header GPIO 7	Opened
SB24	PSoC6 P11.7 with P2 header GPIO 14	Opened	SB49	PSoC6 P2.6 with P2 header GPIO 5	Opened
SB25	PSoC6 P11.6 with P2 header GPIO 8	Opened	SB50	PSoC6 P9.2 with P14 header GPIO 2	Opened
SB26	PSoC6 P11.5 with P2 header GPIO 13	Opened	SB51	microSD Card Detect signal	Closed

SB52	5V SMPS Power Good signal	Opened	SB77	PSoC6 P6.3 with P14 header GPIO 20	Opened
SB53	PSoC6 P9.3 with P14 header GPIO 5	Opened	SB78	RS485 DE signal	Closed
SB54	USB PD IC Interrupt signal	Opened	SB79	Potentiometer VDD terminal	Closed
SB55	PSoC6 P3.0 with P14 header GPIO 15	Opened	SB80	PSoC6 P6.4 with P14 header GPIO 19	Opened
SB56	PSoC6 UART RX signal	Closed	SB81	PSoC6 P14.0 with P2 header GPIO 16	Opened
SB57	PSoC6 P3.1 with P14 header GPIO 21	Opened	SB82	JTAG TDO signal	Closed
SB58	PSoC6 UART TX signal	Closed	SB83	WCO Input signal	Closed
SB59	PSoC6 P7.0 with P14 header GPIO 10	Opened	SB84	PSoC6 P6.5 with P14 header GPIO 22	Opened
SB60	PSoC6 P5.0 with P14 header GPIO 12	Opened	SB85	PSoC6 P0.1 with P2 header GPIO 18	Opened
SB61	CAN FD RX signal	Closed	SB86	JTAG TDI signal	Closed
SB62	PSoC6 P7.3 with P14 header GPIO	Closed	SB87	PSoC6 P14.0 with P2 header GPIO 16	Opened
SB63	PSoC6 P5.1 with P14 header GPIO	Opened	SB88	PSoC6 P6.6 with P14 header GPIO 16	Opened
SB64	CAN FD TX signal	Closed	SB89	JTAG TMS, SWDIO signal	Closed
SB65	PSoC6 P7.4 with P14 header GPIO 8	Opened	SB90	PSoC6 P6.7 with P14 header GPIO 24	Opened
SB66	PSoC6 P7.5 with P14 header GPIO 11	Opened	SB91	JTAG TCLK, SWCLK signal	Closed
SB67	PSoC6 P7.6 with P14 header GPIO 9	Opened	SB92	PSoC6 Backup Voltage Input	Closed
SB68	PSoC6 P6.2 with P14 header GPIO 14	Opened	SB93	Coin Battery with PSoC6 Backup Voltage Input	Opened
SB69	PSoC6 P7.7 with P14 header GPIO 6	Opened	SB94	WCO Output signal	Closed
SB70	CAN FD Driver Stand-By control input	Closed	SB95	PSoC6 P12.7 with P2 header GPIO 19	Opened
SB71	PSoC6 P6.0 with P14 header GPIO 17	Opened	SB96	PSoC6 P12.6 with P2 header GPIO 20	Opened
SB72	RS485 RX signal	Closed	SB97	ECO Input Signal	Closed
SB73	PSoC6 P6.1 with P14 header GPIO 23	Opened	SB98	ECO Output Signal	Closed
SB74	PSRAM Interrupt signal	Opened	SB99	Voltage Divider Enable signal	Closed
SB75	RS485 TX signal	Closed	SB100	Voltage Divider ADC signal	Closed
SB76	PSoC6 P0.0 with P2 header GPIO 17	Opened			

The locations of the solder bridges can be found in 3D model and assembly drawing of RDK2.



How to find a component on the layout

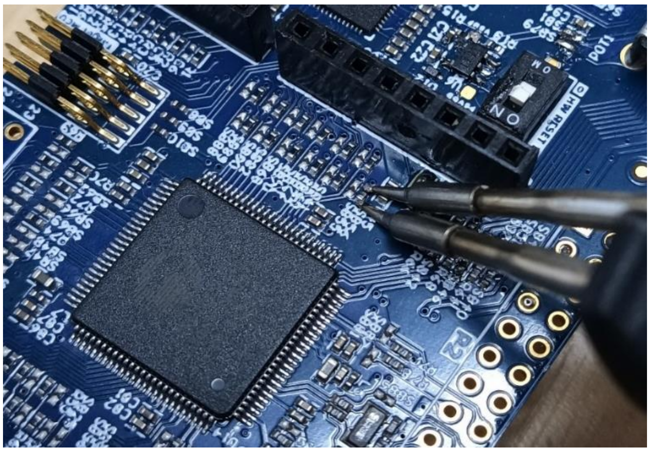
Fuses

Resettable and non-resettable fuses are used for this project. In case the fuses are not fit for the user’s final application the user must change the fuses by unsoldering and soldering new ones that meet the requirements. RDK2 Rev1 fuses list:

1. **F1, F4, F8, F9, F10** “High I²t Chip” 2A, 63V 1206 SMD. Part No.: CC12H2A-TR.
2. **F2, F3, F5, F6** “Resettable PTC” 50mA 60V 1206 SMD. Part No.: PTS120660V005.
3. **F7** “High I²t Chip” 5A, 32V 1206 SMD. Part No.: CC12H5A-TR.

Changing the Fuses or Solder Bridges

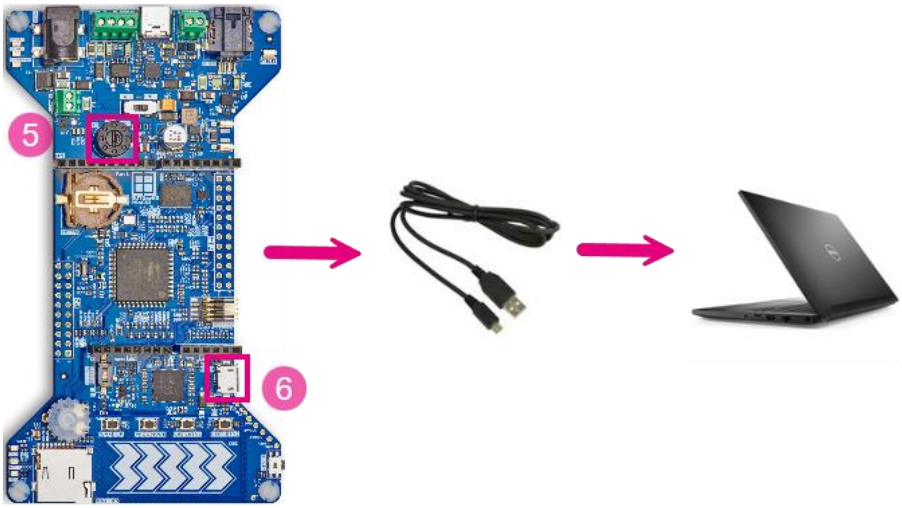
Some of the components might be hard to access, therefore the SMD „Chipping Tool“ is recommended to use for SMD solder bridges or fuses soldering on the RDK2 development board.



