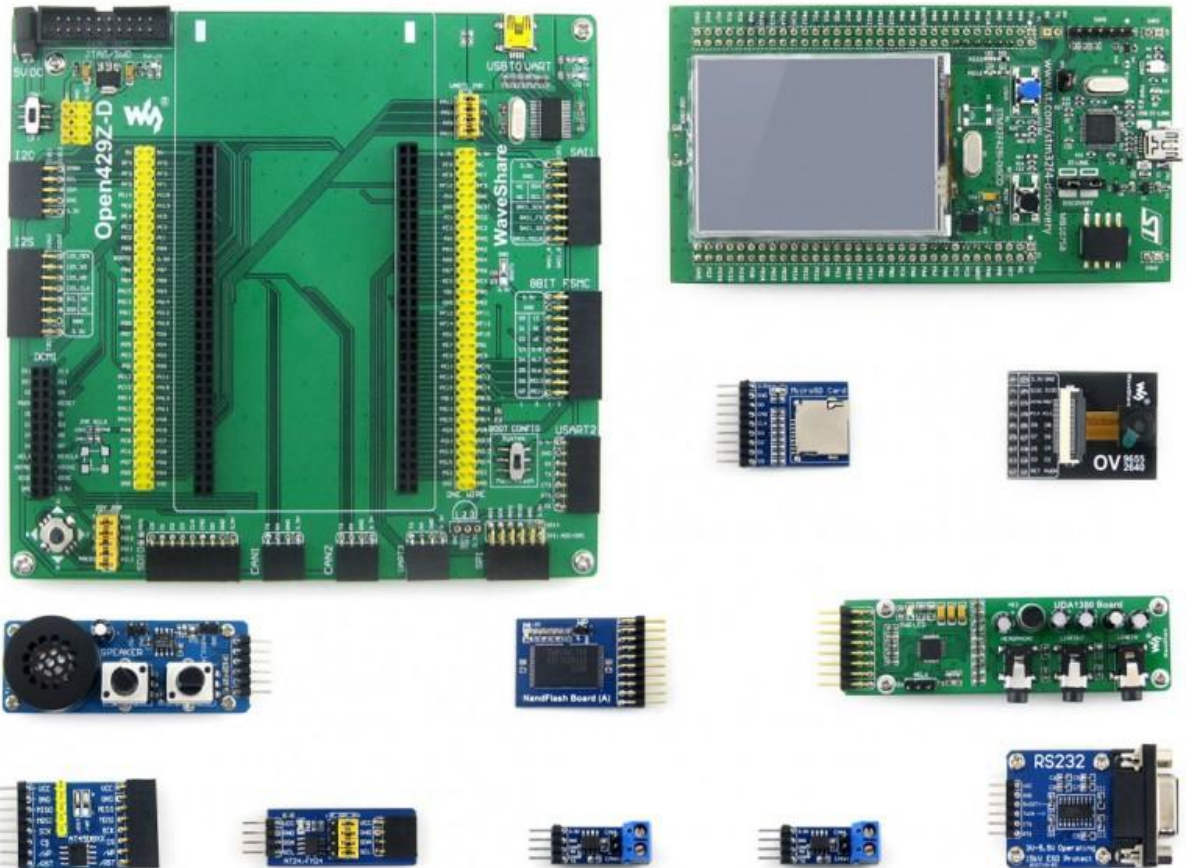


## Open429Z-D Package B



## Introduction

STM32 development board designed for the ST official tool STM32F429I-DISCO, and integrates various standard interfaces, pretty easy for peripheral expansions.

[More](#)

## Getting Started with modules

We provide various modules for Open429Z-D development board aiming to improve your development efficiency. These modules are not only designed for STM32 but also can be used for many other MCU platforms. Let's begin with the demos.

