

MSC

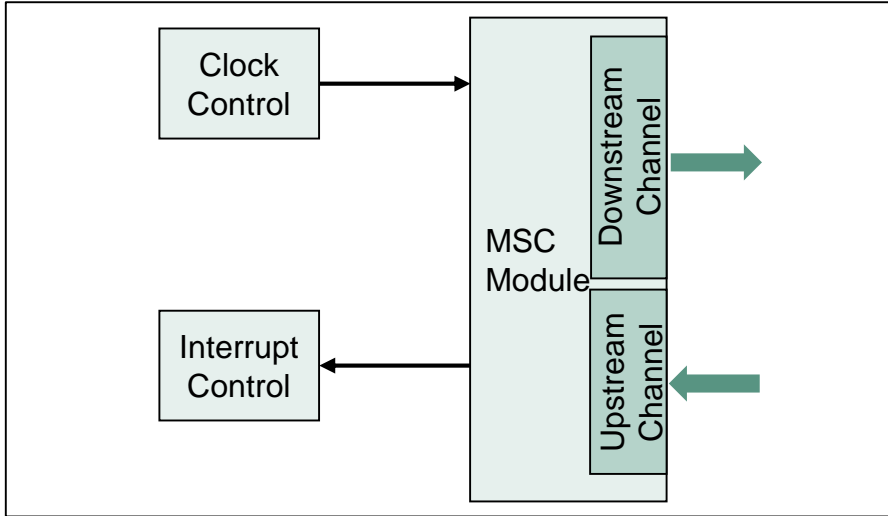
Micro Second Channel

AURIX™ TC3xx Microcontroller Training
V1.0 2020-06



MSC

Micro Second Channel



Highlights

The Micro Second Channel (MSC) is a serial interface that is designed especially for connecting external power devices to AURIX™ TC3xx.

