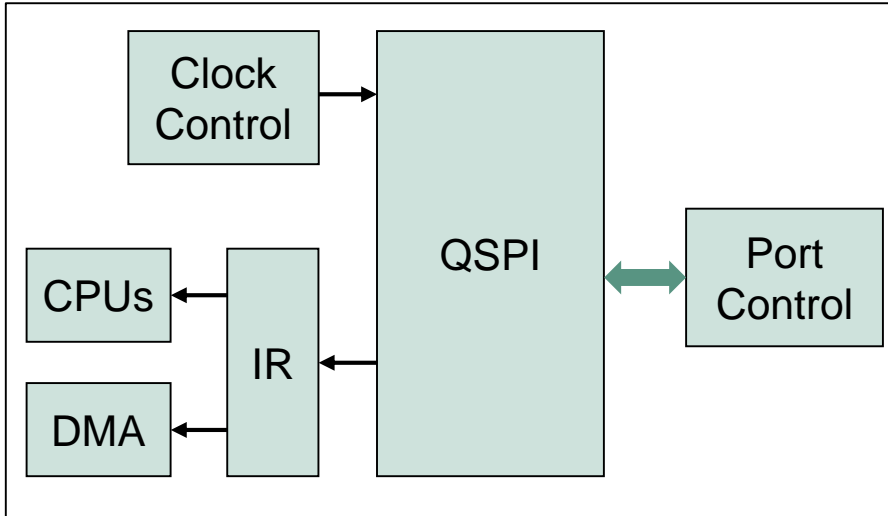


# QSPI

## Queued Synchronous Peripheral Interface

AURIX™ Microcontroller Training  
V1.0 2019-03





### Highlights

QSPI module provides synchronous serial communication with external devices using clock, data-in, data-out and slave select signals.

- > Master and Slave full duplex operation
- > Up to 50 Mbit/s

### Key Features

Queue support

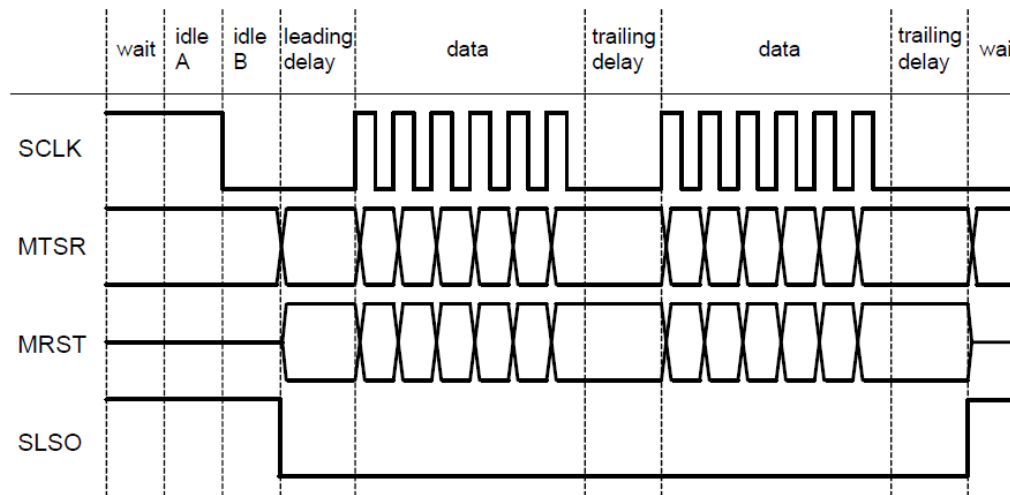
Flexible frame format

### Customer Benefits

- > Configuration and data via the same Queue (Tx or Rx FIFO)
- > Configurable shift direction, clock polarity and phase



