

ARROW ARIS EDGE Board

Software User's Guide

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1. Introduction

1.1. Description

ARIS EDGE board, developed by RELOC for Arrow Electronics, is a ready-to-use Internet of Things (IoT) hardware and software platform that enables users to get their IoT applications up and running quickly, exploiting the Renesas Synergy development framework.

Based on Renesas Synergy S1 MCU with a 32-MHz ARM Cortex-M0+ core, the ARIS EDGE board has a host of features that equip it for smart sensing and IoT operations. Communication with other devices and the cloud is enabled by means of a flexible multi-protocol radio module, supporting Bluetooth Low Energy (BLE 4.1/4.2), Thread and ZigBee stacks. Board sensing capabilities include motion detection via 9-degrees-of-freedom IMU with sensor fusion capabilities, environmental temperature, humidity and ambient light sampling.

The Renesas Synergy Platform helps to accelerate IoT designs: a proven combination of hardware and software makes development easier and faster, thus encouraging innovation and product differentiation. The combination of Arrow ARIS board and Renesas Synergy software platform enables developers to reduce time-to-market and decreases the total cost of ownership of a product over its lifetime.

1.2. Content

This document represents a quick start guide for the creation of a new project with ARIS board revision 1.1 (i.e. production release).

Please refer to ARIS Hardware User’s Guide document for additional information about the ARIS board.

2. Getting started

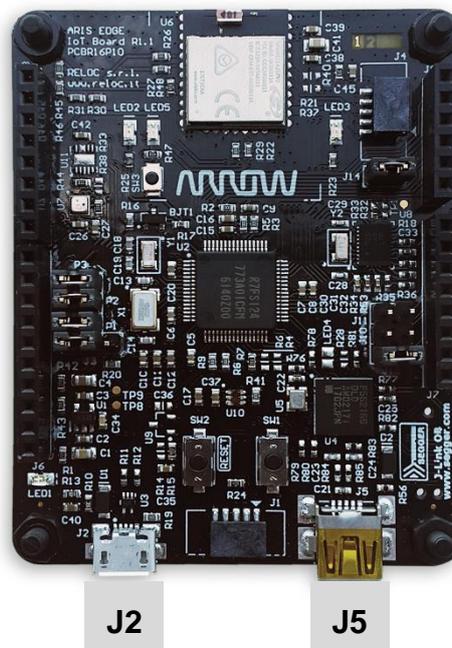
2.1. ARIS EDGE pre programmed demo

The ARIS EDGE board is pre programmed with a demo application which continuously monitors the on-board sensors and sends collected data on Bluetooth Low-Energy (BLE) network.

The Synergy S1 device takes care of sampling sensors data whereas the MGM111 multi-protocol module establishes the BLE communication with a BLE client.

In order to test ARIS EDGE functionalities by means of pre programmed demo application

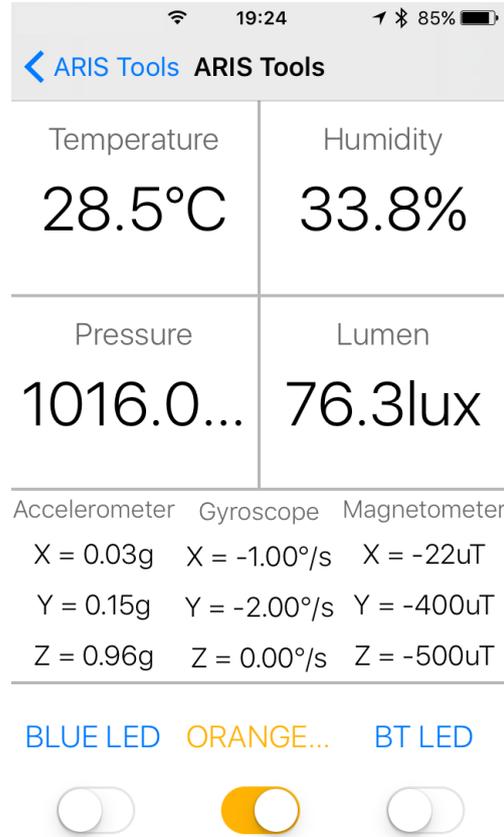
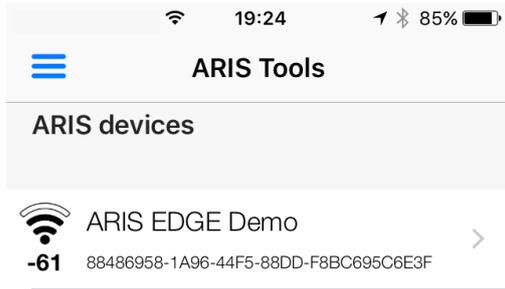
1. download the free ARIS Tools smartphone App from the Apple App Store™ or Google Play™;
2. power supply the ARIS EDGE board through either J2 or J5 USB connector



3. open the ARIS Tools smartphone App and select your ARIS EDGE from the device list.

The application

- a. shows sensor values in real-time through the BLE communication channel,
- b. enables user to remotely control the board LEDs by means of App buttons.