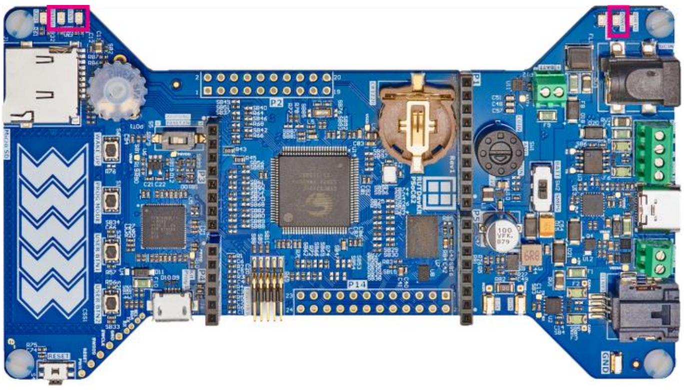
Software and Firmware

Getting Started

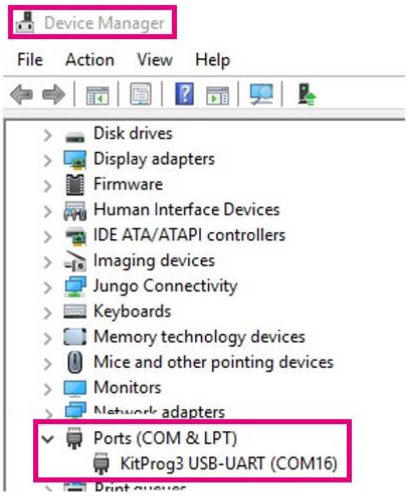
1. Register or/and login at Infineon website (myInfineon tab). License generation may take up to several days.
2. Download and install the latest version of ModusToolbox™ software.
3. Get all the supported firmware examples including the BSP from RDK2 homepage. Press the „Download Area“ and login/register to access the data. https://www.rutronik.com/devkit-login
4. *[Optional]* Download and install your preferred terminal emulator, for example: PuTTY, Tera Term, etc.
5. Ensure switch SW1 is set to „3.3V“
6. Connect your board (micro USB socket with a marking “KitProg3”) and a Windows based PC via USB Cable – A to Micro B.



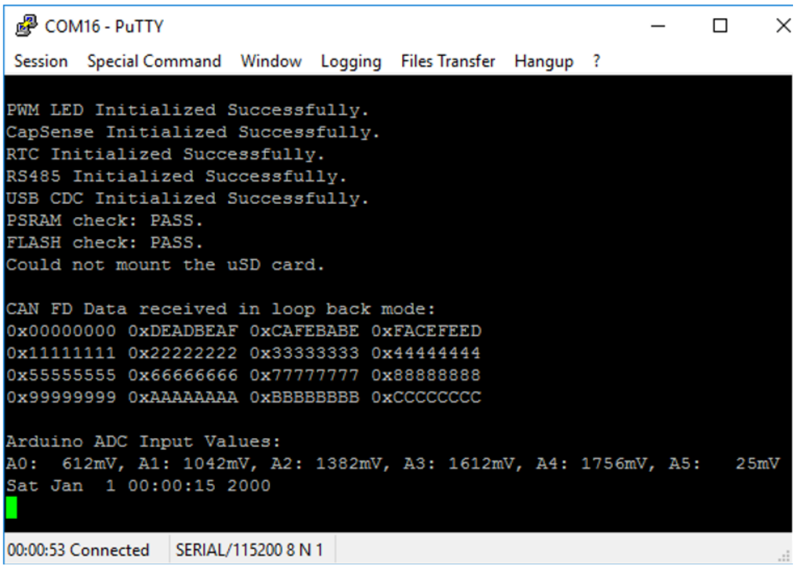
7. Check if RDK2 is ready. Its “POWER” and “DEBUG” LEDs should shine constantly. The LED1 reacts to the touch on the slider.



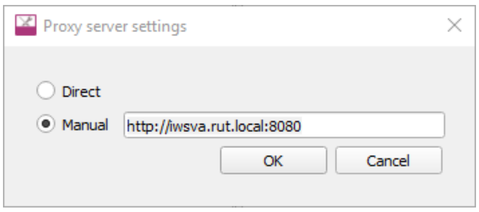
8. The “KitProg3” port must be seen in MS Windows Device Manager window.



9. All new RDK2 boards print out the hardware test results to the KitProg3 serial terminal (115200 bit/s) as it’s shown below. If it doesn’t happen please press RESET on the RDK2.

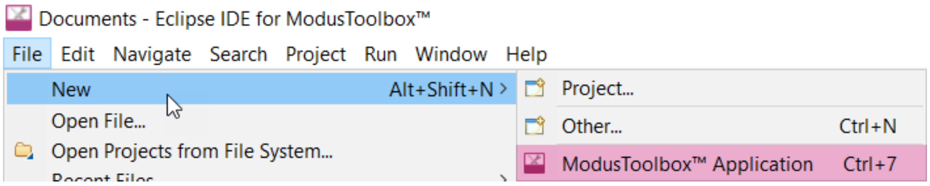


10. *[For Rutronik laptops only]* Run **File – New – ModusToolbox Application – Settings – Proxy server settings** and enter the proxy address: http://iwsva.rut.local:8080