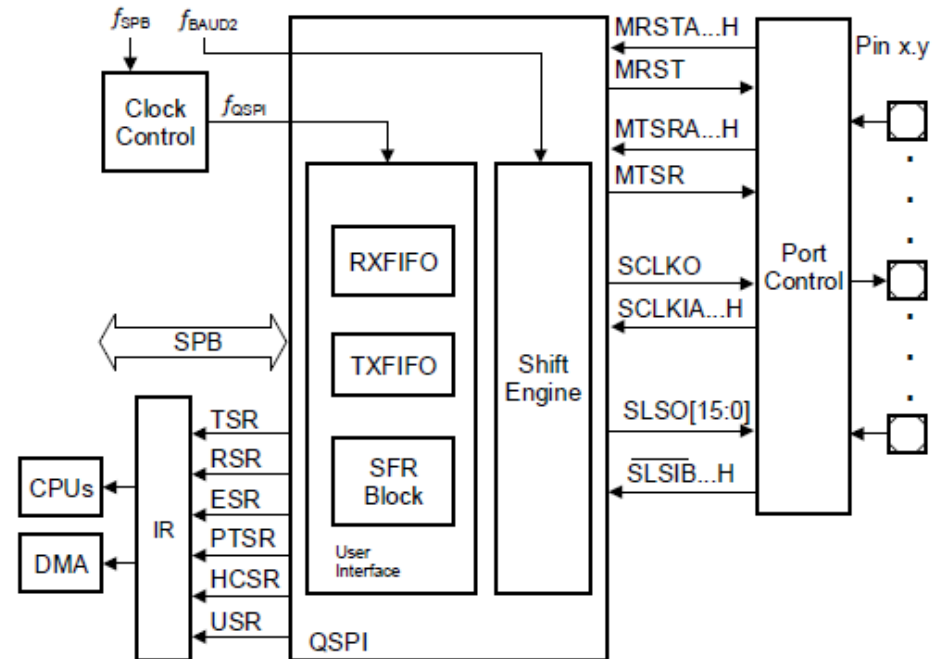
- › Programmable number of data bits: 2 to 32 data bits (plus parity: 3 to 33 bits)
- › 4 to 32 data bits possible for 50 Mbit/s
- › Programmable shift direction: LSB or MSB shift first
- › Programmable clock polarity: Idle low or idle high state for the shift clock
- › Programmable clock phase: data shift with leading or trailing edge of the shift clock
- › Flexible baud rate and delays (leading, trailing, idle) generation



# QSPI

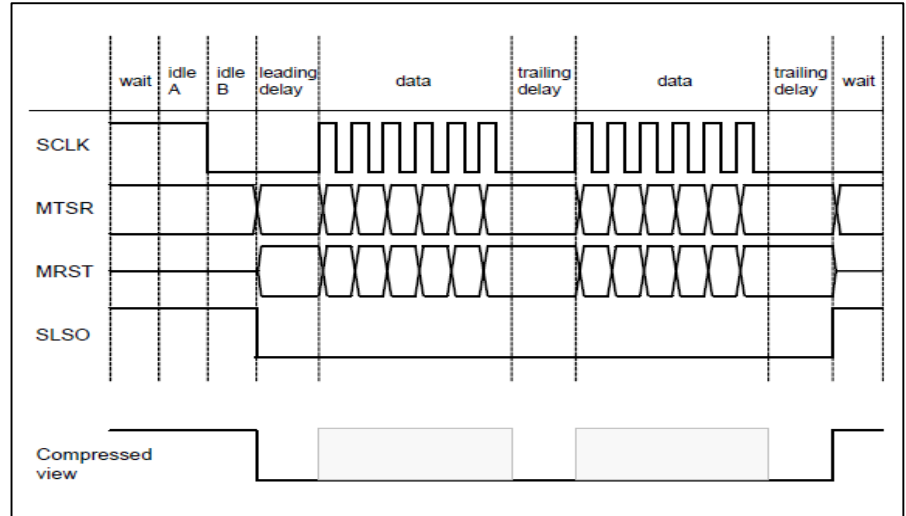
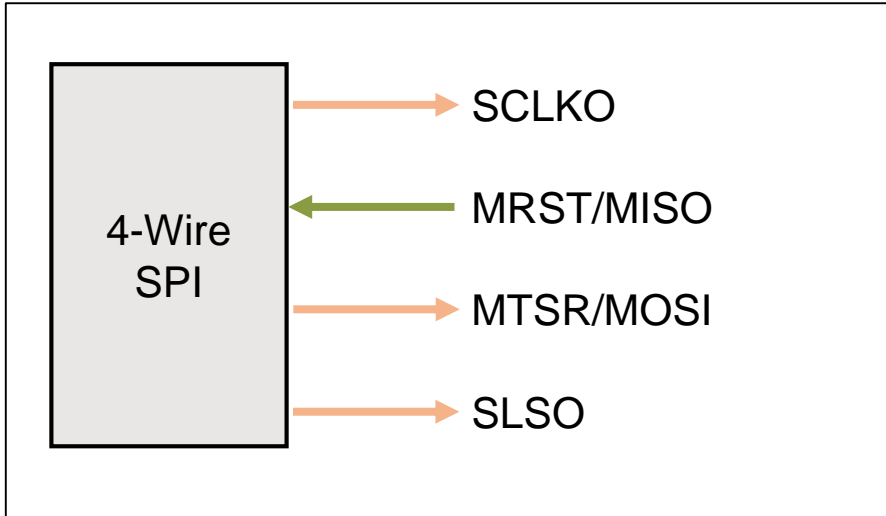
## System integration

