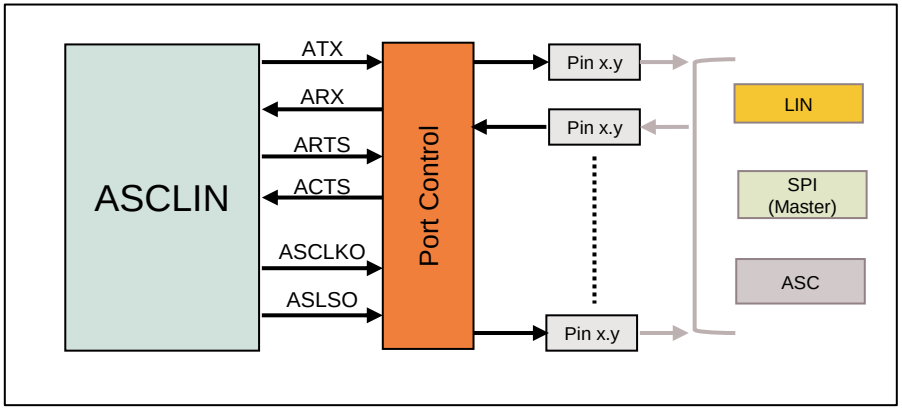
ASCLIN
Asynchronous Synchronous Interface

AURIX™ TC4xx Microcontroller

V1.0.0 2024-09

ASCLIN
Asynchronous Synchronous Interface



Highlights

› Provide asynchronous serial communication with external devices using only data-in, data-out signals. The focus of the module is set to fast and flexible communication: either fast point-to-point or master-to-many slaves communication using the LIN protocol

