

## 다른 자이로센서들의 초기화 함수 tdk\_sensors.pdf

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**MPU6000**

```

void mpu6000_setup(void) {
    mpu6500_spi1_write(PWR_MGMT_1, 0x80); // 1000 0000
    LL_mDelay(100);
    mpu6500_spi1_write(SIGNAL_PATH_RESET, 0x07);
    LL_mDelay(100);
    mpu6500_spi1_write(PWR_MGMT_1, 0x00);
    LL_mDelay(10); mpu6500_spi1_write(CONFIG, 0x03);
    LL_mDelay(10);
    mpu6500_spi1_write(GYRO_CONFIG, 0x08); // => ±500dps
    LL_mDelay(10);
    mpu6500_spi1_write(ACCEL_CONFIG, 0x10); // => ±8g
    LL_mDelay(10);
    mpu6500_spi1_write(SMPLRT_DIV, 0x00);
}

```

**MPU6500**

```

void mpu6500_setup(void) {
    mpu6500_spi1_write(PWR_MGMT_1, 0x80); // => 1000 0000
    LL_mDelay(100);
    mpu6500_spi1_write(SIGNAL_PATH_RESET, 0x07);
    LL_mDelay(100);
    mpu6500_spi1_write(PWR_MGMT_1, 0x01); // PLL circuit enabled.
    LL_mDelay(10);
    mpu6500_spi1_write(PWR_MGMT_2, 0x00);
    LL_mDelay(10);
    mpu6500_spi1_write(CONFIG, 0x03); // LPF(~43Hz)
    LL_mDelay(10);
    mpu6500_spi1_write(GYRO_CONFIG, 0x08); // => ±500dps
    LL_mDelay(10);
}

```

```

mpu6500_spi1_write(ACCEL_CONFIG, 0x10); // => ±8g
LL_mDelay(10);
mpu6500_spi1_write(ACCEL_CONFIG2, 0x03);
LL_mDelay(10);
mpu6500_spi1_write(SMPLRT_DIV, 0x00);
}

```

## ICM20948

```

uint8_t delay_ = 10;
void icm20948_setup(void) {
    icm20948_select_bank(USER_BANK_0);
    LL_mDelay(delay_);
    uint8_t test = icm20948_whoami();
    printf("0x%X\n", test); // 0xEA ---> OK
    spi1_write(PWR_MGMT_1, 0x80); // reset
    LL_mDelay(delay_);
    spi1_write(PWR_MGMT_1, 0x01); // clock: 20MHz (with PLL)
    LL_mDelay(delay_);
    spi1_write(PWR_MGMT_2, 0x00); // gyro_accel_on
    LL_mDelay(delay_);
    spi1_write(0x03, 0x10); // SPI only
    LL_mDelay(delay_);
    // printf("0x%02X\n", spi1_read(0x03)); // 0xEA ---> OK
    icm20948_select_bank(USER_BANK_2);
    LL_mDelay(delay_);
    spi1_write(GYRO_CONFIG_1, 0x1B); // 1.1kHz, +-500dps, DLPF: 73(51)Hz
    LL_mDelay(delay_);
    spi1_write(GYRO_SMPLRT_DIV, 0x00); // No change in sampling rate
    LL_mDelay(delay_);
    spi1_write(ACCEL_CONFIG, 0x1D); // 1.1kHz, +-8g, DLPF: 69(50)Hz
    LL_mDelay(delay_);
    spi1_write(ACCEL_SMPLRT_DIV_1, 0x00); // No change in sampling rate
    LL_mDelay(delay_);
    // printf("0x%02X\n", spi1_read(GYRO_CONFIG_1)); // 0xEA ---> OK
    icm20948_select_bank(USER_BANK_0);
}

```

```
#define USER_BANK_SEL      0x7F
#define USER_BANK_0        0x00
#define USER_BANK_1        0x10
#define USER_BANK_2        0x20
#define USER_BANK_3        0x30
#define PWR_MGMT_1         0x06
#define PWR_MGMT_2         0x07
#define GYRO_CONFIG_1      0x01
#define ACCEL_CONFIG       0x14
#define GYRO_SMPLRT_DIV    0x00
#define ACCEL_SMPLRT_DIV_1 0x10
```

```
void icm20948_select_bank(uint8_t bank) {
    spi1_write(USER_BANK_SEL, bank);
}
```

```
uint8_t icm20948_whoami(void) {
    uint8_t val;
    val = spi1_read(0x00);
    return val;
}
```