

## Renesas RA Family

# EK-RA6M5 Example Project Bundle

## Introduction

This document describes the contents of the Example Project Bundle for the EK-RA6M5 kit. The Example Projects contained within the bundle show how to write code for the various Renesas Flexible Software Package (FSP) modules supported by the EK-RA6M5 kit.

Flexible Software Package is an optimized software package designed to provide easy to use, scalable, high quality software for embedded system design. The primary goal is to provide lightweight, efficient drivers that meet common use cases in embedded systems. FSP code quality is enforced by peer reviews, automated requirements-based testing, and automated static analysis. FSP provides uniform and intuitive APIs that are well documented. Each module is supported with detailed user documentation including example code. FSP modules can be used on any MCU in the RA family, provided the MCU has any peripherals required by the module. FSP modules can be configured at build-time to optimize the size of the module for the feature set required by the application.

## Supported Kit

EK-RA6M5

## Supported FSP Version

FSP v4.5.0

## Supported Toolchains

- e<sup>2</sup> studio Integrated Development Environment (IDE), default toolchain is GCC Arm Embedded
- Keil MDK with Arm compiler toolchain
- IAR EWARM with IAR toolchain for Arm

## 1. Using the Example Projects

To use EK-RA6M5 Example Projects follow the steps mentioned in the following documents:

- Example Project Usage Guide  
[https://github.com/renesas/ra-fsp-examples/blob/master/example\\_projects/Example%20Project%20Usage%20Guide.pdf](https://github.com/renesas/ra-fsp-examples/blob/master/example_projects/Example%20Project%20Usage%20Guide.pdf)
- e<sup>2</sup> studio AC6 porting Guide  
<https://en-support.renesas.com/knowledgeBase/19375553>

Users that are new to the FSP are recommended to refer to the section **Starting Development > Tutorial: Your First RA MCU Project – Blinky** in the [RA FSP Documentation](#) prior to attempting to debug an example project.

## 2. List of Example Projects Supported on Different Toolchains in the Bundle

| EK-RA6M5 Example Projects | e <sup>2</sup> studio/GCC | e <sup>2</sup> studio/AC6   | Keil MDK  | IAR       |
|---------------------------|---------------------------|-----------------------------|-----------|-----------|
| adc                       | Supported                 | Supported via port from GCC |           |           |
| adc_gpt_periodic_samplng  | Supported                 | Supported via port from GCC |           |           |
| agt                       | Supported                 | Supported via port from GCC | Supported | Supported |
| audio_playback_pwm        | Supported                 | Supported via port from GCC |           |           |
| aws_https_client          | Supported                 | Supported via port from GCC |           |           |
| cac                       | Supported                 | Supported via port from GCC |           |           |

