

# Readme

## APM32F051 EVAL SDK

**Rev: V1.0**

# 1 Introduction

The Geehy Semiconductor APM32F051 EVAL board software development kit includes a series driver library, a group of example applications that demonstrate key peripheral functionality, and other development files.

Software development kit have a hierarchy as follows:

- SDK directory
  - \* [Boards](#)
  - \* [Documents](#)
  - \* [Examples](#)
  - \* [Libraries](#)
  - \* [Middlewares](#)
  - \* [Package](#)

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## 2 About boards

The boards folder includes a board support package for APM32F051 EVAL board. It can help drive the peripheral circuit or components on the board quickly. The BSP can be found in the [~/Boards](#) directory.

The BSP provided are built for APM32F051 EVAL board compatibility. For other user development board use, some minor modifications may be required.

Boards have a hierarchy as follows:

- Boards folder
  - \* Board folder
    - inc
    - src
  - \* board.c
  - \* board.h

Board APM32F051 EVAL include following board support package:

- Board\_APM32F051\_EVAL src folder
  - \* board\_APM32F051\_eval
  - \* bsp\_delay
  - \* bsp\_i2c\_ee
  - \* bsp\_key
  - \* bsp\_lcd
  - \* bsp\_w25q16

### 3 **About documents**

The documents folder includes a link file that can be redirected to the technical support center of Geehy semiconductor. The BSP can be found in the [~/Documents](#) directory.

## 4 About examples

The example applications can be found in the [~/Examples](#) directory.

The examples provided are built for APM32F051 EVAL board compatibility. For other user development board use, some minor modifications may be required.

Example projects have a hierarchy as follows:

- Example folder

- \* Include
- \* Project
  - IAR
  - MDK
- \* Source

All example applications tested with: **APM32F0xx StdPeriphDriver v1.0.3**, include the following examples:

- Examples

- \* ADC
  - [ADC\\_Potentiometer](#)
- \* I2C
  - [I2C\\_EEPROM](#)
- \* RTC
  - [RTC\\_Clock](#)
- \* SPI
  - [SPI\\_FLASH](#)
- \* LCD
  - [LCD\\_Menu](#)
- \* TSC
  - [TSC\\_KeyLinearRotate](#)
- \* Template
  - [Template](#)

- \* USART
  - [USART Interrupt](#)
  - [USART Polling](#)
  - [USART RS485](#)

## **4.1 ADC\_Potentiometer**

### **4.1.1 Example Description**

This example shows how to use ADC Peripheral to detect potentiometer. Press KEY1 to start test. If detect operation is success, LCD will display the test information.

### **4.1.2 Directory contents**

This example can be found in the [~/Examples/ADC/ADC\\_Potentiometer](#) directory.

## **4.2 I2C\_EEPROM**

### **4.2.1 Example Description**

This example shows how to use I2C Peripheral to read and write EEPROM. Press KEY1 to write data to EEPROM. And read data form EEPROM. if read and write success, LED2 will turn on. The data will be shown on serial assistant trough usart1.if error, LED3 will turn on. And LCD will display the test information.

### **4.2.2 Directory contents**

This example can be found in the [~/Examples/I2C/I2C\\_EEPROM](#) directory.

## **4.3 LCD\_Menu**

### **4.3.1 Example Description**

This example shows how to use SPI Peripheral to driver LCD to display multi-level menu.

### **4.3.2 Directory contents**

This example can be found in the [~/Examples/LCD/LCD\\_Menu](#) directory.

## **4.4 RTC\_Clock**

### **4.4.1 Example Description**

This example shows how to use RTC Peripheral to make a clock. After power on, program will read the backup area data to determine whether to reconfigure RTC time. Then the RTC time will display in the LCD and written to the backup area.



#### **4.4.2 Directory contents**

This example can be found in the [~/Examples/RTC/RTC\\_Clock](#) directory.

### **4.5 SPI\_FLASH**

#### **4.5.1 Example Description**

This example shows how to use SPI Peripheral to write data to W25Q16 flash and read data from W25Q16 flash. Press KEY1 to start test. If detect operation is success, LCD will display the test information.

#### **4.5.2 Directory contents**

This example can be found in the [~/Examples/SPI/SPI\\_FLASH](#) directory.

### **4.6 Template**

#### **4.6.1 Example Description**

This demo is based on the APM32F051 EVAL board. It provides a template project.

#### **4.6.2 Directory contents**

This example can be found in the [~/Examples/Template/Template](#) directory.

### **4.7 TSC\_KeyLinearRotate**

#### **4.7.1 Example Description**

This example shows how to use TSC (Touch sensing controller) to achieve Key, Linear, Rotation control. The linear rotation touch will display the value on the LCD.

#### **4.7.2 Directory contents**

This example can be found in the [~/Examples/TSC/TSC\\_KeyLinearRotate](#) directory.

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## 4.8 USART\_Interrupt

### 4.8.1 Example Description

This example shows how to use USART1 Peripheral to send data and receive data from serial assistant by interrupt. Press KEY1 to write data to serial assistant. And you can send data to device use serial assistant.

### 4.8.2 Directory contents

This example can be found in the [~/Examples/USART/USART\\_Interrupt](#) directory.

## 4.9 USART\_Polling

### 4.9.1 Example Description

This example shows how to use USART1 Peripheral to send data and receive data from serial assistant by polling. Press KEY1 to write data to serial assistant. And you can send data to device use serial assistant.

### 4.9.2 Directory contents

This example can be found in the [~/Examples/USART/USART\\_Polling](#) directory.

## 4.10 USART\_RS485

### 4.10.1 Example Description

This example describes how to use MAX485 module to transfer data with serial COM. When you send some data from PC to USART2(PA2, PA3), then MCU will send the same data to PC.

### 4.10.2 Directory contents

This example can be found in the [~/Examples/USART/USART\\_RS485](#) directory.

## 5 About libraries

The libraries folder includes a series library. It can provide supports for APM32F0xx MCU such as device support and standard peripheral and USB OTG etc. The libraries can be found in the [~/Libraries](#) directory.

APM32F0xx MCU include following library:

- Libraries folder
  - \* APM32F0xx\_StdPeriphDriver
  - \* CMSIS
  - \* Device
  - \* TSC\_Device\_Lib

## 6 About middlewares

The middlewares folder includes a series third-party middleware. The middlewares can be found in the [~/middlewares](#) directory.

The middlewares used by APM32F051 EVAL include following:

- Middlewares folder

## 7 About Package

The Package folder includes Geehy DFP Package. The Package can be found in the [~/Package](#) directory.

The middlewares used by APM32F051 EVAL include following:

- Package folder
  - \* Geehy.APM32F0xx\_DFP.1.0.7.pack

## 8 Revision History

Table 1 File Revision History

Date	Rev	Description
2022.08.26	1.0	First Release version of APM32F051 EVAL SDK

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## 8. Scope of Application



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