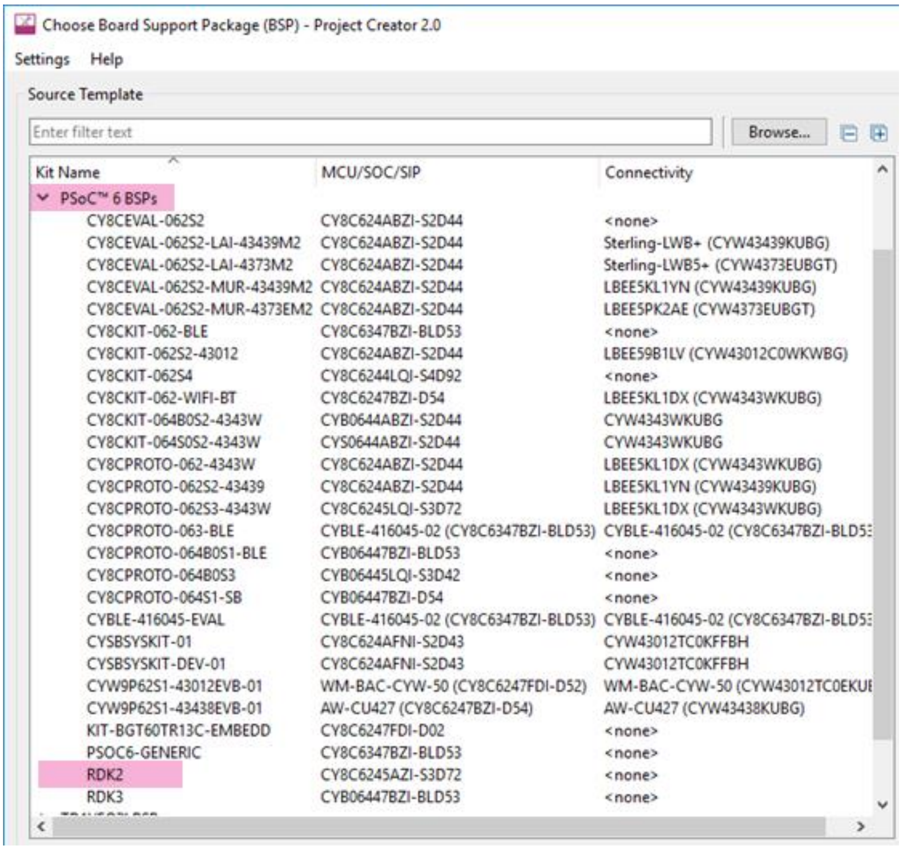


Creating New Project

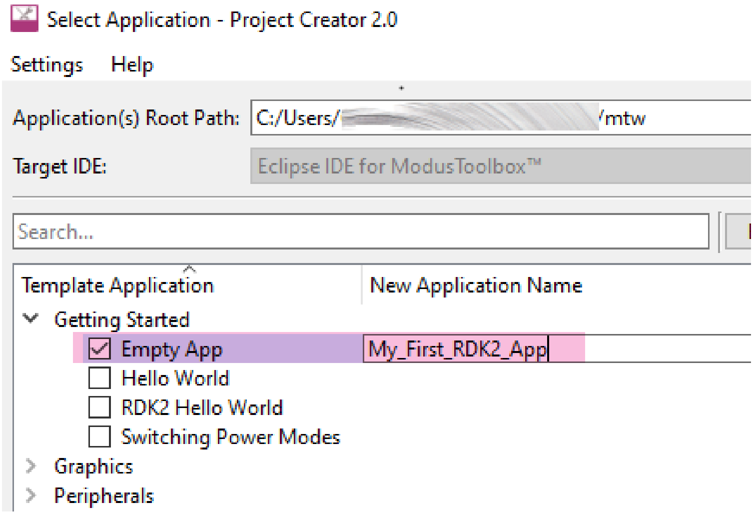
1. Select **File – New – ModusToolbox Application**.



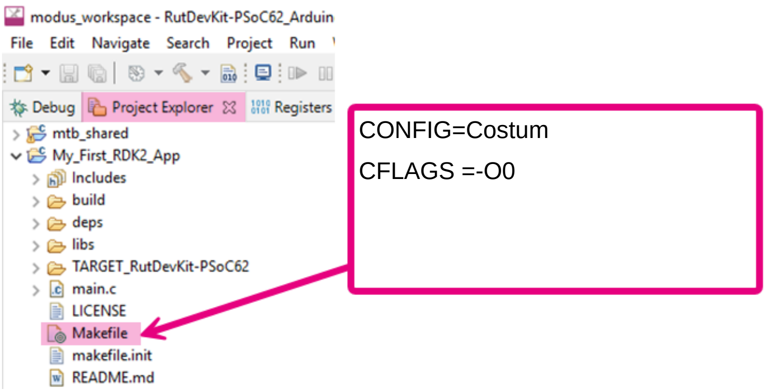
2. Select the **RDK2** BSP. It is in **PSoC™ 6 BSPs** list, press **Next** after that.



3. Open **Getting Started** block, check **Empty App**, insert the **New Application Name** and click **Create**. Wait for a while until project creation is finished.

