RA4M1 CLICKER

QUICK START GUIDE

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Introduction

RA4M1 Clicker is an amazingly compact starter development board which brings the innovative mikroBUS™ socket to your favorite microcontroller.

It features R7FA4M1AB3CFM, a 32-bit ARM® Cortex®-M4 microcontroller, two indication LEDs, two general purpose buttons, a reset button, a USB Type-C connector and a single mikroBUS™ socket.

To make your prototyping experience as convenient as possible, RA4M1 Clicker is equipped with J-Link OB, an on-board debug probe. It allows you to fully use, test and debug the target device right out of the box. RA4M1 Clicker is compatible with **e² studio**, Integrated Development Environment by Renesas, and can be used with Flexible Software Package (FSP), a suite for drivers and middleware for Renesas RA Microcontrollers.
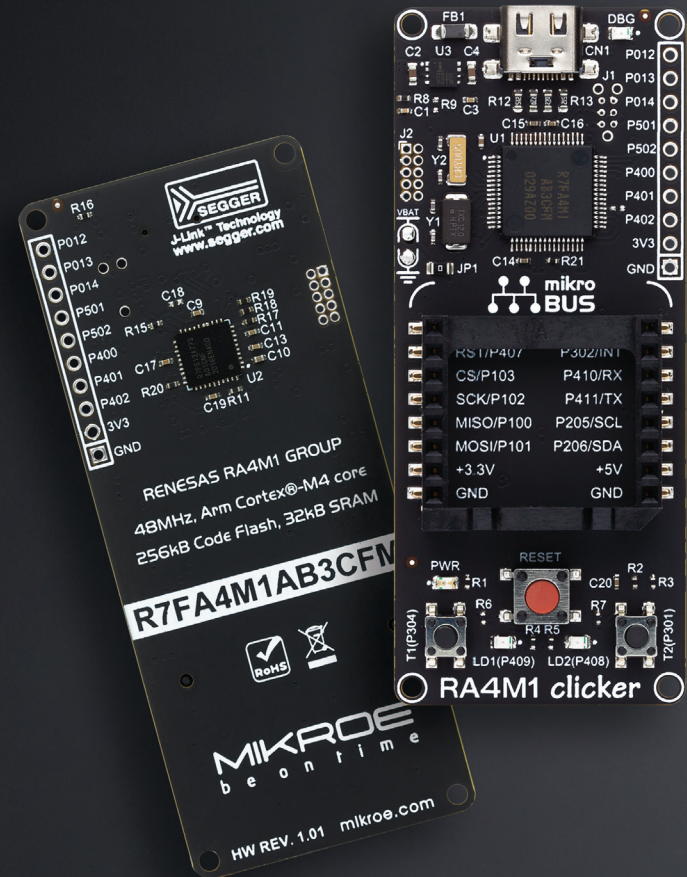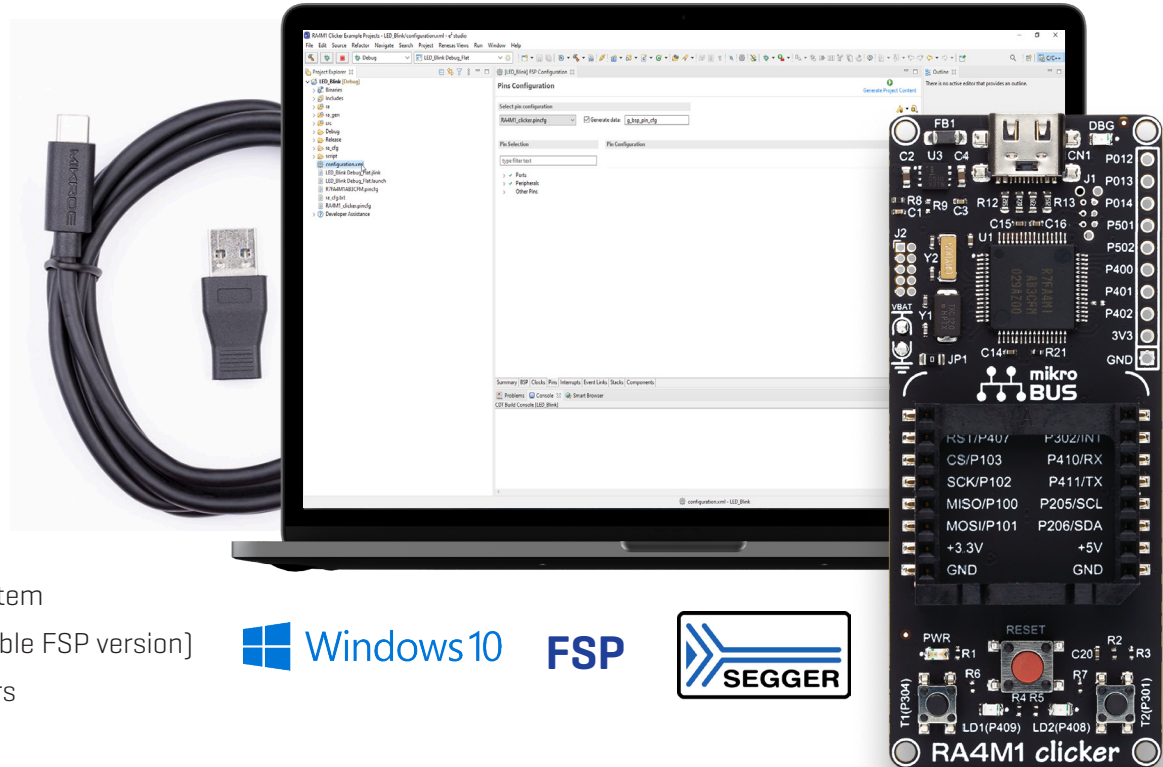
Requirements list