## Development Environment

- KEIL MDK Version : 4.7
- Programmer/Debugger:STM32F429I-DISCO onboard ST-LINK V2
- Programming/Debugginginterface: SWD
- ConnectPC to the onboard USB TO UART connector via USB wire
- Resultof demos which based on serial port are all checked via SSCOM32, onboard PL2303;connect the USB cable to the USB TO UART interface.
- Serial port assistant SSCOM3.2 settings:

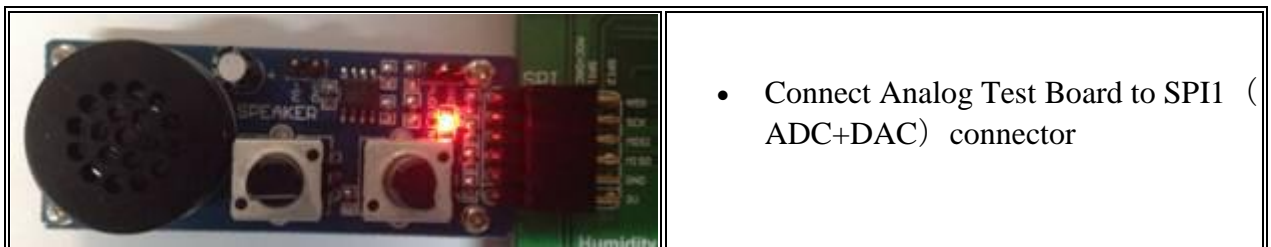
Select a proper COM port	
Baud rate	115200
Data bits	8
Stop bits	1
Parity bits	None
Flow control	None

## ADC+DMA

### Overview

AD acquisitiondemo

### Hardwareconnection



### Operationand result

- Rotate the onboard potentiometer, the below message will beprinted on the serial debugging assistant:

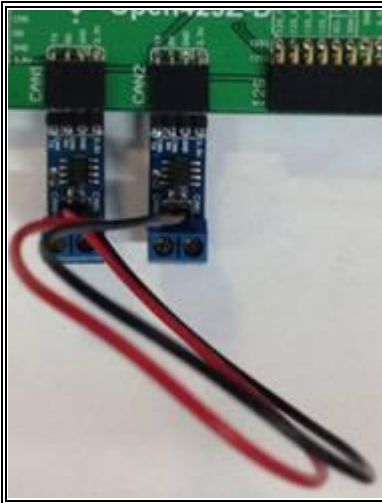
```
The current AD value = 1.0264V  
The current AD value = 1.2319V  
The current AD value = 2.6837V  
The current AD value = 2.4750V
```

## CAN1 TOCAN2-Normal

### Overview

CAN1 TO CAN2communication demo

### Hardware connection



- Connect the two CAN modules to the onboard CAN1 and CAN2 interface
- Connect the two CAN modules via DuPont wires (CANL<->CANL, CANH<->CANH)

### Operation and result

- You may see the below result on the serial debugging assistant:

```

SYSCLK: 168M
MCLK: 168M
PCLK1: 42M
PCLK2: 84M
CAN Printf Example: Press the USER key observations
CAN2 Receive Data
CAN2 ID 123
CAN2_DATA0 34
CAN2_DATA1 a2
CAN2_DATA2 88
CAN2_DATA3 42
CAN2_DATA4 a1
CAN2_DATA5 44
CAN2_DATA6 a4
CAN2_DATA7 69
CAN1 Receive Data
  
```

## DAC

### Overview

DA output demo, output via DMA channel

### Hardware connection



- Connect the Analog Test Board to the SPI1 (ADC+DAC) connector
- Connect the Analog Test Board onboard 5V interface to the board onboard 5V interface via jumper wire.

