

# Anfragen von Daten vom Slave per SPI

## Student Group

First Name	Surname	Matrikel Nr.

## Table of Contents

<b>Anfragen von Daten vom Slave per SPI</b> .....	2
Code des Master .....	2
Code des Slave .....	3

# Anfragen von Daten vom Slave per SPI

Ein einfaches Beispiel wie ein SPI-Master von einem SPI-Slave Daten anfragen kann ist hier zu finden:

[spi\\_slavetest.zip](#)

In der Datei ist auch das passende Simulide File vorhanden

## Code des Master

```
#define F_CPU                16000000UL

#include <avr/io.h>
#include <util/delay.h>
#include <stdint.h>

#define SET_BIT(BYTE, BIT)  ((BYTE) |= (1 << (BIT)))
#define CLR_BIT(BYTE, BIT)  ((BYTE) &= ~(1 << (BIT)))

#define SLAVE_REQUEST       0x11           // The value can be changed

void SPI_MasterTransmit(uint8_t data);

int main()
{
    // Set the following Pins as
    output
    DDRB =      (1<<DDB2)                // - !SS
              |(1<<DDB3)                // - MOSI
              |(1<<DDB4)                // - MOSI
              |(1<<DDB5);               // - SCK
    SPCR =  (1<<SPE)|(1<<MSTR)|(1<<SPR0); // Enable SPI, Master mode,
    clock rate fck/16
    DDRD = 0xFF;                         // Set PORTD as output
    while(1) {
        SPI_MasterTransmit(SLAVE_REQUEST); // Send request to slave

        uint8_t dataFromSlave = SPDR;     // Receive the answer from the
    slave
        PORTD = dataFromSlave^0xFF;       // Output the answer on
    PORTC, but all Bits inverted
    }
}

void SPI_MasterTransmit(uint8_t data)
{
    CLR_BIT(PORTB, PORTB2);              // clear !SS to activate
    Slave
    SPDR = data;                          // Start transmission
    while(!(SPSR & (1<<SPIF)));           // Wait for transmission
    complete
}
```

```
    SET_BIT(PORTB, PORTB2);           // Set !SS to deactivate
Slave
}
```

## Code des Slave

```
#include <avr/io.h>
#include <avr/interrupt.h>

#define SLAVE_REQUEST      0x11      // The value can be changed

volatile uint8_t dataToMaster  = 0x00;
volatile uint8_t dataFromMaster = 0x00;

int main() {
    DDRB = (1<<DDB4);           // MISO as output
    PORTD = 0xFF;               // Activate all pull-up resistors
    for PIND, to read switch states correctly
    SPCR = (1<<SPE)|(1<<SPIE);   // Enable SPI and SPI interrupt
    sei();                       // Enable global interrupts

    while(1)
    {
        // Main application code
    }
}

ISR(SPI_STC_vect) {
    dataFromMaster = SPDR;
    if (dataFromMaster == SLAVE_REQUEST)
    {
        dataToMaster=PIND;
        SPDR = dataToMaster;    // Load data into the buffer
    }
}
```

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