Hardware Requirements:

- RA4M1 Clicker board
- USB Type-C cable
- A PC with a USB port

Software Requirements:

- Windows® 10 operating system
- e² studio IDE (with compatible FSP version)
- SEGGER J-Link® USB drivers
- FSP
- Quick Start example project

1. Connecting and powering up the board

1.1 Connect the USB-Type C end of the USB cable to connector CN1 [1].

1.2 Connect the other end of the cable to the USB port of the host PC. A LED indicator labeled as PWR **[2]** lights up solid green, indicating that the board is powered on. Clicker comes equiped with LED blink example, on power up or RESET, LD1 and LD2 are blinking at 1 Hz frequency.

1.3 If J-Link drivers are installed on the PC and detected by the board, the LD4 (DBG) **[3]** blinks yellow with a very small duty cycle that is barely noticeable. Otherwise, LD4 (DBG) blinks yellow prominently.
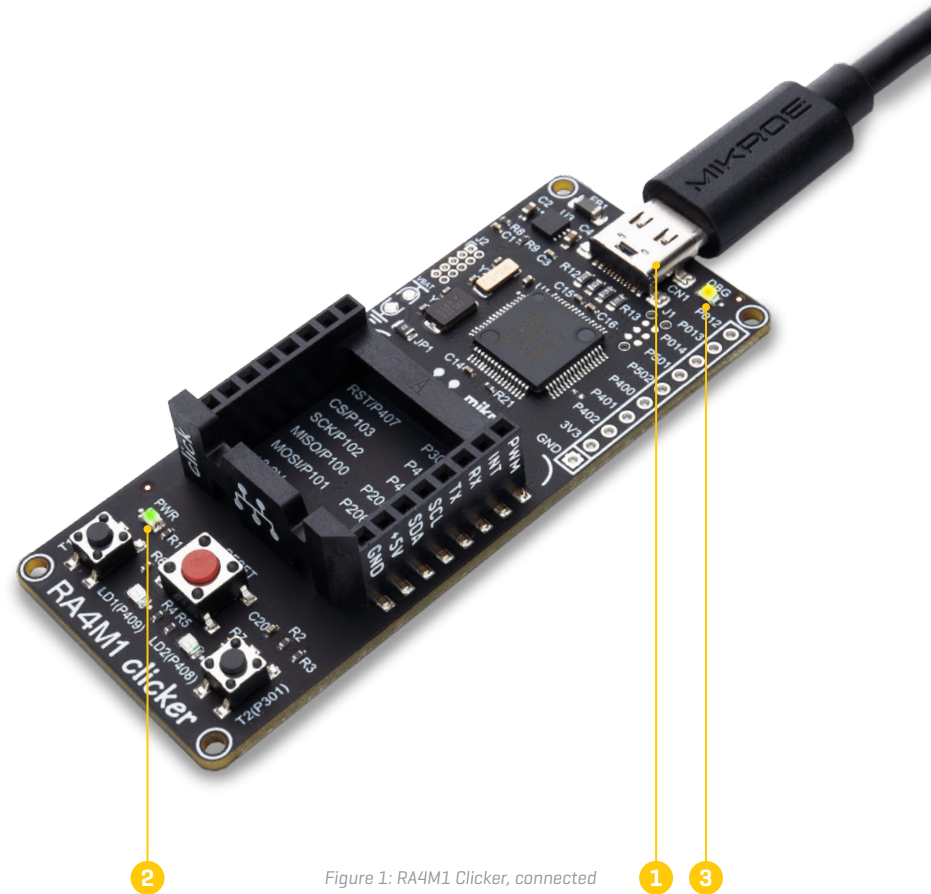
Figure 1: RA4M1 Clicker, connected

2. Downloading and Installing Software and Development Tools

Before the Quick Start example project can be modified, it is necessary to download and install software and development tools on the host PC.

The **FSP**, **J-Link USB drivers**, and **e² studio** are bundled in a downloadable platform installer available on the *FSP webpage*. New users are recommended to use the Quick Install option provided in the installation wizard, to minimize the amount of manual configuration needed.