### Operation and result

- You may hear sound from the Analog Test Board

## DS18B20

### Overview

Connect the DS18B20,detect the temperature

### Hardware connection

Connect the DS18B20 module to the one-wire socket

### Operation and result

The below information will be printed on the serial debugging assistant

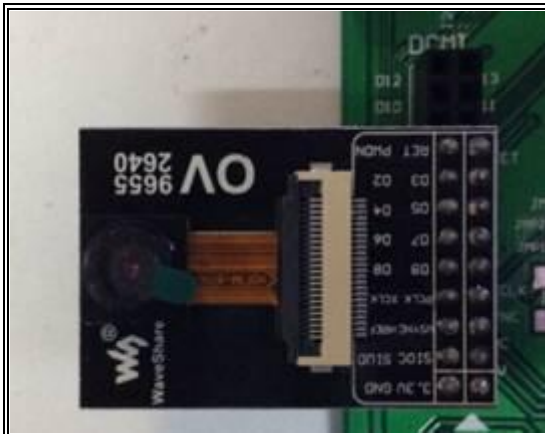
```
*****
DS18B20's ID :0x28 0x76 0xfe 0x49 0x5 0x2 0x0 0x20 Temperture:8 °C
Temperture:30 °C
Temperture:29 °C
Temperture:30 °C
Temperture:29 °C
Temperture:30 °C
Temperture:29 °C
Temperture:30 °C
```

## OV2640

### Overview

The development board communicates with the PC via Internet

### Hardware connection



- Connect the OV2640 Camera Board to the onboard DCMI interface

Launch the serial debugging assistant, configuring the data as below:

COM: COM3

Baud rate: 115200

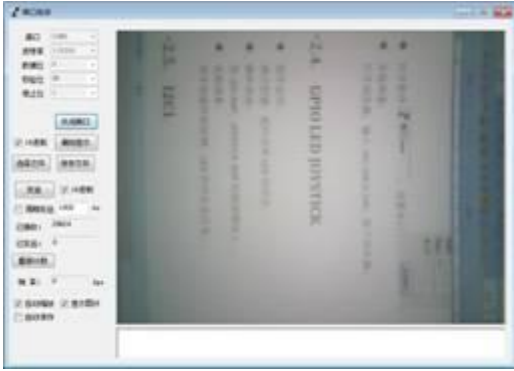
Data bits: 8

Parity bits: NO

Stop bits: 1

### Operation and result:

Press “user key”, the captured image displayed on the serial debugging assistant:



## GPIO\_Key

### Overview

Button, joystickdemo

### Hardware connection

Short the JOYSTICK JMP onboard

### Operation and result

Press the joystick, message will be printed on the serial debugging assistant accordingly.

## I2C

### Overview

Read and write data on E2PROM via I2C protocol

### Hardware connection



- Connect the AT24/FM24 Board to the board via I2C connector (I2C1 or I2C2, depending on the software configuration).

### Software configuration

Connect the module to I2C1 interface	Connect the module to I2C2 interface
<pre>#define Open_I2C1 //#define Open_I2C2</pre>	<pre>//#define Open_I2C1 #define Open_I2C2</pre>

### Operation and result

- The below information will be printed on the serial debugging assistant:

```
*****
EEPROM 24C02 Write Test
EEPROM 24C02 Write Test OK
EEPROM 24C02 Read Test
EEPROM 24C02 Read Test OK
```

## I2S\_UDA1380

### Overview

Drive the UDA1380 Board to play music via Phillips I2S protocol

### Hardware connection



- Connect the UDA1380 Board to the board via I2S interface.
- Connect the earphone to the UDA1380 Board via LINEOUT interface

### Operation and result

You should hear music when press the RESET key

## NandFlash\_SCB0

### Overview

Read and write NAND FLASH via FMC

### Hardware connection



- Connect the NandFlash Board to the board via 8BIT FMC interface.

### Operation and result

- The below information will be printed on the serial debugging assistant:

```

SYSCLK: 180M
MCLK: 180M
PCLK1: 45M
PCLK2: 90M
Welcome to use NAND FLASH module:
*****
Nand Flash ID = EC,F1,00,95 Type = K9F1G08UB

Written to the number of:
0 1 2 3 4 5 6 7 8 9 a b c d e f 10 11 12 13 14 15 16 17 18 1
9 1a 1b 1c 1d 1e 1f 20 21 22 23 24 25 26 27 28 29 2a 2b 2c 2d
2e 2f 30 31 32 33 34 35 36 37 38 39 3a 3b 3c 3d 3e 3f 40 41 42
3 44 45 46 47 48 49 4a 4b 4c 4d 4e 4f 50 51 52 53 54 55 56 57
58 59 5a 5b 5c 5d 5e 5f 60 61 62 63 64 65 66 67 68 69 6a 6b 6c
4 6e 6f 70 71 72 73 74 75 76 77 78 79 7a 7b 7c 7d 7e 7f 80 81
82 83 84 85 86 87 88 89 8a 8b 8c 8d 8e 8f 90 91 92 93 94 95 96
7 90 99 9a 9b 9c 9d 9e 9f a0 a1 a2 a3 a4 a5 a6 a7 a8 a9 aa ab

