

Date: August 31, 1993
To: X3T9.2
From: Steve Finch, Editor ATA Extensions
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Subject: Bus Definitions, Driver Specifications and Backward Compatibility

We are faced with a minor problem: backward compatibility. Some of the original ATA compatible systems utilized extremely simple host bus adapters which did not buffer all of the ATA signals. The result was that some signals were passed through the host bus adapter creating so rather long stubs and ugly signals. The backward compatible nature of the existing ATA standard makes it difficult to fix this issue.

This issue was not addressed in the original ATA standard. As a matter of fact, the ATA interface has several types of signals used (tri-state, open collector, totem-pole and non-TTL), yet we don't, in all cases, state which type is applicable to a particular signal. In addition, there is only one type of driver specification, and it is not valid for all of the signals. I have summarized my understanding of the signals, including what type of signal it is and what termination has been specified for that signal. I also listed how the EISA bus specification terminates these signals, where applicable. This information is listed in Table 1.

With the speed enhancements being proposed, both in X3T9.2 and in the Small Form Factor group, we need to address these issues. I would recommend we develop bus "classes" or "types" or "?????" and describe the characteristics of each signal for each class. We must state the driver specifications and termination required for each signal.

I would like input from any interested party on these specifications. I am not an expert (nor do I want to be come one) on drivers, receivers, termination, transmission lines, or noise resulting from the use of these.

Signal Name(s)	Source	Description/Comment	Termination (ATA) (ohms)	Termination (EISA) (ohms)
CS0- CS1-	Host	TTL Output	n/s	N/A (Not an EISA signal)
	Devices	TTL Input		
DA0 DA1 DA2	Host	TTL Output	n/s	None
	Devices	TTL Input		
DIOR- DIOW-	Host	TTL Tri-state Output	n/s	8.2K pull-up (host) (Note 1)
	Devices	TTL Input		
RESET-	Host	TTL Output	n/s	None
	Devices	TTL Input		
IOCS16-	Devices	TTL Open Collector Output	n/s	300 pull-up (host)
	Host	TTL Input		
IORDY	Devices	TTL Open Collector Output	n/s	1K pull-up (host)
	Host	TTL Input		
PDIAG-	Devices	TTL Open Collector Output TTL Input	10k pull-up (each drive)	N/A (Not an EISA signal)
	Host	Not Used		
DASP-	Devices	Non-TTL Open Collector Output Non-TTL Input	10K pull-up (each drive)	N/A (Not an EISA signal)
	Host	Non-TTL Input	LED pull-up	
DD0 through DD15	Host & Device	TTL Tri-state Output TTL Input	n/s	8.2K pull-up (host)
	Device (Host, other)	TTL Open Collector Output (if shared interrupts)	n/s	8.2K pull-up (host)
INTRQ	Host	TTL Input		
	Device	TTL Tri-state Output	n/s	5.6K pull- down (host)
DMARQ	Host	TTL Input		
	Device	TTL (Tri-state) Output	n/s	None
DMACK-	Host	TTL (Tri-state) Output	n/s	None
	Device	TTL Input		
SPSYNC:CSEL SPSYNC CSEL	Host or Device	(Not stated) Output	10K pull-up (each drive)	N/A (Not EISA signals)
	Device	(Not stated) Input		
	Device	No-connect/Ground Input		