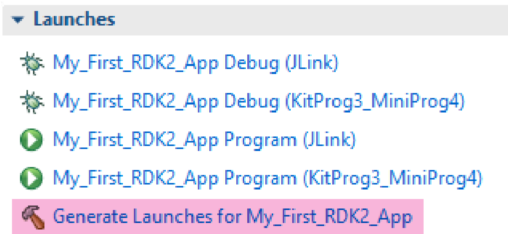


4. Modify Makefile as it’s shown below to disable the code optimisation.

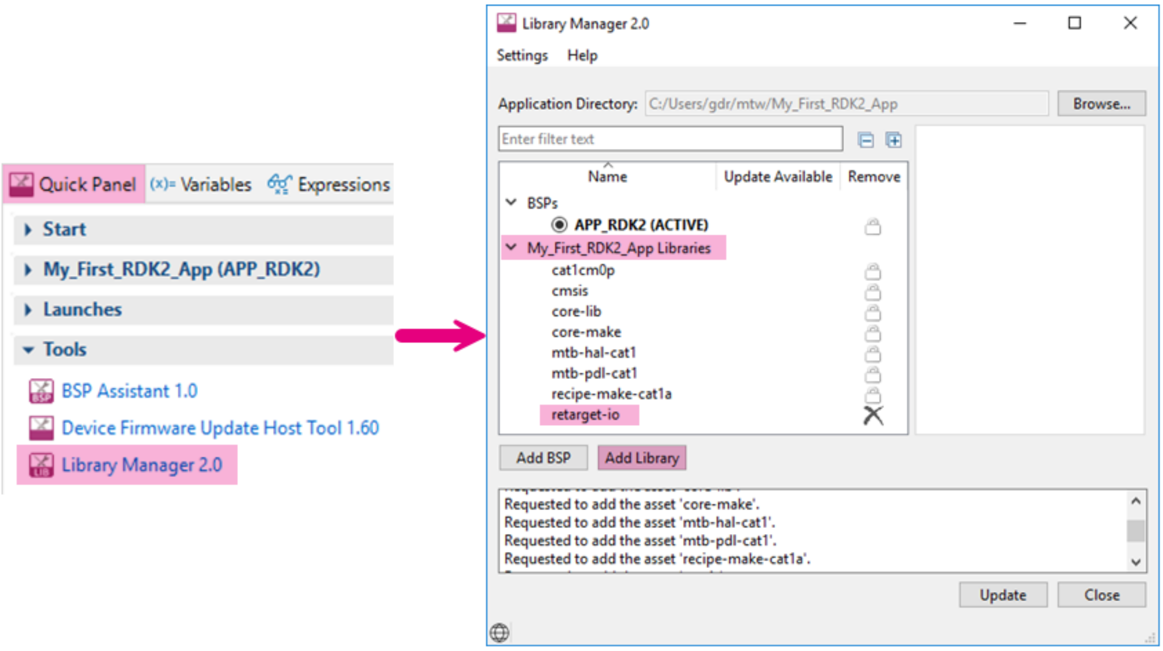


*It is required only for debugging, learning and demo purposes. Normally, code optimisations should never be disabled.

5. Press **Generate Launches for <project name>** in **Quick Panel.**



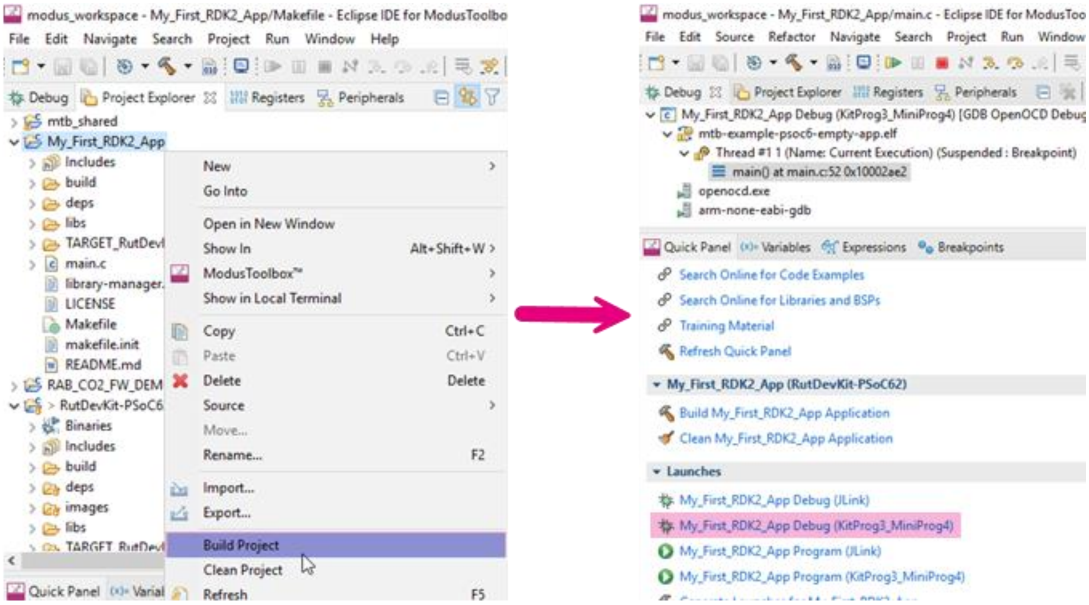
6. Open **Library Manager**, select “retarget-io” library and press **Update**.



7. Copy, paste and save the code example from this file to the “main.c” file.

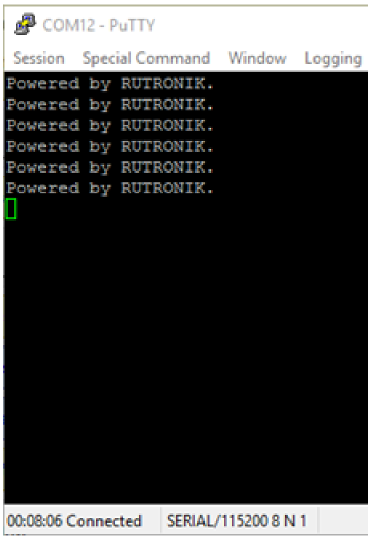
```
#include "cy_pdl.h"
#include "cyhal.h"
#include "cybsp.h"
#include "cy_retarget_io.h"
int main(void)
{
    cy_rslt_t result;
    /* Initialize the device and board peripherals */
    result = cybsp_init() ;
    if (result != CY_RSLT_SUCCESS)
    {
        CY_ASSERT(0);
    }
    __enable_irq();
    /*Initialize LED1*/
    result = cyhal_gpio_init( LED1, CYHAL_GPIO_DIR_OUTPUT, CYHAL_GPIO_DRIVE_STRONG, CYBSP_LED_STATE_OFF);
    if (result != CY_RSLT_SUCCESS)
    {CY_ASSERT(0);}
    /*Enable debug output via KitProg UART*/
    result = cy_retarget_io_init( KITPROG_TX, KITPROG_RX, CY_RETARGET_IO_BAUDRATE);
    if (result != CY_RSLT_SUCCESS)
    {CY_ASSERT(0);}
    printf("\x1b[2J\x1b[;H");
    for (;;)
    {
    /*Delay 1000 milliseconds*/
    CyDelay(1000);
    printf("Powered by RUTRONIK.\r\n");
    cyhal_gpio_toggle(LED1);
    }
}
```

8. **Build** and **Debug** the active project.

