

# CAST

## SDIO-HOST Controller Driver

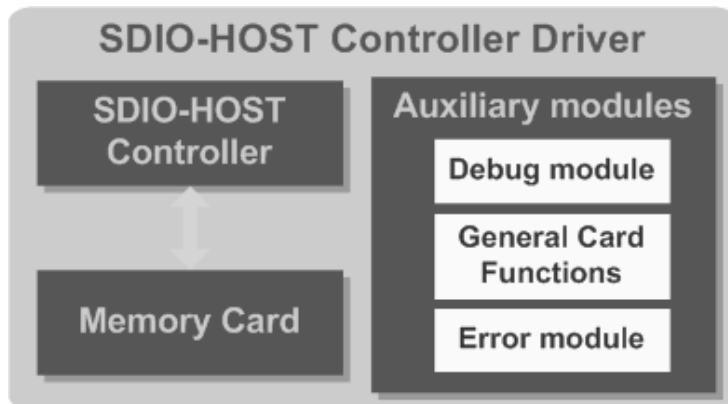
The SDIO-HOST Controller Driver is a complete software package that supports the SDIO Host Controller IP core. The driver includes such functions as initialization, bus width settings, clock frequency setting, sending and receiving of commands, and SDIO interrupt handling.

The driver also supports typical client memory card device functions such as card initialization/configuration and data transmission. The software is divided into five blocks to facilitate its usage. The driver allows the user to build applications without detailed knowledge of the SDIO Host controller hardware.

### Applications

- Personal Digital Assistants
- Multimedia players
- SD and MMC card readers
- SDIO device verification

### Block Diagram



### Functional Description

The SDIO-HOST Controller Software Driver is divided into modules as shown in the diagram above and described below:

#### Memory Card

The main task of this module is to perform SD or MMC card operations. The module supplies the following operations:

- Register card driver
- Initialize card
- Read/write data from memory card
- Lock/Unlock – password protection

### Features

- Compatibility
  - SD Memory Card version 3.00 (including SDHC)
  - SDIO Card version 2.00
  - MMC Card version 4.4
  - SDIO Host Specification version 2.00
- SD1/SD4 modes of operation
- Support for MMC 8-bit modes
- Support for Multislot per host
- Detection of card insertion or removal
- Recognition of the inserted card type with correct driver loading
- Functions for sending commands and getting responses
- Interrupt support
- DMA Support
  - SDMA (Simple DMA) mode
  - ADMA (Advanced DMA) mode
- Debug support module
- Memory card driver
  - Lock/unlock – password protection
  - Write and read data sectors
  - Support high speed and high capacity cards
- Developed in ANSI C

## SDIO Host Controller

This module is the lowest and most important layer of the driver. It is responsible for initializing and configuring SDIO Host controller hardware as well as recognition of newly inserted card devices. It keeps information about card drivers and searches for the device match when card insertion occurs. The Host controller module supplies the following operations:

- Configure host clock frequency
- Configure bus width (host and card)
- Execute all card commands by one function
- Interpret card command responses
- Initialize and attach inserted device card
- Detach removed device card
- Switch host and card to high speed mode
- Interrupt handling

## Debug module

This module contains macros and functions that facilitate driver running and testing.

## Error module

This module contains all error code definitions and error announcements.

## General Card Functions

This module contains functions which can be useful during the development of other card drivers. The module supplies the read/write SDIO/SD/MMC card register operations as well as select/deselect card, read card status and reset card procedures.

## Configurability

The configurability of the SDIO-HOST Controller Driver helps to change its options easily. The most important options are listed below:

- Enable/disable DMA data transfer
- Enable/disable interrupt mode

## Support

The driver as delivered is warranted against defects for ninety days from purchase. Thirty days of phone and email support are included, starting with the first interaction. Additional maintenance and support options are available.

## Deliverables

- ANSI C source code of all modules
- User manual
- Demo application written in C – verified with Tasking and GCC environments