



ATA-3 Cable Error Detection Proposal

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Introduction

This proposal discusses a method for cable error detection using parity. The proposal attempts to address cable error detection with the following goals in mind:

1. Add only trivial cost to the drive and host.
2. Be compatible with hosts and drives that do NOT support parity.
3. Use a simple error handling protocol.
4. Work with PIO and DMA data commands.

Enabling/Disabling Cable Parity

Cable Parity is disabled on power up and after a reset. The Cable Parity feature is enabled and disabled using the Set Features command (codes 30H and B0H, respectively). The host may determine if parity is supported via the Identify Drive command: word TBD, bit TBD is asserted if parity is available and word TBD, bit TBD is asserted if parity is currently enabled.

Signals

CSEL:SPSYNC becomes a three purpose signal and is renamed CSEL:SPSYNC:PARI. If this signal is configured at power-up for CSEL or SPSYNC, the drive will report cable parity is not available via the Identify Drive command. When parity is enabled and the Data Register is accessed, the PARI signal reflects the odd parity of the 16-bit data lines and meets all the timing constraints for valid data accesses. The PARI signal is NOT valid when the Cable Parity feature is disabled nor is it valid for 8-bit accesses to the Data Register.

Protocol

The drive enables the Cable Parity feature through the Set Features command after a reset.

During a PIO or DMA data in command, the host monitors the 16-bit data access and the PARI signal. If a parity error is detected and the data transfer is not completed nor currently on a block boundary, the host shall continue transferring data until a block boundary is reached or there is no data remaining to transfer. The host may then, at its discretion, abort the command if necessary and issue the failed command again.

During a PIO or DMA data out command, the drive monitors the 16-bit data access and the PARI signal. If a parity error is detected and the data transfer is not complete nor currently on a block boundary, the drive shall continue to allow data to transfer until a block boundary is reached or there is no data remaining to transfer. The drive will then abort the command asserting the ERR and DF bits in the Status Register and the ABRT bit the Error Register. The host may then issue the failed command again.

A block is defined as 256 words times the current Multiple count for Read/Write Multiple commands and 256 words for all other commands.

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