- › Parity Error Checker
- › Spike filter on input line

Key Features

Downstream and upstream channels

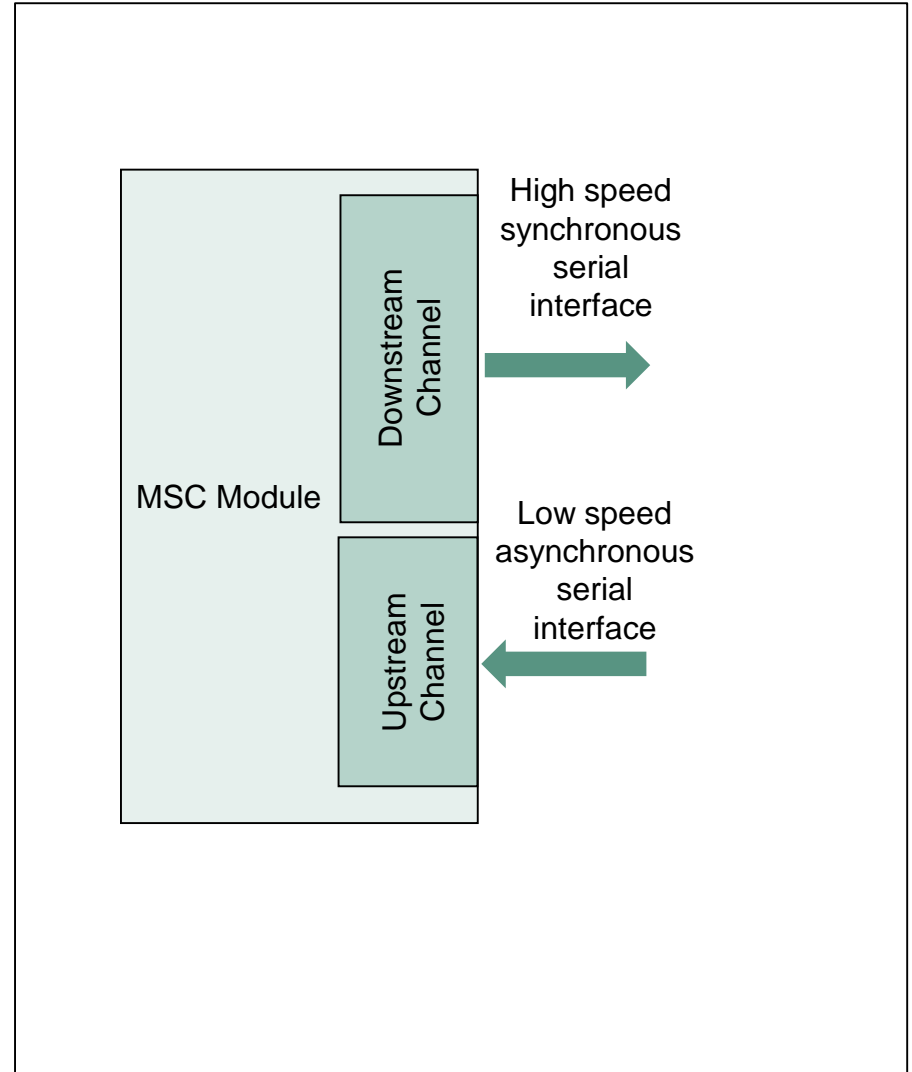
Serial data transmission

Customer Benefits

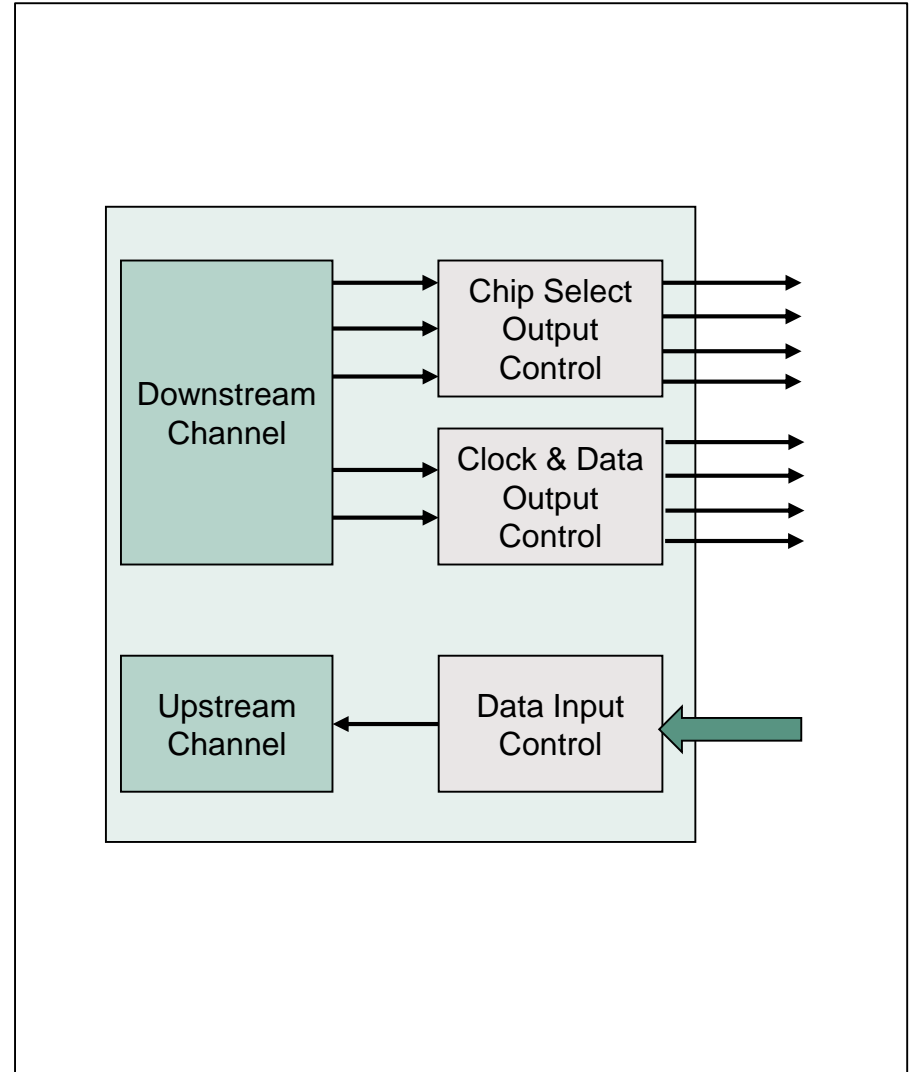
- › Efficient communication between AURIX™ and power devices
- › Reduces the number of pins required for connecting external power devices