Key Features

3 in 1 module

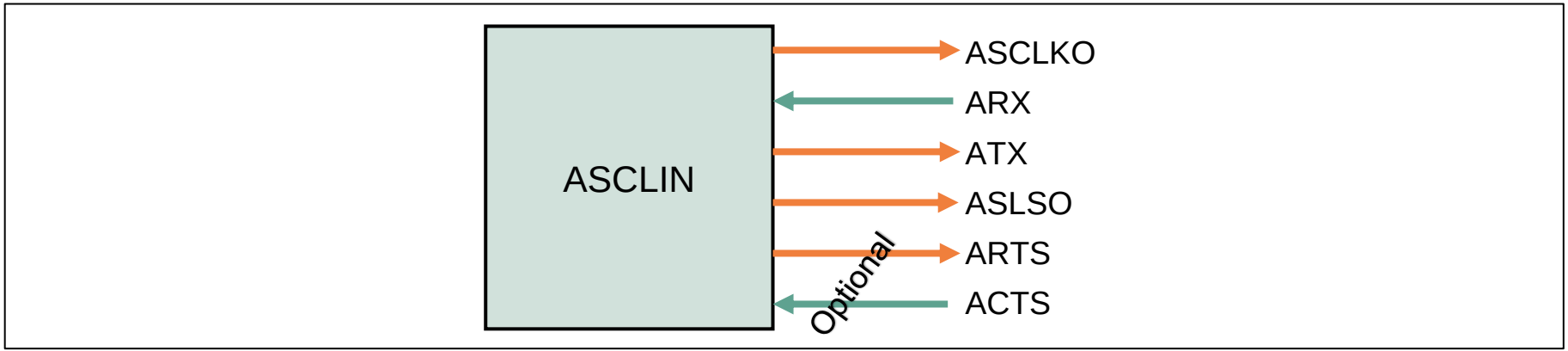
Configurable oversampling per bit

Customer Benefits

› Customer can use single module for ASC (UART), LIN and Master SPI applications

› Choose up to 16 oversampling per bit for higher accuracy for higher baud rates

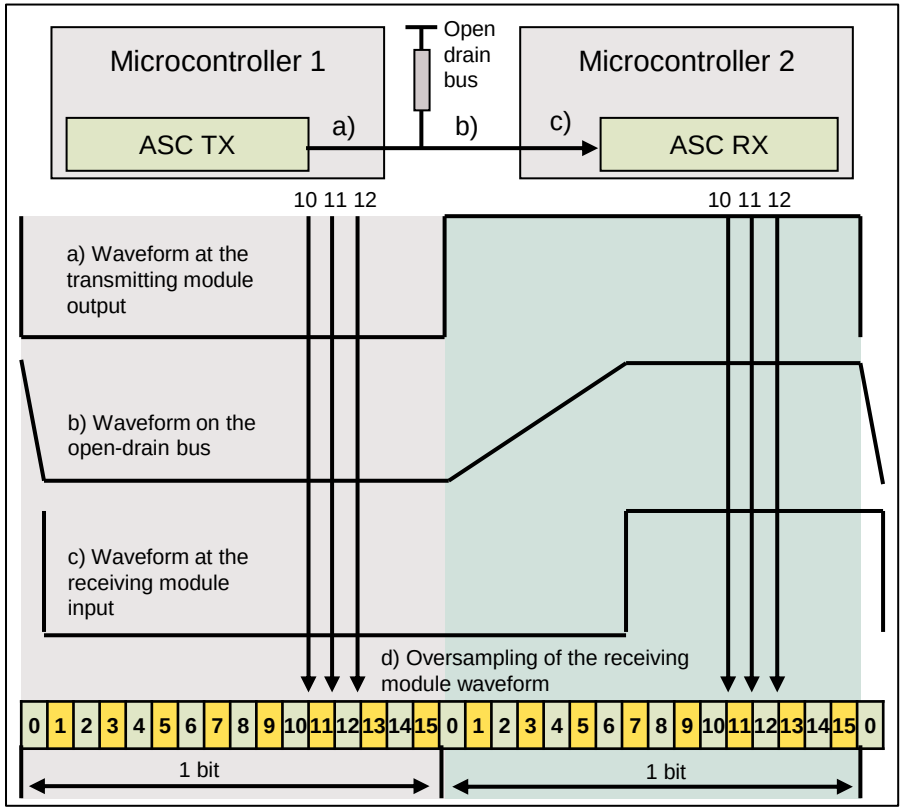
ASCLIN
3 in 1 Module



- ASCLIN module supports three different serial protocol standards:
  - ASC(UART)
  - LIN
  - SPI
- Customer can leverage three protocols support without additional hardware
- SPI master is supported with three or four wire approach (with or without slave select output signal)

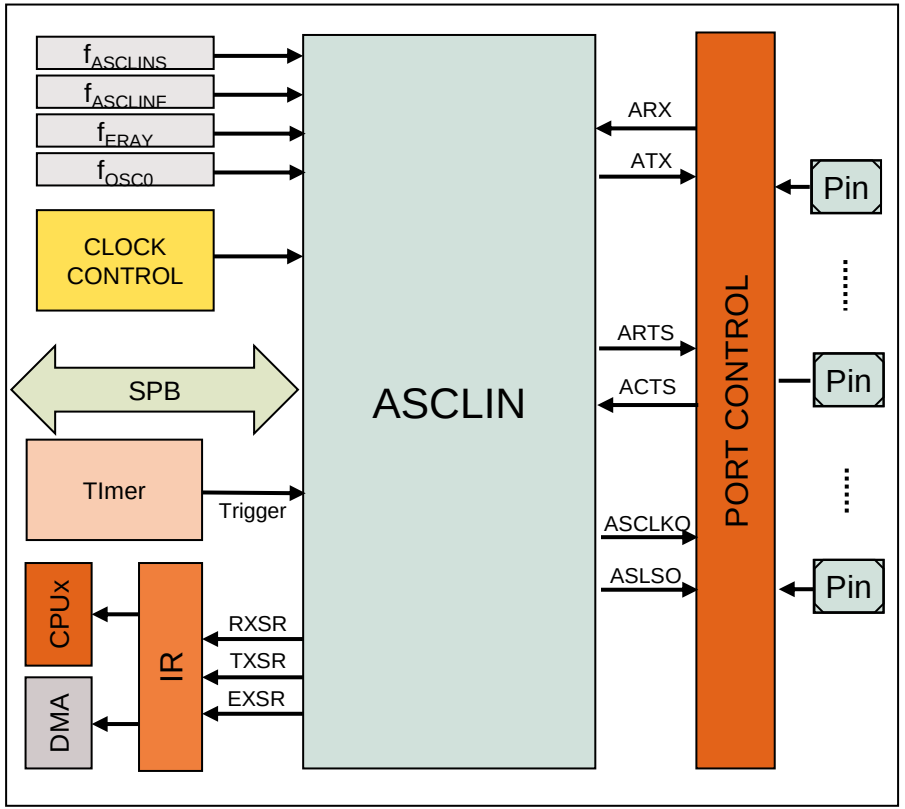
ASCLIN
Configurable oversampling per bit