- › FIFOs can be handled by DMA controller
- › Interrupt generation on
  - transmitter FIFO event
  - receiver FIFO event
  - error condition
  - phase transition
- › Seven slave select inputs SLSI in Slave Mode
- › Sixteen programmable slave select outputs SLSO in Master Mode



# Application example

## SPI master



## Overview

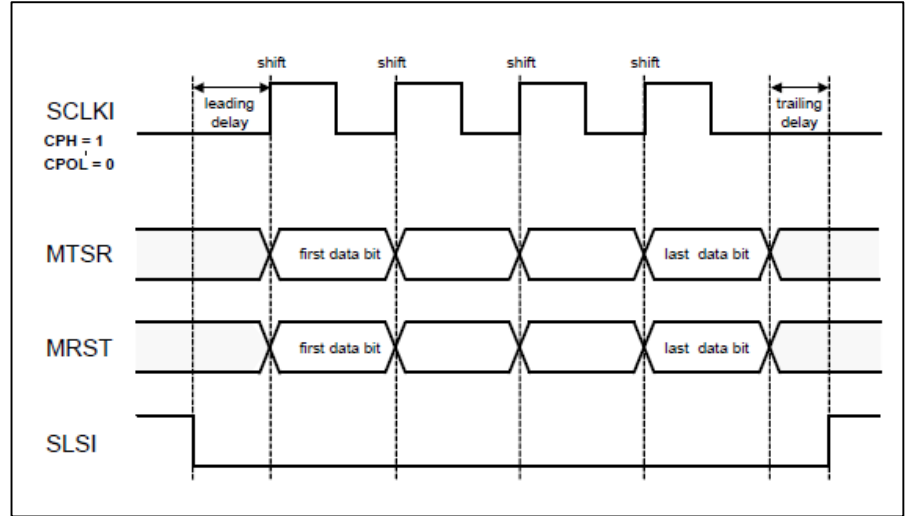
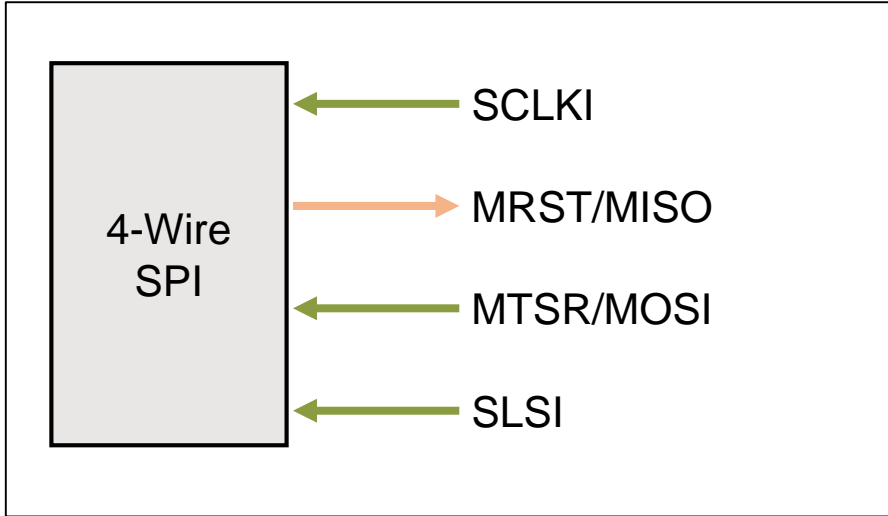
- › Typical 4-wire SPI Master communication
- › Support for Full-duplex, Half-duplex and Simplex modes

## Advantages

- › Full configuration of Idle, Leading and Trailing delays
- › Flexible timing control allows to program the duty cycle and the sampling point properties of the serial clock

# Application Example

## SPI slave



## Overview

- > Typical 4-wire SPI Slave communication
- > Support for Full-duplex, Half-duplex and Simplex modes

## Advantages

- > Easy configuration with shift clock phase and polarity

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**Edition 2019-03**

**Published by**

**Infineon Technologies AG  
81726 Munich, Germany**

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