2.2. Creating and debugging a sample “Blinky” project

2.2.1 Prerequisites

The following development tools should be installed before trying to use any example based on ARIS board:

- e² studio v5.3.1.002 or later release
- Synergy Software Package v1.2.0 or later release

Please refer to the [Synergy Gallery](#) website for more information and for obtaining the required software.

2.2.2 ARIS EDGE BSP

ARIS EDGE Board Support Package (BSP) provides a default configuration for ARIS EDGE board peripherals.

ARIS EDGE BSP is available for download at the following link:

http://www.reloc.it/download/products/ARIS-EDGE/reloc.aris_edge1.1.2.0.zip

In order to install it, please unzip the archive and copy the file “reloc.aris_edge1.1.2.0.pack” in the following directory:

`%e2_studio_install_dir%\internal\projectgen\arm\Packs`

where

`%e2_studio_install_dir%` is typically the folder “C:\Renesas\e2_studio\”

2.2.3 Creating and building a demo project

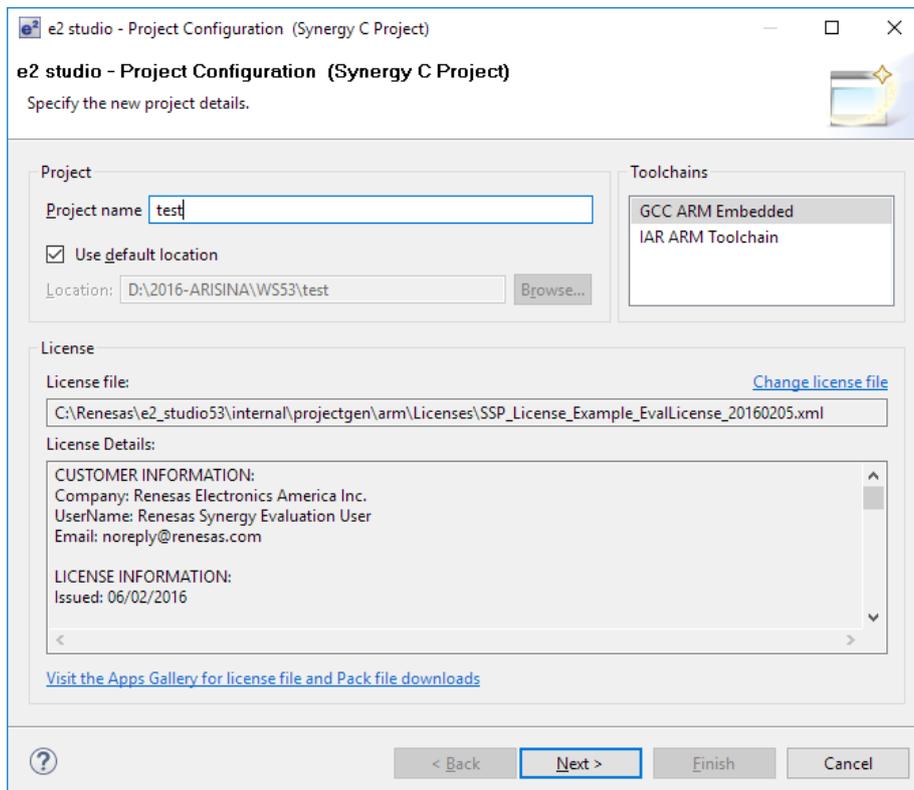
To create a Synergy project with ARIS EDGE board as a target, please follow these steps within e² studio:

- Select: File → New → Synergy C Project in the menu of e² studio
- Assign a new project name and select GCC toolchain

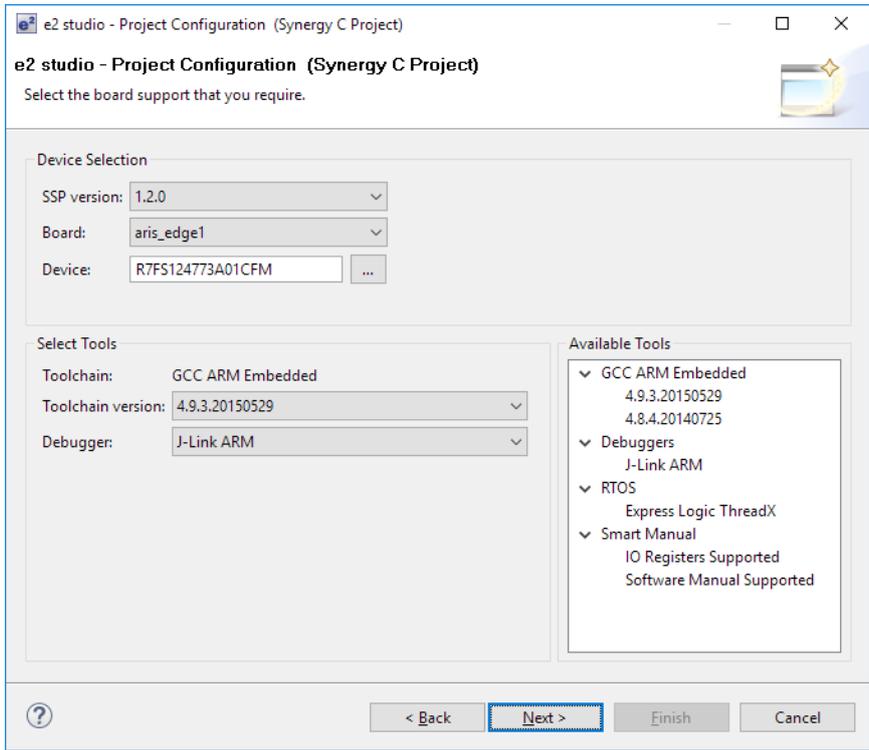
A license file is required for using Synergy platform, an evaluation license is provided with SSP in the following directory:

`%e2_studio_install_dir%\internal\projectgen\arm\Licenses`

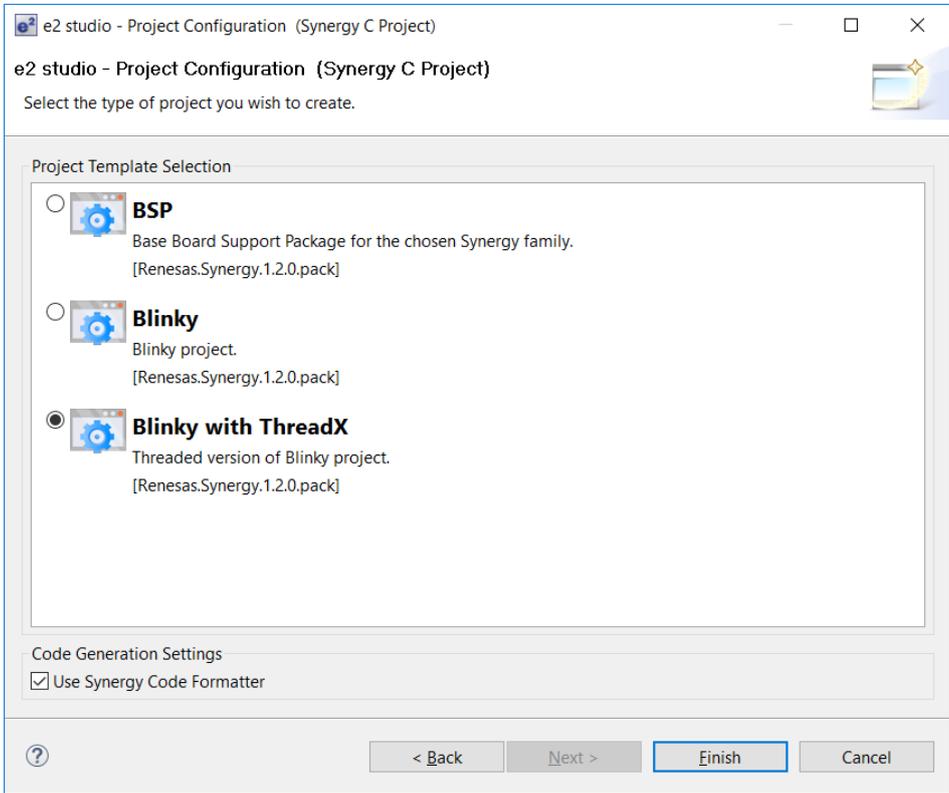
Please refer to [Synergy Gallery](#) website for additional information about obtaining a custom license.



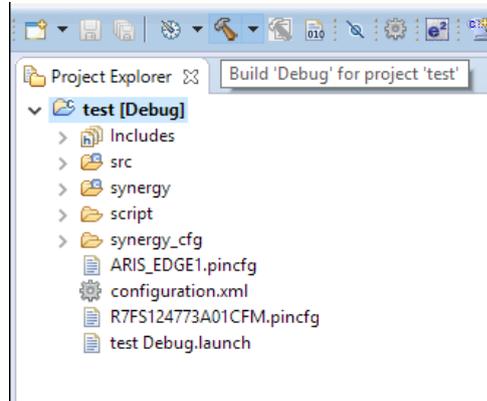
- Select the “aris_edge1” board and verify the other parameters accordingly to the picture below



- Select the “Blinky with ThreadX” and confirm with Finish button:



- You should now be able to build the project by clicking on the Build button:



Compilation should end without any error or warning.

2.2.4 Board configuration and connection

Connect the ARIS EDGE board to your PC through the mini-USB port (J5): this connection provides board with power supply and represents the interface for flashing and debug.

Jumpers P1, P2 and P3 (populated in the default configuration) route power to the Synergy MCU and to peripheral components. P1 can also be used to measure the current consumption of the S1 device.

Please refer to ARIS EDGE Hardware User’s Guide for additional information about the board power supply distribution.

2.2.5 Debugging the project

In order to check the correct behavior of the sample “Blinky” application start the Debug by selecting Run → Debug from the menu; if there is no any error the “Blinky” application will be downloaded to ARIS EDGE board and the development environment will switch automatically to the Debug Perspective.

Click on Resume (F8) two times in order to execute the application. LED2 and LED3 should start blinking.