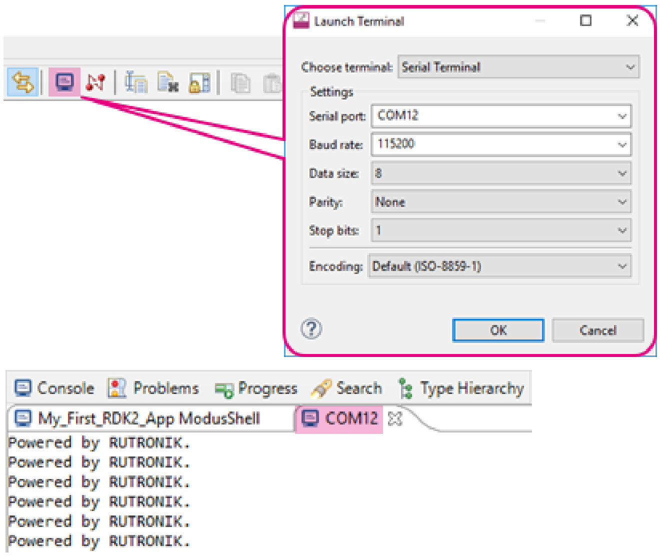


9. The final result is a blinking LED1 on the RDK2 board and text on the terminal window.

PuTTY Terminal

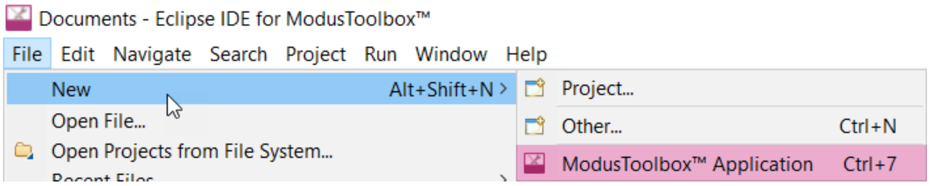


ModusToolbox Terminal

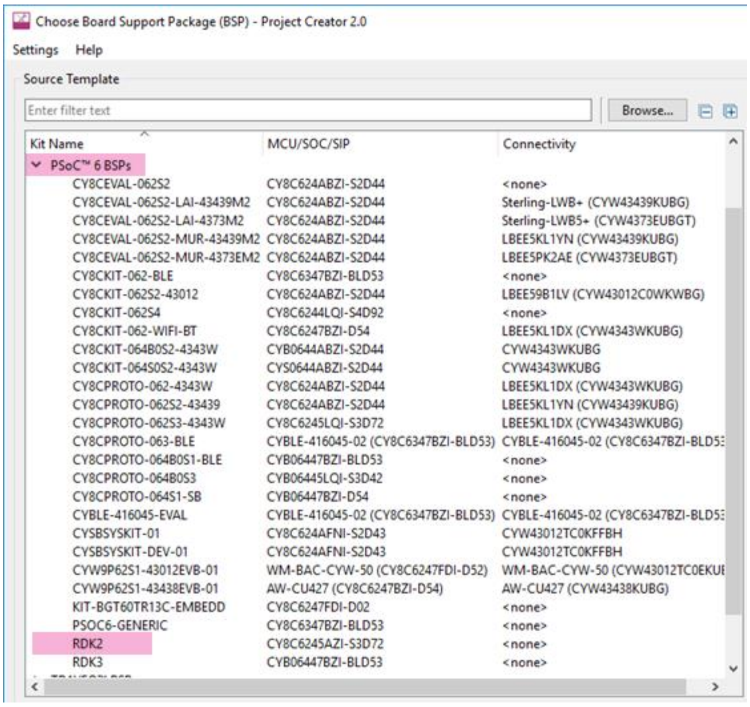


Running Existing Project

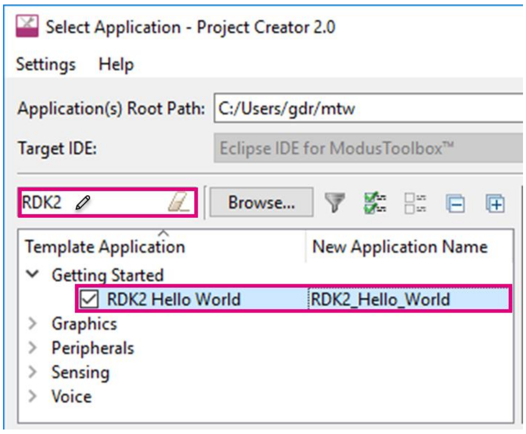
1. Select **File – New – ModusToolbox Application**.



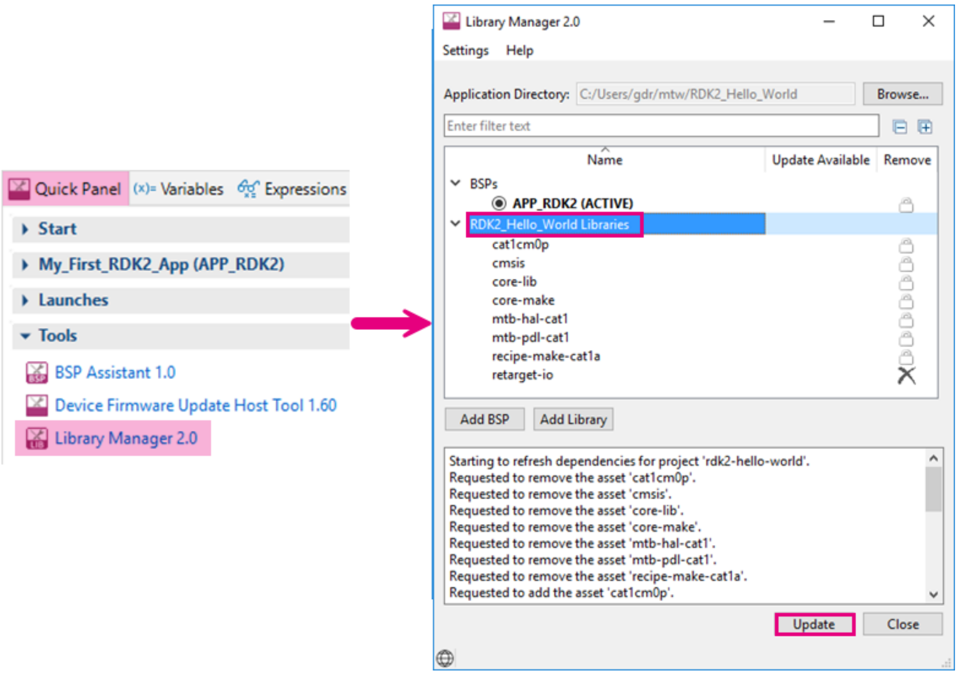
2. Select the **RDK2** BSP. It is in **PSoC™ 6 BSPs** list, press **Next** after that.



