

# ISELED Starter Kit

**ILaS®**

## Guide for Demonstration Project

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### Introduction

This document defines how to import, compile, flash and use ISELED demonstration project.

The purpose of the project is to demonstrate ISELED driving on the Renesas RH850/F1KM-S1 ISELED Starter Kit.

### Target Device

The ISELED demo project is a e<sup>2</sup> Studio project for the RH850/F1KM-S1 ISELED Starter Kit.

For more information, refer to the ISELED Starter Kit Hardware Guide.

In this demonstration project the general product R7F701684 is used. Please note for ISELED additional products are available as described in the document [RH850/F1KM, User's Manual Hardware, Addendum for ISELED \(R01UH1024EJxxxx\)](#).

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## 1. Import Project

Install e<sup>2</sup> studio (22.7.0) and run it.

Create a workspace.

In e<sup>2</sup> studio:

- Click on File -> Import.
- Select General -> Existing Project into Workspace and click Next.
- Click and Browse, select "Demo" directory and click Select Directory.
- On Projects tab, Select Demo project and click Finish.

## 2. Compile and Flash Project

Click on Project -> Build project.

Click on Run -> Debug Configuration.

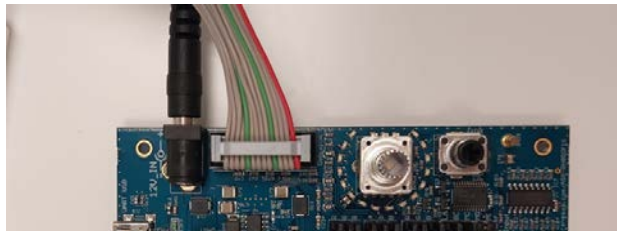
Double click on Renesas GDB Hardware Debugging to create a new debug configuration.

In C/C++ Application, click Search Project, select Demo.x and click OK.

In the debugger section, select device R7F701684.

In Connection Settings sub-section, change Main Clock Frequency [MHz] for 16.00.

Connect debugger and 12V supply as below:



Connect the ISELED strip on the right order: Ensure that the orange capacitor on the backside is first in line, as depicted below.



Click Apply then click Debug.

### 3. Software Description

The demonstration software consists of switching between 3 lighting effects:

- Off ISELED LEDs are Off.
- Chasing Color ISELED LEDs are light-up one after one, every 10ms.
- Rainbow All ISELED LEDs are light-up with rainbow effect. LEDs color are changing every 10ms among 24 bits colors.

To switch lighting effects, click on the INT button of RH850/F1KM-S1 Starter Kit V3.

You can add a second strip. Once you reset the kit by pressing RESET button, the software will detect the new number of LEDs and adapt the lighting effect accordingly.

**Revision History**

Rev.	Date	Description	
		Page	Summary
1.00	May 07, 2024	-	Initial release

# General Precautions in the Handling of Microprocessing Unit and Microcontroller Unit Products

The following usage notes are applicable to all Microprocessing unit and Microcontroller unit products from Renesas. For detailed usage notes on the products covered by this document, refer to the relevant sections of the document as well as any technical updates that have been issued for the products.

## 1. Precaution against Electrostatic Discharge (ESD)

A strong electrical field, when exposed to a CMOS device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop the generation of static electricity as much as possible, and quickly dissipate it when it occurs. Environmental control must be adequate. When it is dry, a humidifier should be used. This is recommended to avoid using insulators that can easily build up static electricity.

Semiconductor devices must be stored and transported in an anti-static container, static shielding bag or conductive material. All test and measurement tools including work benches and floors must be grounded. The operator must also be grounded using a wrist strap. Semiconductor devices must not be touched with bare hands. Similar precautions must be taken for printed circuit boards with mounted semiconductor devices.

## 2. Processing at power-on

The state of the product is undefined at the time when power is supplied. The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the time when power is supplied. In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the time when power is supplied until the reset process is completed. In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the time when power is supplied until the power reaches the level at which resetting is specified.

## 3. Input of signal during power-off state

Do not input signals or an I/O pull-up power supply while the device is powered off. The current injection that results from input of such a signal or I/O pull-up power supply may cause malfunction and the abnormal current that passes in the device at this time may cause degradation of internal elements. Follow the guideline for input signal during power-off state as described in your product documentation.

## 4. Handling of unused pins

Handle unused pins in accordance with the directions given under handling of unused pins in the manual. The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of the LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible.

## 5. Clock signals

After applying a reset, only release the reset line after the operating clock signal becomes stable. When switching the clock signal during program execution, wait until the target clock signal is stabilized. When the clock signal is generated with an external resonator or from an external oscillator during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Additionally, when switching to a clock signal produced with an external resonator or by an external oscillator while program execution is in progress, wait until the target clock signal is stable.

## 6. Voltage application waveform at input pin

Waveform distortion due to input noise or a reflected wave may cause malfunction. If the input of the CMOS device stays in the area between  $V_{IL}$  (Max.) and  $V_{IH}$  (Min.) due to noise, for example, the device may malfunction. Take care to prevent chattering noise from entering the device when the input level is fixed, and also in the transition period when the input level passes through the area between  $V_{IL}$  (Max.) and  $V_{IH}$  (Min.).

## 7. Prohibition of access to reserved addresses

Access to reserved addresses is prohibited. The reserved addresses are provided for possible future expansion of functions. Do not access these addresses as the correct operation of the LSI is not guaranteed.

## 8. Differences between products

Before changing from one product to another, for example to a product with a different part number, confirm that the change will not lead to problems. The characteristics of a microprocessing unit or microcontroller unit products in the same group but having a different part number might differ in terms of internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system-evaluation test for the given product.

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