There is no need to download and install software, development tools, and drivers separately.

3. Downloading and Importing the Quick Start Example Project

3.1 Download and extract the Quick Start example project to a local directory on the host PC.

The Quick Start example project (source code and project files) is available in the RA4M1 Clicker Example Projects Bundle, on the **RA4M1 Clicker Libstock page**

Before booting up the **e² studio**, find the file called Mikroe.RA_board_RA4M1_clicker.2.0.0.pack located at "ra4m1_clicker_other_arm" in the E2_Studio_Pack folder of the Quick Start Example projects package.
After that copy the pack file into:
\Renesas\RA\e2studio_v2020-10_fsp_v2.0.0\internal\projectgen\ra\packs

> *Please note that the version of FSP has to match the Clicker pack version, in this guide we used the 2.0 version.*

3.2 Launch e² studio

3.3 Enter a name in the Workspace dialog box to create a new workspace folder or browse to an existing one and click on the Launch button. On the Welcome screen click on Import existing projects and under Select Root Directory click on the Browse button **[1]** then navigate to where you extracted the RA4M1 Clicker Example Projects and click on Select folder. You should see all the example projects in the list below. Click on Finish when you are done.
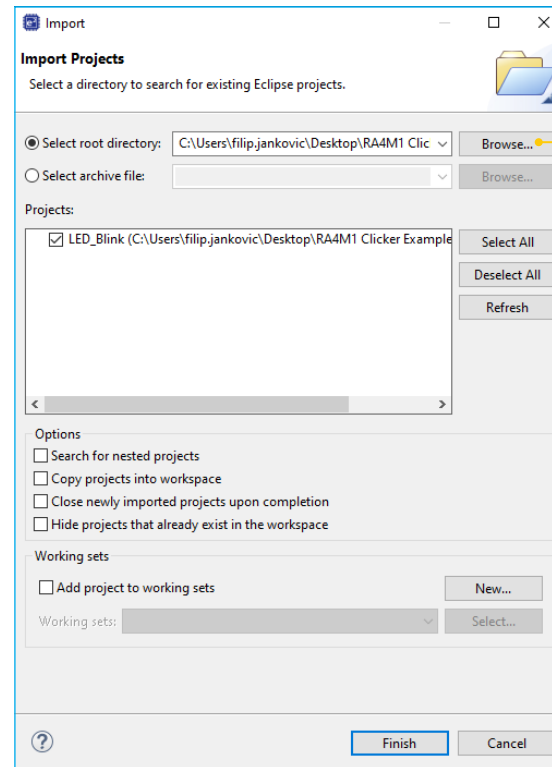

