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REG_PORT_DIRSET1 = 0x80;          /* PB07 = CS for BME680 */

REG_SERCOM1_SPI_CTRLA = 1;        /* reset SERCOM1 */
while (REG_SERCOM1_SPI_CTRLA & 1) {} /* wait for reset to complete */

REG_SERCOM1_SPI_CTRLA = 0x3030000C; /* MISO-3, MOSI-0, SCK-1, SS-2, CPOL=1, CPHA=1 */
REG_SERCOM1_SPI_CTRLB = 0x00022000; /* Master SS, 8-bit, receiver enabled */
REG_SERCOM1_SPI_BAUD = 0;          /* SPI clock is 4MHz/2 = 2MHz */
REG_SERCOM1_SPI_CTRLA |= 2;        /* enable SERCOM1 */
}

static void init_spi_BME680 (void) {
    user_spi_write(0, 0x60, (void *)0xB6, 1); /*software reset BME680
    user_spi_write(0, 0x73, (void *)0, 1);    //switch to page 0 of memory map
    user_spi_read(0, 0x73, &status, 1);       //read status register
    user_spi_read(0, 0x50, &id, 1);           //read id register
    user_spi_write(0, 0x73, (void *)0x10, 1); //switch to page 1 of memory map
    user_spi_read(0, 0x73, &status, 1);       //read status register
}

void user_delay_ms (uint32_t period) {
    for (int i = 0; i < 170*period; i++) {    //based off of 30us delay in DOGM163W_A_SERCOM1.c
        __asm("nop");                        //delay by period ms
    }
}

static uint8_t spi_transfer (uint8_t data) {
    uint8_t Rx_data;
    while(!(REG_SERCOM1_SPI_INTFLAG & 1)) {} /*wait until Tx ready
    REG_SERCOM1_SPI_DATA = data;             //send data byte
    while(!(REG_SERCOM1_SPI_INTFLAG & 2)) {} /*wait until transmit is complete
    while(!(REG_SERCOM1_SPI_INTFLAG & 4)) {} /*wait until receive is complete
    Rx_data = REG_SERCOM1_SPI_DATA;          //read data register
    return Rx_data;
}

int8_t user_spi_read (uint8_t dev_id, uint8_t reg_addr, uint8_t *reg_data, uint16_t len) {

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