| <b>EK-RA6M5<br/>Example Projects</b> | <b>e<sup>2</sup> studio/GCC</b> | <b>e<sup>2</sup> studio/AC6</b> | <b>Keil MDK</b> | <b>IAR</b> |
|--------------------------------------|---------------------------------|---------------------------------|-----------------|------------|
| can_fd                               | Supported                       | Supported via port from GCC     |                 |            |
| cpp                                  | Supported                       | Supported via port from GCC     |                 |            |
| crc                                  | Supported                       | Supported via port from GCC     |                 |            |
| dac                                  | Supported                       | Supported via port from GCC     |                 |            |
| dma_spi                              | Supported                       | Supported via port from GCC     |                 |            |
| dmac                                 | Supported                       | Supported via port from GCC     | Supported       | Supported  |
| doc                                  | Supported                       | Supported via port from GCC     |                 |            |
| elc                                  | Supported                       | Supported via port from GCC     |                 |            |
| ethernet                             | Supported                       | Supported via port from GCC     | Supported       | Supported  |
| FileX_block_media_qs<br>pi_LevelX    | Supported                       | Supported via port from GCC     |                 |            |
| flash_hp                             | Supported                       | Supported via port from GCC     | Supported       | Supported  |
| freertos                             | Supported                       | Supported via port from GCC     | Supported       | Supported  |
| gpt                                  | Supported                       | Supported via port from GCC     | Supported       | Supported  |
| gpt_input_capture                    | Supported                       | Supported via port from GCC     |                 |            |
| icu                                  | Supported                       | Supported via port from GCC     | Supported       | Supported  |
| iic_master                           | Supported                       | Supported via port from GCC     |                 |            |
| iic_slave                            | Supported                       | Supported via port from GCC     | Supported       | Supported  |
| iwdt                                 | Supported                       | Supported via port from GCC     |                 |            |
| lpm                                  | Supported                       | Supported via port from GCC     |                 |            |
| lvd                                  | Supported                       | Supported via port from GCC     |                 |            |
| mbed_crypto                          | Supported                       | Supported via port from GCC     |                 |            |
| NetX_crypto                          | Supported                       | Supported via port from GCC     |                 |            |
| NetX_dhcpv4_client                   | Supported                       | Supported via port from GCC     |                 |            |
| NetX_dhcpv4_server                   | Supported                       | Supported via port from GCC     |                 |            |
| NetX_dhcpv6_client                   | Supported                       | Supported via port from GCC     |                 |            |
| NetX_dhcpv6_server                   | Supported                       | Supported via port from GCC     |                 |            |
| NetX_ftp_client                      | Supported                       | Supported via port from GCC     |                 |            |
| NetX_ftp_server                      | Supported                       | Supported via port from GCC     |                 |            |
| NetX_https_client                    | Supported                       | Supported via port from GCC     |                 |            |
| NetX_snmp_agent                      | Supported                       | Supported via port from GCC     |                 |            |
| NetX_snmp_client                     | Supported                       | Supported via port from GCC     |                 |            |
| NetX_wifi                            | Supported                       | Supported via port from GCC     |                 |            |
| ospi                                 | Supported                       | Supported via port from GCC     |                 |            |
| qspi                                 | Supported                       | Supported via port from GCC     |                 |            |
| qspi_blockmedia_usb_<br>composite    | Supported                       | Supported via port from GCC     |                 |            |
| _quickstart                          | Supported                       | Supported via port from GCC     |                 |            |
| rtc                                  | Supported                       | Supported via port from GCC     | Supported       | Supported  |
| sci_i2c                              | Supported                       | Supported via port from GCC     |                 |            |
| sci_spi                              | Supported                       | Supported via port from GCC     |                 |            |
| sci_uart                             | Supported                       | Supported via port from GCC     | Supported       | Supported  |
| sdhi                                 | Supported                       | Supported via port from GCC     |                 |            |
| spi                                  | Supported                       | Supported via port from GCC     | Supported       | Supported  |

| <b>EK-RA6M5<br/>Example Projects</b> | <b>e<sup>2</sup> studio/GCC</b> | <b>e<sup>2</sup> studio/AC6</b> | <b>Keil MDK</b> | <b>IAR</b> |
|--------------------------------------|---------------------------------|---------------------------------|-----------------|------------|
| ssi                                  | Supported                       | Supported via port from GCC     |                 |            |
| ssi_slave                            | Supported                       | Supported via port from GCC     |                 |            |
| trustzone/agt                        | Supported                       | Supported via port from GCC     | Supported       | Supported  |
| trustzone/doc                        | Supported                       | Supported via port from GCC     | Supported       | Supported  |
| trustzone/ethernet                   | Supported                       | Supported via port from GCC     | Supported       | Supported  |
| trustzone/iic_master                 | Supported                       | Supported via port from GCC     | Supported       | Supported  |
| trustzone/rtc                        | Supported                       | Supported via port from GCC     | Supported       | Supported  |
| trustzone/usb_phid                   | Supported                       | Supported via port from GCC     | Supported       | Supported  |
| usb_composite                        | Supported                       | Supported via port from GCC     |                 |            |
| usb_hhid                             | Supported                       | Supported via port from GCC     |                 |            |
| usb_hmsc                             | Supported                       | Supported via port from GCC     |                 |            |
| usb_hmsc_baremetal                   | Supported                       | Supported via port from GCC     |                 |            |
| usb_hvnd                             | Supported                       | Supported via port from GCC     |                 |            |
| usb_multiport                        | Supported                       | Supported via port from GCC     |                 |            |
| usb_pcdc                             | Supported                       | Supported via port from GCC     |                 |            |
| usb_phid                             | Supported                       | Supported via port from GCC     |                 |            |
| usb_pmsc                             | Supported                       | Supported via port from GCC     |                 |            |
| usb_pvnd                             | Supported                       | Supported via port from GCC     |                 |            |
| USBX_dfu                             | Supported                       | Supported via port from GCC     |                 |            |
| USBX_hhid                            | Supported                       | Supported via port from GCC     |                 |            |
| USBX_hmsc                            | Supported                       | Supported via port from GCC     |                 |            |
| USBX_host_hub                        | Supported                       | Supported via port from GCC     |                 |            |
| USBX_hprn                            | Supported                       | Supported via port from GCC     |                 |            |
| USBX_paud                            | Supported                       | Supported via port from GCC     |                 |            |
| USBX_pcdc_acm                        | Supported                       | Supported via port from GCC     |                 |            |
| USBX_phid                            | Supported                       | Supported via port from GCC     |                 |            |
| USBX_pmsc                            | Supported                       | Supported via port from GCC     |                 |            |
| USBX_pprn                            | Supported                       | Supported via port from GCC     |                 |            |
| vee_flash                            | Supported                       | Supported via port from GCC     |                 |            |
| wdt                                  | Supported                       | Supported via port from GCC     | Supported       | Supported  |
| wifi                                 | Supported                       | Supported via port from GCC     |                 |            |
| wifi_on_chip_udp_freertos            | Supported                       | Supported via port from GCC     |                 |            |