Figure 2: e² studio – Import Projects window

4. Modifying, Generating, and Building the Quick Start Example Project

The Quick Start example project can be modified by editing the source code and reconfiguring the properties of the MCU peripherals, pins, clocks, interrupts, and so forth.

4.1 Once the Quick Start example project is imported, double click the configuration.xml **[1]** file to open the configurator. The configurator **[2]** provides an easy to use interface to configure the properties of the MCU peripherals.
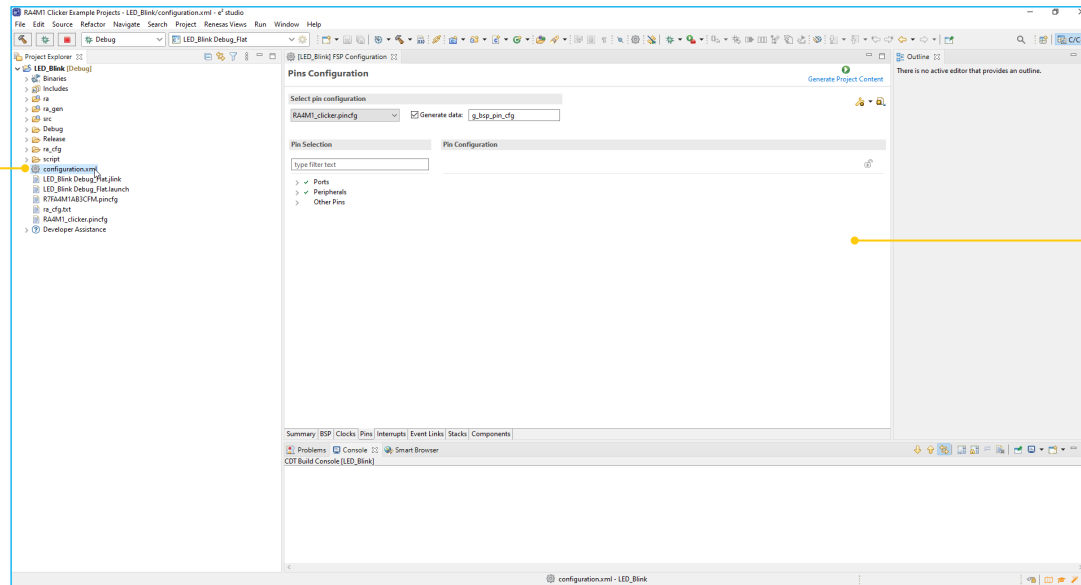