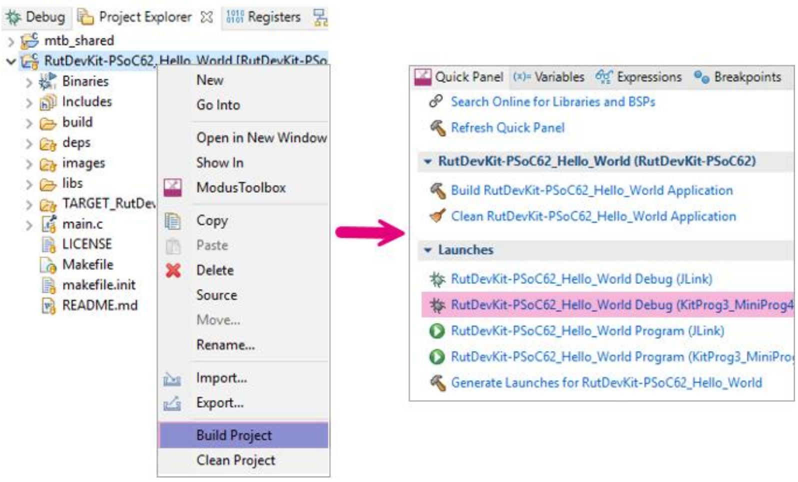
3. Type *RDK2* in the search field. Select the example from the list. Press **Create**.



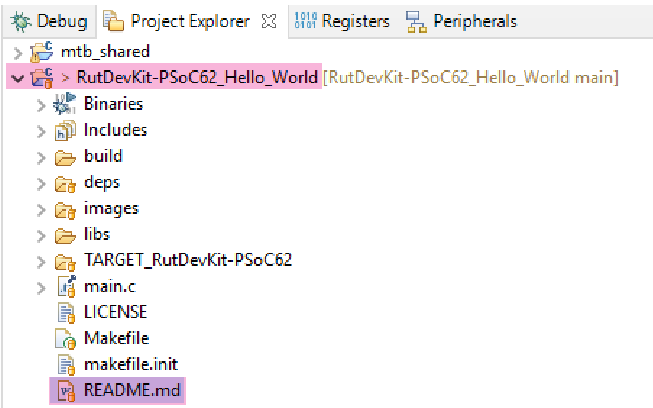
4. Before starting the software, we have to make sure that all libraries are up to date, for this please select **Library Manager** in the **Quick Panel** and click **Update**.



5. Select the project (for example, “RutDevKit-PSoC62-Hello_World”). Build and debug it.



6. Check README.md file before starting to explore the code example. You may find important hints and other information that are needed to have firmware running properly.



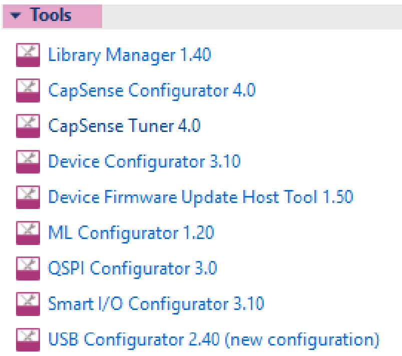
Firmware Examples

All these examples can be found in the Download Area at RDK2 page.

RDK2 BSP	This project is needed as a board support package while creating a new project with the RDK2 development kit.
Hello World	This example is an introduction to the basic components of the board: LEDs, Buttons, and KitProg3 UART for debugging.
Arduino ADC DMA	This example demonstrates how to use the PDL library to measure all the ADC channels on the Arduino ADC header.
Arduino ADC HAL	This example demonstrates how to use the HAL library to measure all the ADC channels on the Arduino ADC header.
CAN FD Test	This example demonstrates how to use the PDL library to send and receive CAN FD packages while in external loop mode.
CapSense CSD Slider	This example demonstrates how to use the onboard slider configured in CSD mode.
I2C Scanner	This application is used to find all the devices connected to the I2C.
QSPI Semper NOR Flash XIP	This example demonstrates how to use the serial flash library and XIP (execute-in-place) feature.
QSPI APMemory PSRAM Dynamic Allocation	This example demonstrates how to configure and use the PSRAM APS6404L-3SQR-ZR with standard dynamic memory allocation functions such as malloc() etc.
QSPI APMemory PSRAM XIP	This example demonstrates how to configure and use PSRAM APS6404L-3SQR-ZR in XIP mode.
RS485 Modbus	This example demonstrates the RS485 interface capabilities using the Modbus protocol.
RTC Hibernate	This example demonstrates one of the low power modes: hibernation. RTC alarm is used as a wake-up source.
USB Power Delivery Control	This example demonstrates how to access and control the CYPD3177 power delivery, sink controller.
microSD Card FAT	This example demonstrates how to access microSD cards using a FAT file system.
USB Type-C CDC Test	This example is used for testing the USB port and demonstrates the CDC device software features.

Useful Links and Tools

1. **Peripheral Driver Library API**: https://infineon.github.io/psoc6pdl/pdl_api_reference_manual/html/index.html
2. **Hardware Abstraction Layer API**: https://infineon.github.io/psoc6hal/html/index.html
3. **ModusToolbox Tools:** all tools are very useful and we recommend using them in your work.



Application Examples

4D Systems GEN4-FT812-43-T Display Demo

This example is for introduction to the 4D Systems GEN4-FT812-43T 4.3“ display with resistive touch.

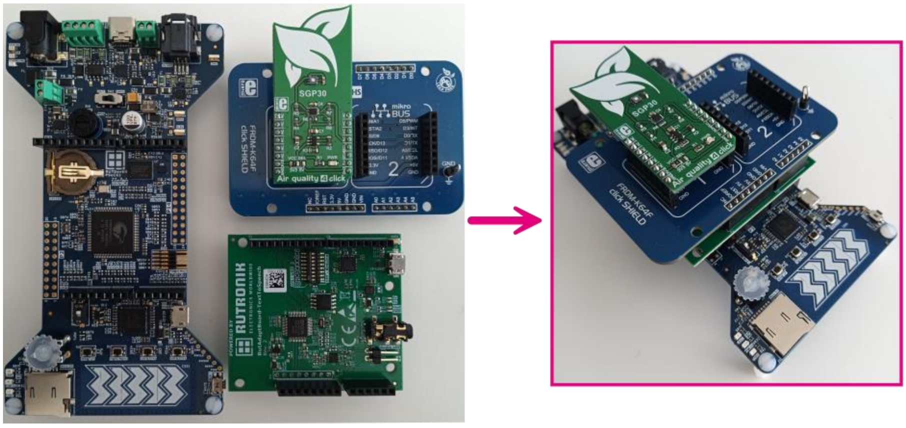
The display is driven using an SPI interface therefore the adapter for Arduino headers is needed. The demo application has static display objects and rotating an image using EVE capabilities. The image rotation may be started or stopped using a button on the screen.