- Programmable oversampling of 4 to 16 times per bit as shown in figure waveform
- Programmable sample point position with respect to the oversampling points in the range of 0 to 15
- Programmable number of samples per bit between 1 or 3

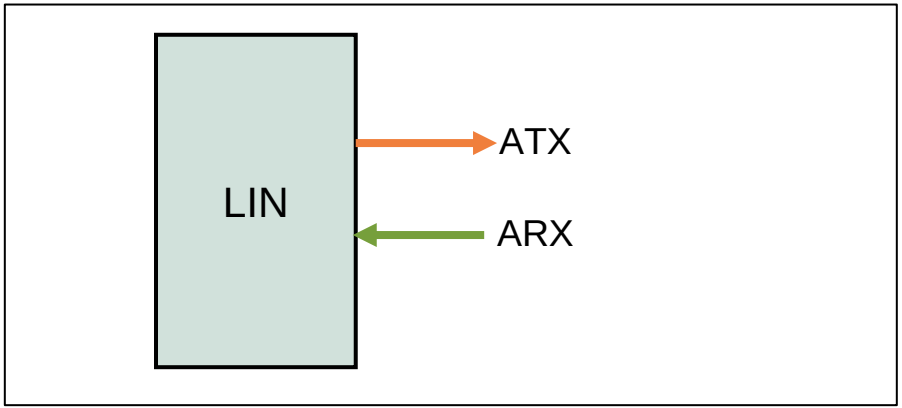


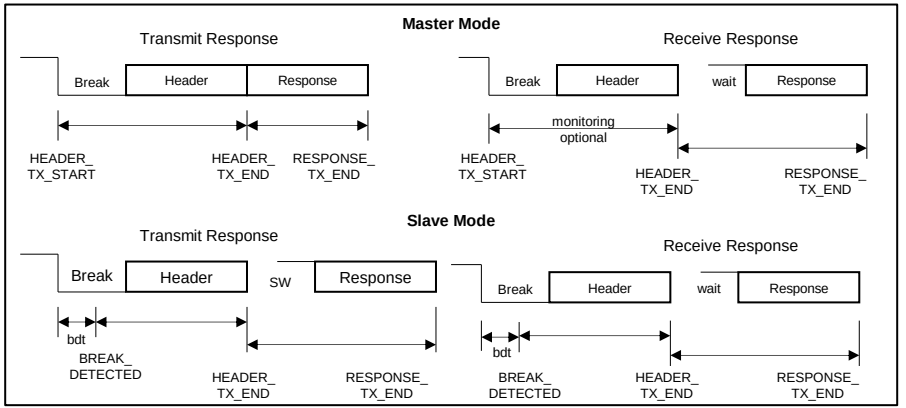
ASCLIN
System integration

- ASCLIN module is integrated to provide following benefits:
  - Interrupts signals capable of triggering either CPU or DMA
  - Trigger module functions based on external trigger from timer like GTM or eGTM
  - Internal loop-back mode for test functionality
  - Up to 12 ASCLIN channels available with flexible connections to multiple GPIO via multiplexers for transmission and reception respectively