Figure 3: e² studio –Pins Configuration window

Click on the BSP tab **[1]** in the bottom left corner of the FSP configuration window and make sure that RA4M1_clicker is selected as Board.
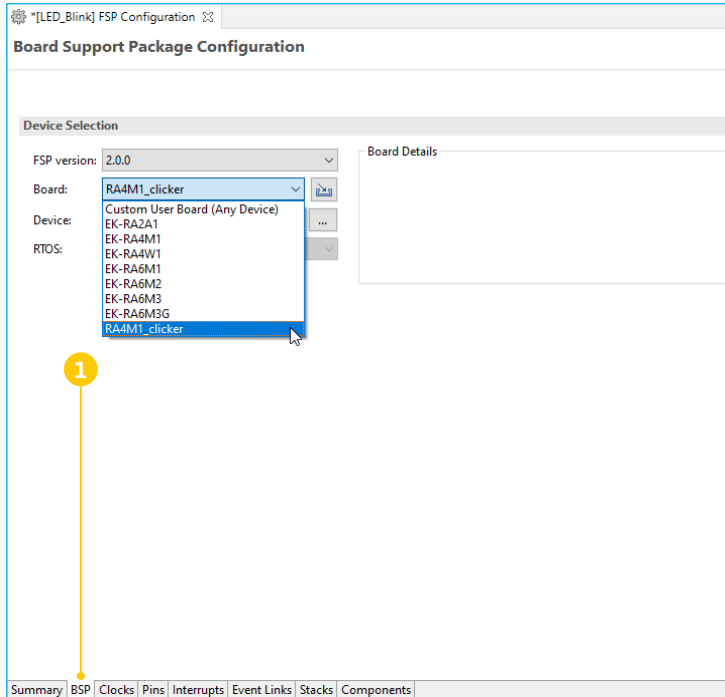

Figure 4: e² studio – FSP Configuration window

You can now build the project by clicking on the build icon 🔨 ▾ in the toolbar.

4.2 If you wish for the compiler to generate an Intel hex from your project, right click on the name of your project in the Project Explorer and select Properties.

Go to *C/C++ Build > Settings > Tool Settings > GNU ARM Cross Create Flash Image > General* and in the Output file format select Intel HEX **[2]**. Click Apply. Rebuild your project and the hex will appear in Debug and Release folders.

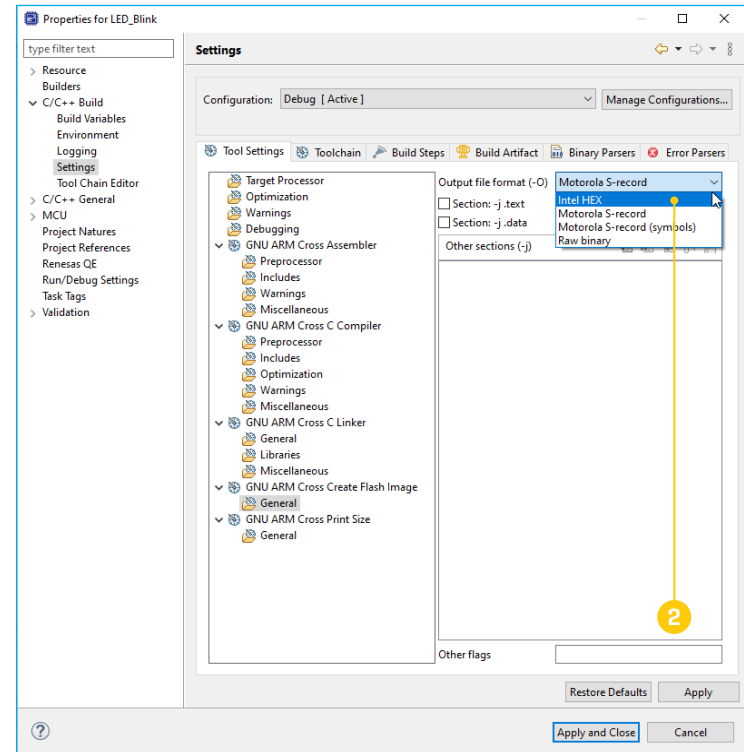This step is needed for the method we will use to program our Clicker board later on.

Figure 5: e² studio – FSP Properties window

5. Programming and running the modified example project

If you have followed the steps explained in **3.2 section**, you will have a generated hex file which you can use to program your MCU. For this we need a software called **J-Flash Lite.** Make sure you have an up to date version or you might not see the RA4M1 in the list.

