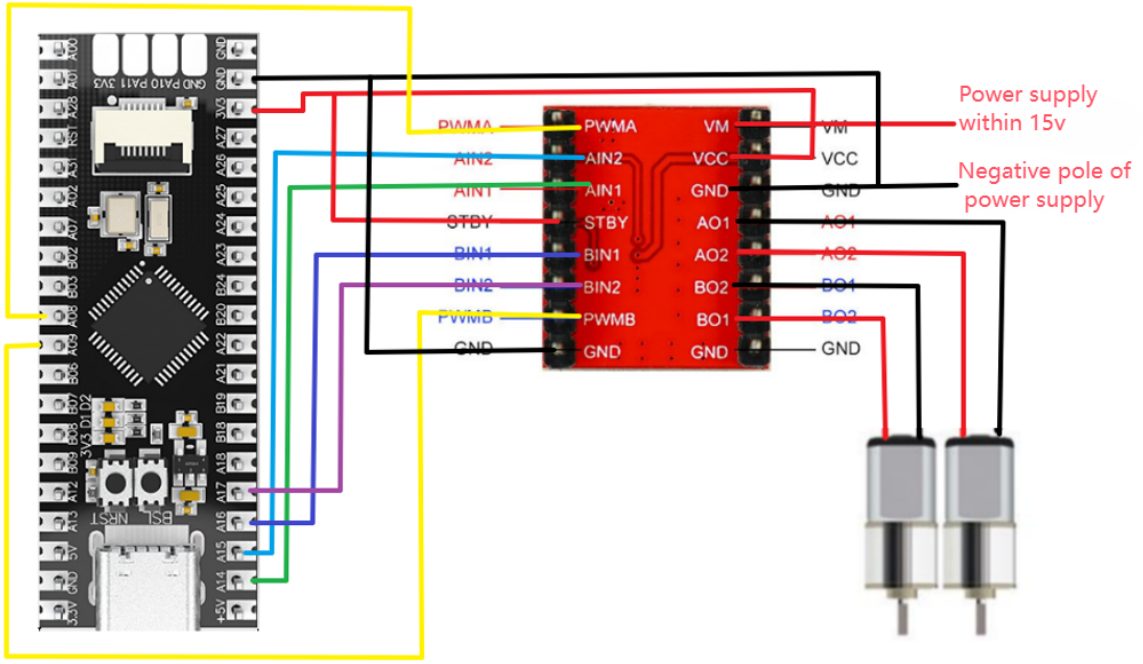
TB6612 dual-channel driver

1. Learning Objectives

Use TB6612 motor driver module to drive dual-channel motors.

2. Hardware connection

MSPM0G3507 and TB6612 pin connection



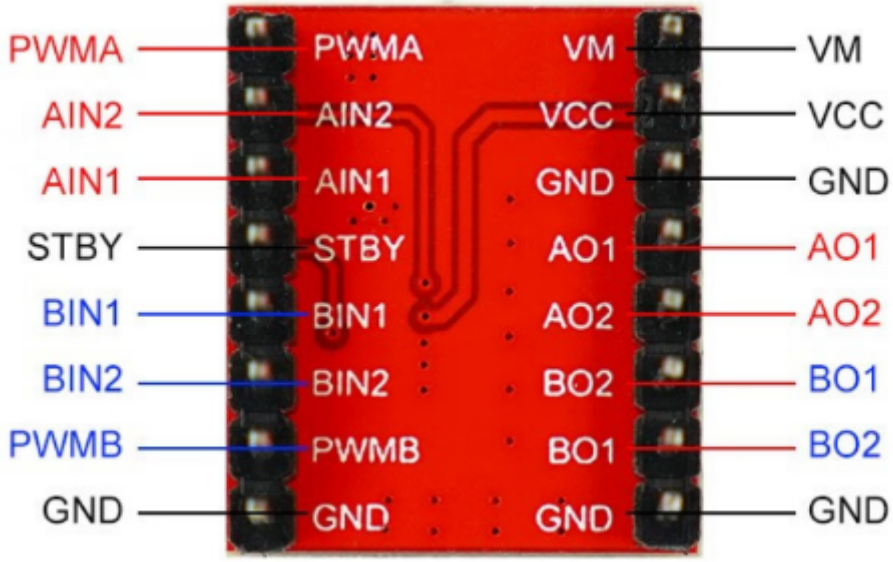
A motor:

MSPM0G3507	TB6612
PA8	PWMA
PA14	AIN1
PA15	AIN2

B motor:

MSPM0G3507	TB6612
PA9	PWMB
PA16	BIN1
PA17	BIN2

TB6612 motor driver module pin description:



	Pin Name	Pin Description
	VM	Drive voltage input (4.5-15V)
	VCC	Logic level input (2.7-5.5V)
	GND	Power Ground
	STBY	Normal working/standby state control input
Motor 1	PWMA	Motor 1 PWM signal input
	AIN1	Motor 1 control mode input
	AIN2	
	AO1	Motor 1 drive output
	AO2	
Motor 2	PWMB	Motor 2 PWM signal input
	BIN1	Motor 2 control mode input
	BIN2	
	BO1	Motor 2 drive output
	BO2	

3. Program description

- bsp_tb6612.h

```
#ifndef __BSP_TB6612_H_
#define __BSP_TB6612_H_

#include "ti_msp_dl_config.h"

//A Motor
```

```
#define AIN1_OUT(X)  ( (X) ? (DL_GPIO_setPins(GPIO_1_PORT,GPIO_1_AIN1_PIN)) :
(DL_GPIO_clearPins(GPIO_1_PORT,GPIO_1_AIN1_PIN)) )
#define AIN2_OUT(X)  ( (X) ? (DL_GPIO_setPins(GPIO_2_PORT,GPIO_2_AIN2_PIN)) :
(DL_GPIO_clearPins(GPIO_2_PORT,GPIO_2_AIN2_PIN)) )

//B Motor
#define BIN1_OUT(X)  ( (X) ? (DL_GPIO_setPins(GPIO_3_PORT,GPIO_3_BIN1_PIN)) :
(DL_GPIO_clearPins(GPIO_3_PORT,GPIO_3_BIN1_PIN)) )
#define BIN2_OUT(X)  ( (X) ? (DL_GPIO_setPins(GPIO_4_PORT,GPIO_4_BIN4_PIN)) :
(DL_GPIO_clearPins(GPIO_4_PORT,GPIO_4_BIN4_PIN)) )

void A_control(uint16_t motor_speed,uint8_t dir);
void B_control(uint16_t motor_speed,uint8_t dir);

#endif
```

- The macro definition part defines how to control the direction of the motor. TB6612 controls the direction of the motor through two pins. When one pin is high and the other is low, the motor rotates in one direction; otherwise, it rotates in the opposite direction.

  AIN1_OUT and AIN2_OUT control the direction of motor A.

  BIN1_OUT and BIN2_OUT control the direction of motor B.

  A_control(uint16_t motor_speed, uint8_t dir): This function is used to control motor A and accepts motor speed (motor_speed) and direction (dir) as parameters.

  B_control(uint16_t motor_speed, uint8_t dir): This function is used to control motor B and has similar functions to A_control.

    - bsp_tb6612.c

```
void A_control(uint16_t motor_speed,uint8_t dir)
{
    if(dir)
    {
        AIN1_OUT(0);
        AIN2_OUT(1);
    }
    else
    {
        AIN1_OUT(1);
        AIN2_OUT(0);
    }


    DL_TimerA_setCaptureCompareValue(PWM_1_INST, motor_speed,
DL_TIMER_CC_0_INDEX);

}



void B_control(uint16_t motor_speed,uint8_t dir)
{
    if(dir)
    {
        BIN1_OUT(0);
        BIN2_OUT(1);
```

```
    }
    else
    {
        BIN1_OUT(1);
        BIN2_OUT(0);
    }


    DL_TimerA_setCaptureCompareValue(PWM_1_INST, motor_speed,
DL_TIMER_CC_1_INDEX);

}
```

Function A_control(uint16_t motor_speed, uint8_t dir) and function B_control(uint16_t motor_speed, uint8_t dir) control motor A and B respectively, determine the rotation direction of the motor according to the dir parameter, and use the motor_speed parameter to set the motor speed.

Note: The project source code must be placed in the SDK path for compilation,

For example, the path: D:\TI\M0_SDK\mspm0_sdk_1_30_00_03\TB6612