Application example
LIN





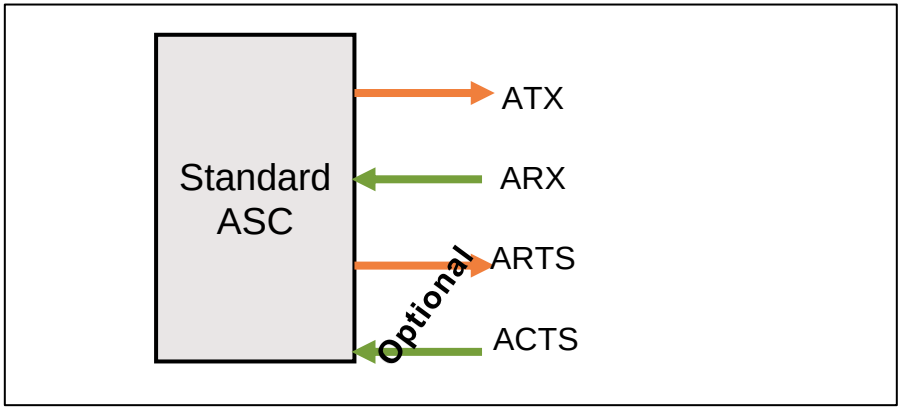
Overview

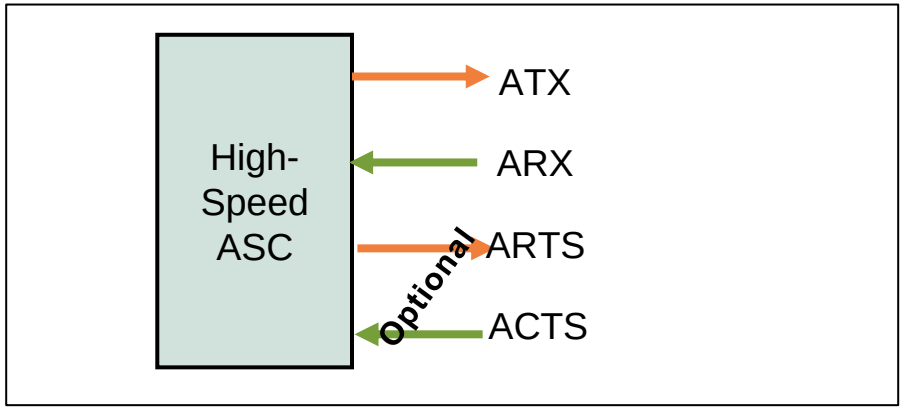
- Supports all four elementary LIN transactions including header/response transmission & reception, as master or slave
- Supports standard LIN v1.3/2.0/2.1/2.2 and J2602 with collision detection

Advantages

- Auto baud detection
- Optional collision detection
- Bus idle monitoring and wake-up capabilities
- Stuck at zero/one monitoring for safety

Application example
ASC





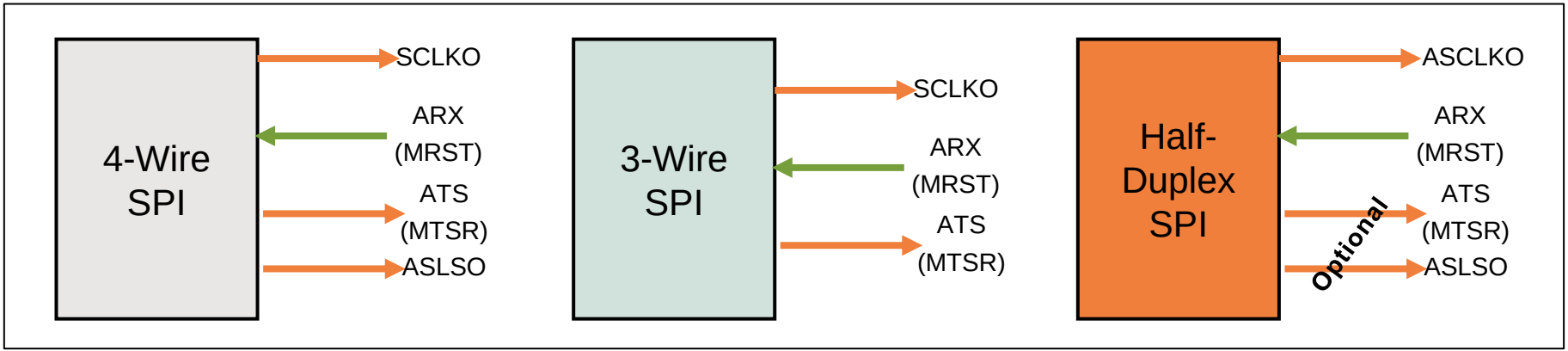
Overview

- Configure UART communications
- Supports baudrates up to 25 MBaud

Advantages

- Extended supports of different sensors through high-speed ASC extension
- Extension in functionality to support optional handshaking (RTS/CTS) for high-speed ASC communication

Application example
SPI master



Overview

- SPI master configuration for SPI based communications in multiple configurations
- Support of full and half duplex
- Supports baudrates up to 25 MBaud

Advantages

- Up to 32 bit data width supported
- Programmable leading & trailing delays

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