**Note:** Additional example projects other than those mentioned above, maybe available in the [example project repository](#). However, they are supported only with older versions of FSP. Please refer to the [relevant table in the repository](#) to identify the appropriate FSP version for the example project of interest.

**Website and Support**

Visit the following URLs to learn about key elements of the RA family, download components and related documentation, and get support.

|                              |                                                                        |
|------------------------------|------------------------------------------------------------------------|
| RA Product Information       | <a href="http://www.renesas.com/ra">www.renesas.com/ra</a>             |
| RA Product Support Forum     | <a href="http://www.renesas.com/ra/forum">www.renesas.com/ra/forum</a> |
| RA Flexible Software Package | <a href="http://www.renesas.com/FSP">www.renesas.com/FSP</a>           |
| Renesas Support              | <a href="http://www.renesas.com/support">www.renesas.com/support</a>   |

**Revision History**

| Rev. | Date      | Description |                                   |
|------|-----------|-------------|-----------------------------------|
|      |           | Page        | Summary                           |
| 1.00 | Mar.30.21 | —           | First release document.           |
| 1.01 | Apr.23.21 | —           | Added AWS HTTPS CLIENT, CAN FD.   |
| 1.02 | May.03.21 | —           | Added support for FSP v3.0.0.     |
| 1.03 | May.13.21 | —           | Added support for FSP v3.0.0 (2). |
| 1.04 | Jun.16.21 | —           | Added support for FSP v3.0.0 (4). |
| 1.05 | Jul.12.21 | —           | Added support for FSP v3.1.0 (1). |
| 1.06 | Jul.26.21 | —           | Added support for FSP v3.1.0 (2). |
| 1.07 | Aug.31.21 | —           | Added support for FSP v3.1.0 (3). |
| 1.08 | Sep.10.21 | —           | Added support for FSP v3.2.0.     |
| 1.09 | Sep.29.21 | —           | Added support for FSP v3.3.0 (2). |
| 1.10 | Oct.20.21 | —           | Added support for FSP v3.4.0 (2). |
| 1.11 | Dec.20.21 | —           | Added support for FSP v3.5.0 (2). |
| 1.12 | Mar.21.22 | —           | Added support for FSP v3.6.0.     |
| 1.13 | Apr.11.22 | —           | Added support for FSP v3.6.0 (2). |
| 1.14 | Jul.18.22 | —           | Added support for FSP v3.8.0 (1). |
| 1.15 | Aug.11.22 | —           | Added support for FSP v3.8.0 (2). |
| 1.16 | Sep.20.22 | —           | Added support for FSP v4.0.0.     |
| 1.17 | Oct.17.22 | —           | Added support for FSP v4.0.0 (2). |
| 1.18 | Nov.14.22 | —           | Added support for FSP v4.1.0 (1). |
| 1.19 | Dec.01.22 | —           | Added support for FSP v4.1.0 (2). |
| 1.20 | Jan.10.23 | —           | Added support for FSP v4.2.0 (1). |
| 1.21 | Mar.24.23 | —           | Added support for FSP v4.3.0 (2). |
| 1.22 | Apr.28.23 | —           | Added support for FSP v4.4.0 (1). |
| 1.23 | Jun.01.23 | —           | Added support for FSP v4.4.0 (2). |
| 1.24 | Jul.17.23 | —           | Added support for FSP v4.5.0 (1). |
| 1.25 | Sep.18.23 | —           | Added support for FSP v4.5.0 (2). |

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