4D Systems SK-GEN4-43DCT-CLB Display Demo

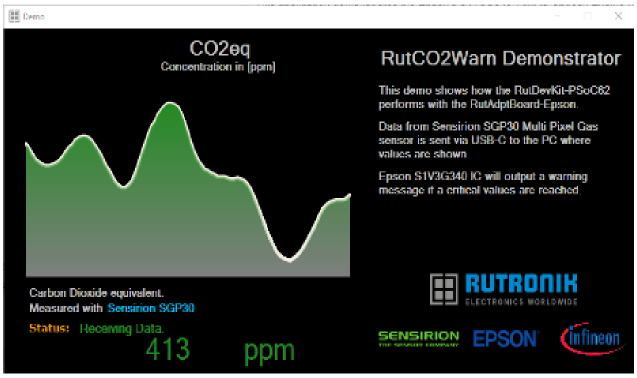
This example is for introduction to the 4D Systems „gen4-uLCD-43DCT-CLB“ 4.3“ display module with capacitive touch. The display is controlled using the UART interface. The SGP30 sensor attached to the I2C is needed to have this demo working. The demo application has a gauge and a scope that represents CO2 equivalent concentration values in ppm.

The CO^2 Alarm Application

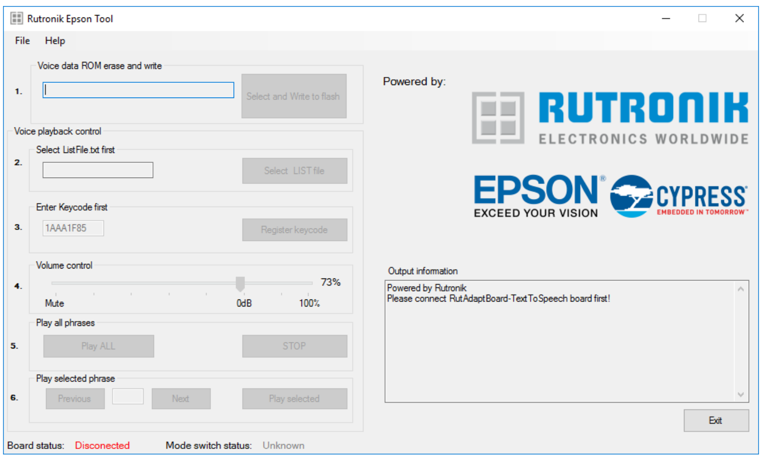
This application demonstrates the Epson's S1V3G340 Text-to-Speech Engine IC and Sensirion's SGP30 Air Quality sensor capabilities.



The firmware example connects with the Windows OS application via USB Type-C as a "Generic HID" device and represents the carbon dioxide equivalent values in ppm that are read from the SGP30 sensor.

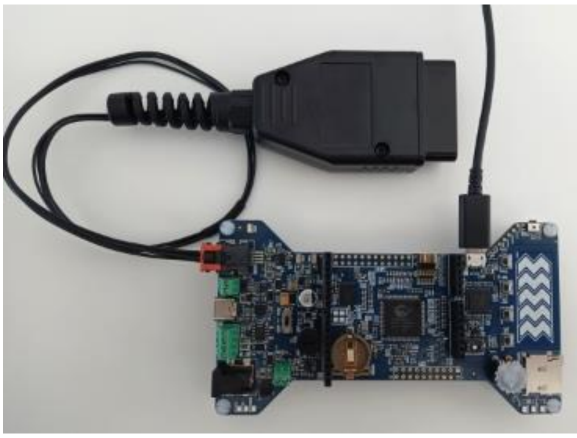


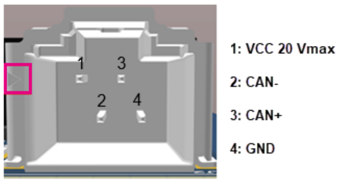
The Text-to-Speech IC is used for audible voice announcements. The LED1 on the RDK2 board will be blinking if the USB HID connection is established and active. A new RutAdaptBoard-TextToSpeech board has to be programmed with audio files using "Rutronik Epson Tool" that are already prepared and provided with the RDK2 RutCO2Alarm project.

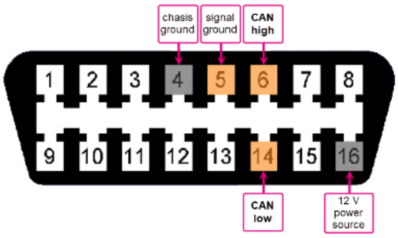


The OBD-II Test Application

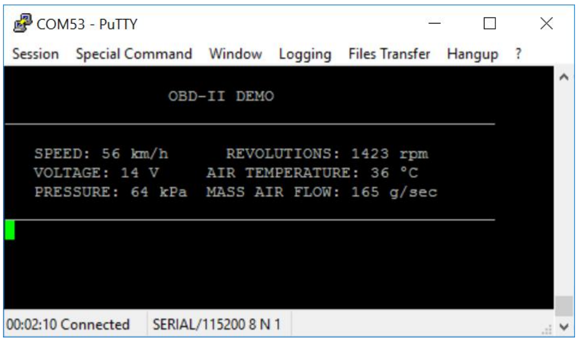
This application is intended to be used as a reference firmware example for the developers who need to quick-start with PSoC62 and CANFD OBD-II protocol.







The firmware example uses KitProg3 Debug UART for debugging output. Some of the most common OBD-II PIDs are presented once per second: Vehicle speed (0x0D), Engine speed (0x0C), Control module voltage (0x66), Intake air temperature (0x0F), Intake manifold absolute pressure (0x0B), Mass airflow sensor air flowrate (0x10).



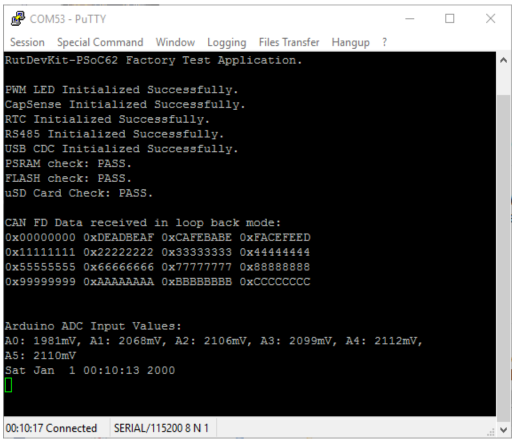
The OBD-II Turbocharger Monitor Application

This example is a practical implementation using 4D Systems "GEN4-FT812-43T" display for representing the vehicle's parameters gathered over the OBD cable using the OBD-II protocol.