Downstream and upstream channels

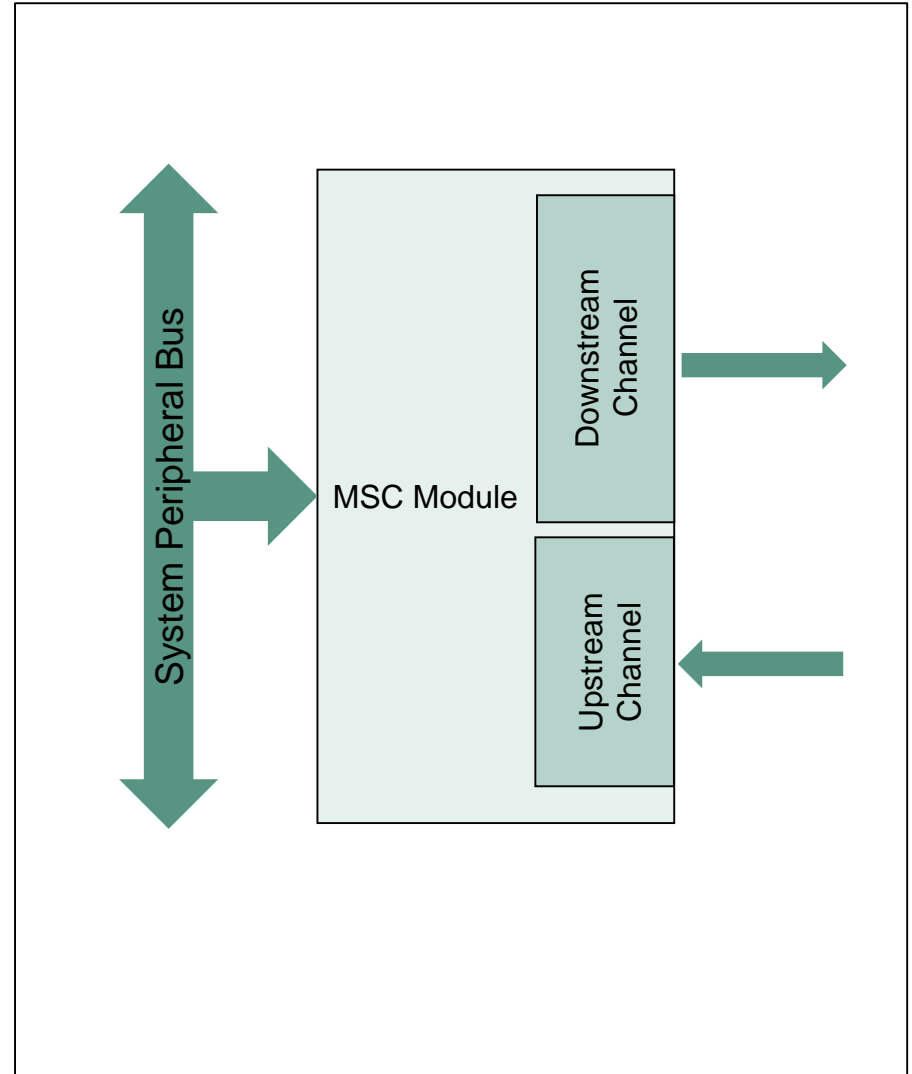
- > The data is sent to the power device via the downstream channel (high speed synchronous serial data stream) and the status information is received on AURIX™ side via the upstream channel (low speed asynchronous serial data stream)
- > Downstream channel:
 - Serial output clock frequency up to 80 MHz
 - Fractional clock divider for precise frequency control
 - Start of serial frame: software-controlled, timer-controlled or free-running
- > Upstream channel:
 - Programmable upstream data frame length (16 or 12 bits)
 - Parity error checker
 - Built-in spike filter on SDI lines



