

STM32 I2C + DMA

?????

1. I2C -
2. I2C -
3. I2C + DMA -

? I2C ??

I2C ??

- (SCL) (SDA)
-
-
- 100 kHz 400 kHz

I2C ???

	GPIO	
SCL	PB6	
SDA	PB7	

I2C ??

I2C 7 10

- MPU6050 0x68 +
- BMP280 0x77
- EEPROM 0x50~0x57

?? ?????

Pin	Pin	Pin
SCL	PB6	I2C1_SCL 4.7kΩ 3.3V
SDA	PB7	I2C1_SDA 4.7kΩ 3.3V
VCC	3.3V	
GND	GND	

?? CubeMX ??

?? 1??? I2C1

1. **Connectivity** → **I2C1**
2. **I2C**

?? 2??? I2C ??

- **Speed Mode** Fast (400 kHz)
- **Addressing Mode** 7-bit

?? 3?????

NVIC Settings I2C1 event interrupt I2C1 error interrupt

? ??????

```
/* STM32 Lesson 08 - I2C Communication */  
  
#include "main.h"  
#include "i2c.h"  
#include "usart.h"  
  
I2C_HandleTypeDef hi2c1;  
UART_HandleTypeDef huart1;
```

```

/* I2C 0000 */
HAL_StatusTypeDef I2C_Write(uint8_t addr, uint8_t reg, uint8_t data)
{
    uint8_t buffer[2] = {reg, data};
    return HAL_I2C_Master_Transmit(&hi2c1, addr << 1, buffer, 2, 1000);
}

/* I2C 0000 */
HAL_StatusTypeDef I2C_Read(uint8_t addr, uint8_t reg, uint8_t *data, uint16_t size)
{
    HAL_I2C_Master_Transmit(&hi2c1, addr << 1, &reg, 1, 1000);
    return HAL_I2C_Master_Receive(&hi2c1, addr << 1, data, size, 1000);
}

void UART_Print(const char *format, ...);

int main(void)
{
    HAL_Init();
    SystemClock_Config();
    MX_I2C1_Init();
    MX_USART1_UART_Init();

    UART_Print("\r\n=== I2C Test ===\r\n");

    /* 00 I2C 0000 */
    for (uint8_t addr = 0x08; addr < 0x78; addr++)
    {
        if (HAL_I2C_IsDeviceReady(&hi2c1, addr << 1, 1, 100) == HAL_OK)
        {
            UART_Print("Device found at 0x%X\r\n", addr);
        }
    }

    while (1)
    {
        /* I2C 0000 */
    }
}

```

□ **I2C** □□□□□□

Revision #2

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