```

## SAI

### Overview

Drive the UDA1380 Board to play music via SAI interface

### Hardware connection



- Connect UDA1380 Board to the board via SAI1 interface.
- Connect the earphone to the UDA1380 Board via LINEOUT connector.

### Operation and result

You should hear music when press the RESET key.

## SD\_FatFS

### Overview

Read and write SD card, SDcard is FAT file system.

### Hardware connection



- Connect the Micro SD Storage Board to the board via SDIO interface.
- Insert the SD card to the Micro SD Storage Board socket.

### Operation and result

Message will be printed on the serial debugging assistant.

## SDIO

## Overview

Read and write information in SD card

### Hardware connection



- Connect the Micro SD Storage Board to the board via SDIO connector.

Insert the SD card to the Micro SD Storage Board socket.

### Operation and result

Message will be printed on the serial debugging assistant.

## SPI

### Overview

Drive the AT45DBXX DataFlash Board via SPI interface

### Hardware connection



- Connect the AT45DBXX DataFlash Board via SPI connector. (SPI1 or SPI4, depends on the software configuration)

### Software connection

Connect the module to SPI1 interface	Connect the module to SPI4 interface
<pre>1. define Open_SPI1 //#define Open_SPI4</pre>	<pre>//#define Open_SPI1 1. define Open_SPI4</pre>

### Operation and result

Info/messages printed on the serial debugging assistant:



```
SYSCLK:180M
HCLK:180M
PCLK1:45M
PCLK2:90M

Welcome to WaveShare STM32F4 series MCU Board Open429Z-D
SPI is ready!
AT45DBXX had been Init!
AT45DBXX ID is 0x1f 0x24 0x0 0x0

FLASH AT45DBXX Write Test:
 0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41
42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62
63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83
84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104
105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125
```

## USART

### Overview

USART serial port communication demo

### Hardware connection

### Operation and result

Info/messages printed on the serial debugging assistant:

```
Waveshare!
Waveshare!
Waveshare!
```

## Resources

- [User Manual](#)
- [Schematic](#)
- [Demo](#)

## STM32 Software

### IDE

- [Keil MDK](#)
- [STM32CubeMX](#)

### Programmers

- [Flash Loader for ISP](#)
- [STVP](#)
- [STM32 ST LINK Utility](#)

### USB Driver

- [PL2303 Windows Driver](#)
- [ST-Link V2 USB Driver](#)
- [Virtual COM Port Driver](#)

## Other Software

- [Stlinkupgrade](#)
- [TCP UDP Debugger](#)
- [IpTool](#)
- [EMWToolBox\\_Setup](#)
- [BonjourSetup](#)
- [SecureCRT](#)
- [Camera test](#)
- [BusHound](#)

## STM32F4 Datasheets

- [STM32F405 STM32F407-Datasheet.pdf](#)
- [STM32F427 STM32F429-Datasheet.pdf](#)
- [STM32F437 STM32F439-Datasheet.pdf](#)
- [STM32F4-Reference.pdf](#)

## STM32 Documents

### IAP Source

- [stm32f4 IAP USART](#)
- [stm32f4 IAP ETH](#)

### ST libraries

- [STM32F4xx\\_DSP\\_StdPeriph\\_Lib.7z](#)
- [STM32F4\\_Eeprom\\_Emulation.7z](#)
- [STM32F417\\_ETH\\_SSL.7z](#)
- [STM32\\_I2C\\_CPAL.7z](#)

### UCOS Source

- [UCGUI3.90\\_Source.zip](#)

## FAQ

## Support



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