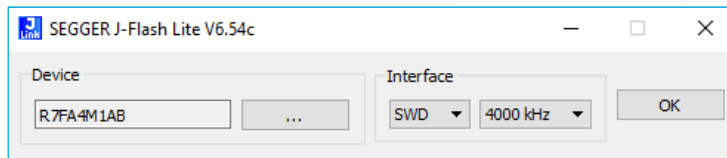Click on the button with three dots and find the R7FA4M1AB MCU in the list and select it, then click OK.

Figure 6: J-Flash Lite window

In the new window click on the button with three dots **[1]** again and navigate to the Release hex file generated from our project. Select it and click Open. At this point you want to make sure that your Clicker is connected to your PC via USB cable.

Click on the Erase Chip button **[2]**, then click Program Device **[3]**. After the message Done appears, press the red RESET button on your Clicker to start the code execution.
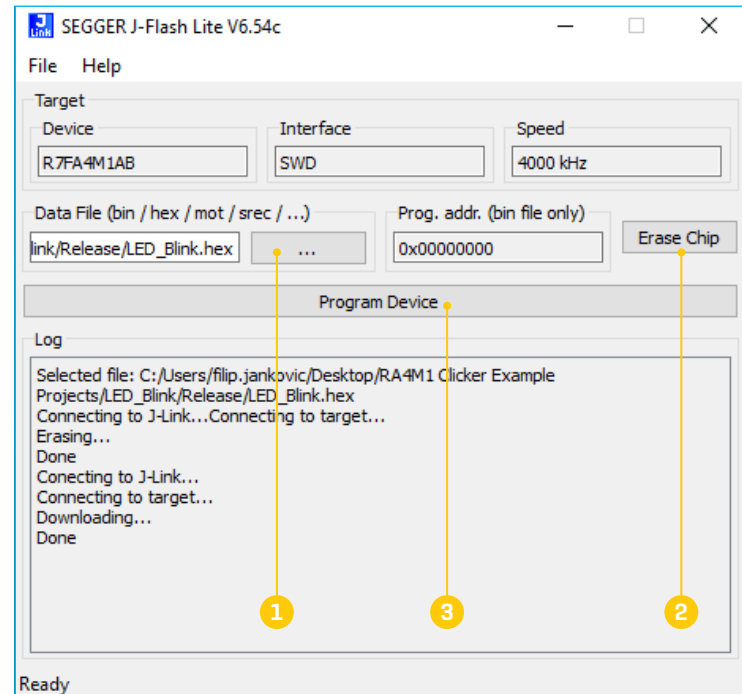

Figure 7: J-Flash Lite – Program Device window

It is also possible to debug your project from within **e² studio** without using J-Flash Lite software for programming.

In that case, you simply have to have Debug **[1]** selected in your project and click on Build button **[2]**, followed by Launch in 'Debug' mode button **[3]**.
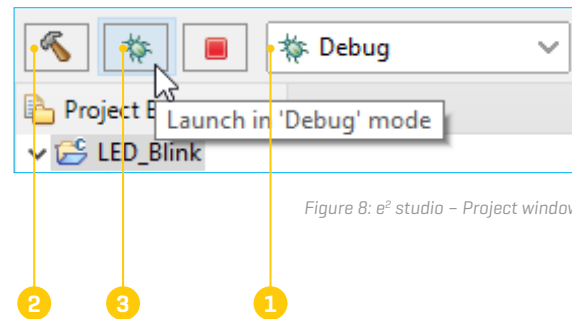

Figure 8: e² studio – Project window

6. Community

We invite you to join thousands of users of Mikroe development tools. You will find useful projects and tutorials and get help from a large user community. If you want to download free projects and libraries, or share your own code, please visit the *Libstock website*

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More information at *www.mikroe.com/click*

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