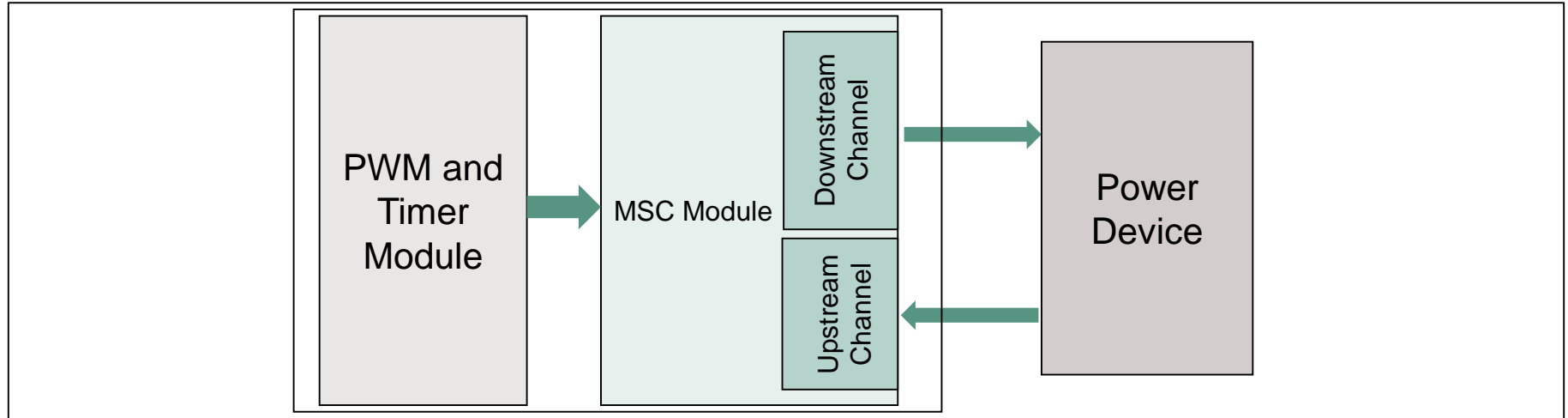
- › Serial data transmission:
 - Low-speed asynchronous reception
 - High-speed synchronous transmission
- › Serial data transmission reduces the number of pins required for communication with external devices
- › The pin types of the downstream channel interface are selectable:
 - Four LVDS differential output drivers
 - Four digital GPIO pins
- › The downstream channel generates five output signals that control eight MSC module output (4 chip select outputs, 2 clock outputs, 2 serial data outputs)
- › The upstream channel has one input signal



- › As in the case of most of the AURIX modules, MSC is connected on the System Peripheral Bus (SPB)
- › Parallel requests from on chip bus masters to MSC module are executed sequentially via the on chip bus system
- › Read-modify-write feature provides an atomic read/write sequence, which ensures that no other master can access the module in between



Control of an external power switching unit



Overview

- > The MSC module supports two MSC slaves. Each interface can send command and data frames to the power device

Advantages

- > Downstream channel can be used to send information to the power device. Data frames can be sent out in repetition mode with one passive frame in between, reducing the number of pins and the CPU overhead

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