The OBD cable and SPI adapter are needed for this application to run. The demo application has a gauge that represents turbocharger boost and other values (battery voltage, engine speed, MAP, air intake temperature, MAF) are represented together with icons that are sensitive for touching and can be enabled or disabled when touched.

RDK2 (Factory) Production Firmware

This firmware example is pre-programmed in a factory and used to test most of the peripherals on board. The firmware checks external PSRAM, Flash, and micro SD Card memory. The debug information is available on the KitProg3 UART port. The RS485 and USB peripherals might be tested as they are echoing every symbol sent through the terminal. The CAN FD is tested once in loop-back mode. The CapSense is initialized and operational after the tests are complete and can be tested manually as it controls the LED1 brightness. The CapSense Tuner is also available via KitProg3 I2C. All the Arduino ADC inputs are shown as well. The date and time shown in the terminal window will notify if the RTC peripheral is functional.



After the initial test is complete the LED1 will shine green and the brightness will depend on the CapSense slider position. If the test fails due to some peripheral faults, the LED2 stays on indefinitely.

Production Data

Schematics, Mechanical Layout and Prints

You'll find the schematics, mechanical layout and prints for RDK2 here.

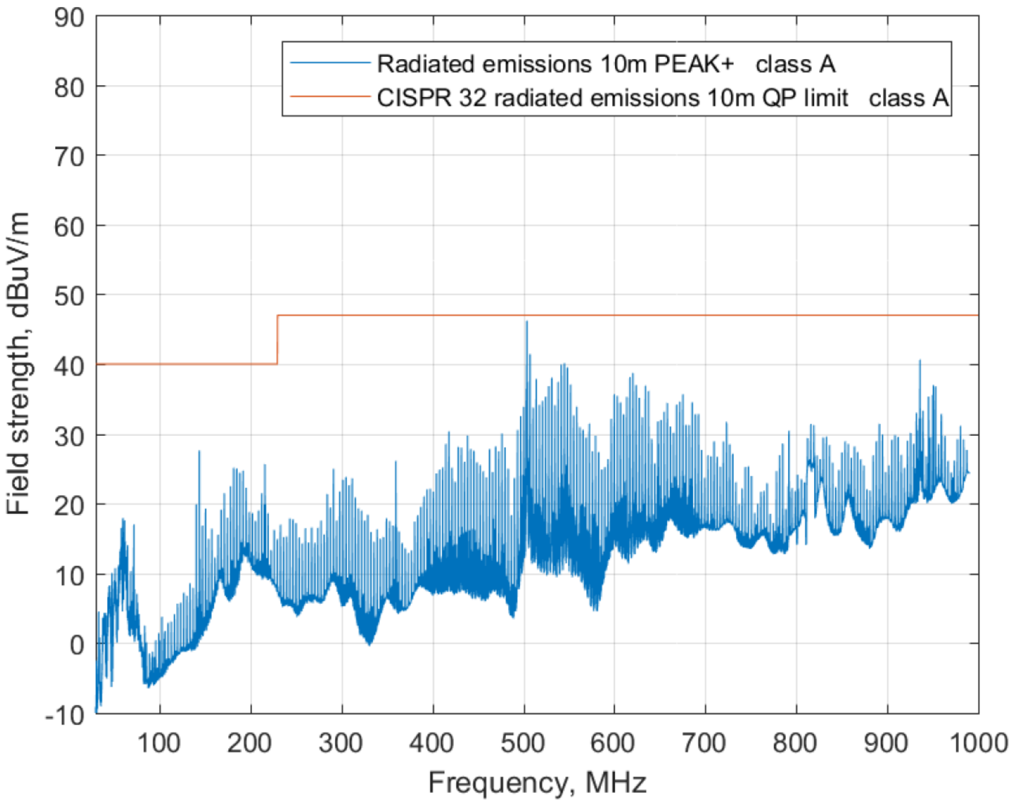
BOM

You'll find the BOM for RDK2 here.

Electromagnetic Compatibility

RDK2 was tested for electromagnetic disturbances and electromagnetic immunity and meet the requirements as in normative documents listed below:

Electromagnetic disturbances:
Radiated disturbance to 1 GHz
IEC 61000-4-20

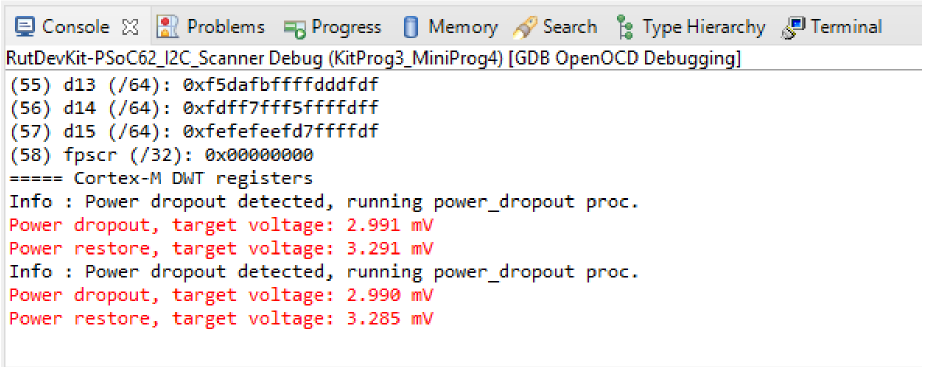


Radiated disturbances while running PSRAM Test

Known Issues

I2C Issue

The power dropout warning appears in the ModusToolbox console window while debugging and working with the I2C interface.



The cause: the 4.7K pull-up resistors R21 and R24 draw too much current from the voltage-follower/buffer U6 and the KitProg3 target voltage divider gets a false low voltage signal. Actual MCU voltage is not affected and remains stable all the time.

How to fix: though this false alarm cannot be disabled from ModusToolbox IDE it can be fixed by changing the pull-up resistors R21 and R24 to much higher values like 18K or could be unsoldered completely if the onboard USB Power Delivery controller CYPD3177 is not used with I2C communications.