SPI

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Overview

- Serial Peripheral Interface
- Created in 1980
- Developed by Motorola
- De facto standard

Applications

- Secure digital cards
- Liquid crystal displays
- Wifi modules
- Camera modules
- NFC modules
- Modules!

Advantages

- Extremely simple
- Higher throughput than I²C or SMBus
- Lower power requirements than I²C or SMBus
- Slaves do not need a unique address

Disadvantages

- No error-checking protocols
- Only short distances possible, compared to RS-232, RS-485, CAN-bus
- No hot-swapping (dynamically adding notes)

Architecture

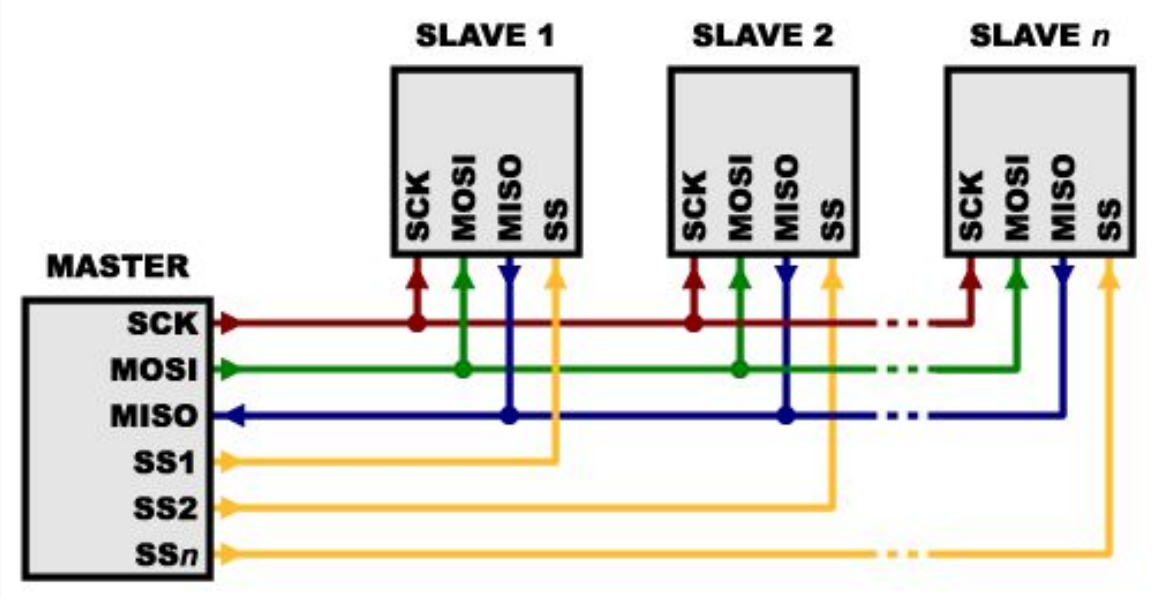
- Full duplex/bidirectional communication
- Master-slave architecture (single master, multiple slaves)
- Two types
  - Standard
  - Extended

Signals

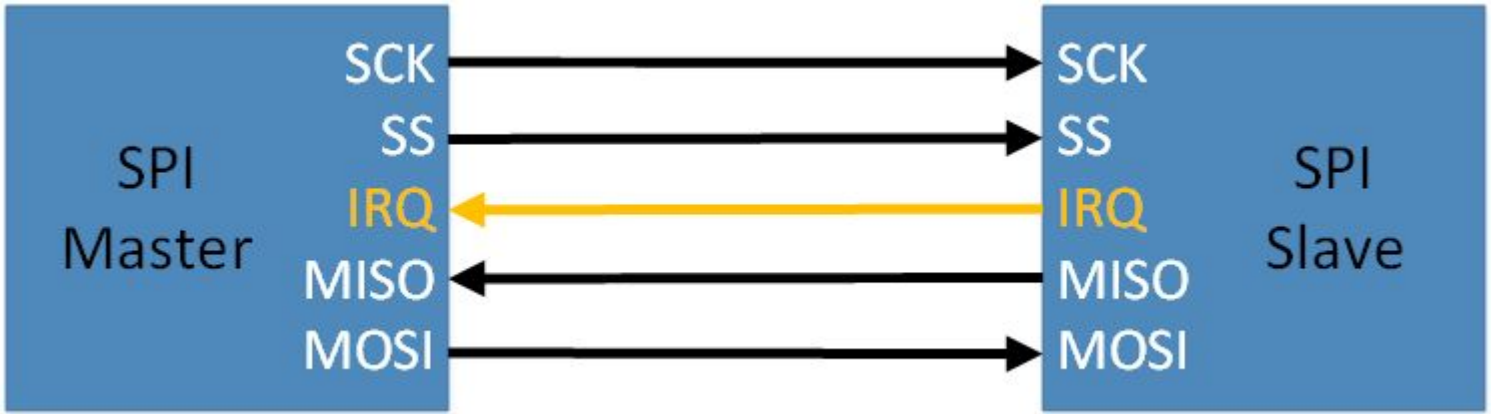
- SCK: Serial Clock
- MOSI: Master Output Slave Input
- MISO: Master Input Slave Output
- SS: Slave Select
- (IRQ: Interrupt Queue)

General SPI (1/2)

General SPI (2/2)



Extended SPI



Literature

- https://learn.sparkfun.com/tutorials/serial-peripheral-interface-spi
- https://www.mikrocontroller.net/articles/Serial_Peripheral_Interface
- http://www.ijedr.org/papers/IJEDR1303026.pdf
- https://en.wikipedia.org/wiki/Serial_Peripheral_Interface_Bus

Thanks