

9/10/99

To: John Lohmeyer
T10 Chairman

Subject: Address Assignment Pins on the SCA connector and the Three-in-one SFF 8009 Connector

There is a proposal being made to T10 that provides a method for addressing up to 64 SCSI devices by use of a group and a member component. At first that proposal caused me to assume the addresses could not be used to bus loading concerns. But if one assumes that lower voltage silicon will eventually lead to a significant class of products that no longer support old 5V processes and in particular Single Ended SCSI, the current SPI-3 guidelines for SCSI LVD only devices allow the possibility of connecting more devices than can be addressed. With that realization I agreed to propose methods that could be used to set a SCSI device using the subject connectors to set an ID from 0 to 63. The set ID may be mapped into a new SCSI ID scheme such as group and member.

SCAM-2:

In addition there are well known motivations to reduce pins in drive implementations. Consequently I am proposing several alternatives to accomplish the set ID function. The alternative which best meets the goal of reducing pins (on ICs as well) is to eliminate jumpers and connector pins for setting the ID and employ a slightly enhanced version of SCAM to accomplish the ID assignment. The reasons that Microsoft is understood to have done a 180 on SCAM are easily overcome in the HBA. A stable ID image can be maintained in flash. Detailed alterations to SCAM will be left as a task to be completed after T10 endorses appropriate routes to the final solution.

SCA Connector Alternative A:

Reclaim SP_Synch, RMT_Start, and Dlyd_Start. Spindle Synch is no longer supported and has been reclaimed in the Fibre Channel version of the SCA connector. Remote Start is used and the function would need to be covered by a mode page. Delayed Start is also used. Two flash bits would be required to replicate the Mode Select start condition and one flash bit to replicate Mode Select legacy state. With this alternative all of the SEL ID pins are long.

Legacy Drives or New + LegFlash=1			New Drives + LegFlash=0		
DLYD_START	RMT_STAR T	Motor Spin Function	Legacy_Not	RMT_STAR T	Function
Open	Open	Spin	Open	Open	Spin
Open	Ground	Use Start Cmd	Open	Ground	Use Start Cmd
Ground	Open	Spin per ID	Ground	Open	SEL 4=0 Md SI
Ground	Ground	Rsvd Start Cmd	Ground	Ground	SEL 4=1 Md SI

SPINDLE SYNC = Not supported
RMT_START = RMT_START

SPINDLE SYNC = SEL 5
RMT_START = SEL 4

DLYD_START = DLYD_START
 SCA Connector Alternative B:

DLYD_START = Legacy_Not (mode)

Reclaim the three 3.3 V pins and the Spindle Synch pin. Assign the two short 3.3 V pins to Legacy_Not and Enable_Group (might be used if host has dynamic support). Assign the long 3.3 V pin to SEL 5 and Spindle Synch to SEL 4. This has the advantage of not requiring any flash bits but has the disadvantage that there may be backpanels that have provided 3.3 V and it eliminates future potential cost savings of having 3.3 V provided without the fear of whether it is 3.3 V or 5 V.

68 Pin Three-in-one Connector Provision:

This is similar to Alternative B without the 3.3 V dilemma since power is separate from the option pin portion. In this case Vendor Unique- becomes SEL 5-, Spindle Synch- becomes SEL 4-, Ground becomes Legacy-, and Enable Terminator- becomes Enable Group-. No flash is required for this change but note that the option pins replicated in flash for the SCA case are not included in the Three-in-one. If this were to be pursued a proposal would need to be made to SFF.

TABLE 5-2 SIGNAL ASSIGNMENTS FOR AUXILIARY CONNECTOR

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	Pin	Signal	Description	Hst	Dir	Dev
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	1	SEL0-	SCSI ID Sel 0	x	---	x
	2	XTFALT-	External fault	x	<---	x
	3	SEL1-	SCSI ID Sel 1	x	---	x
	4	VUNIQ-	Vendor Unique	x	<---	x
	5	SEL2-	SCSI ID Sel 2	x	---	x
	6	SPSYNC-	Spindle Synch	x	<---	x
	7	SEL3-	SCSI ID Sel 3	o	---	x
	8	XTACTV-	External activity	x	<---	x
En_Grp-	9	ENTERM-	Enable termination	o	---	x
	10	GROUND	Ground	o	<---	x
	11	+5V	+5V	o	<---	x
	12	FAULT-	Drive fault	x	---	x

Conclusion: I favor the SCAM-2 approach.

Gene Milligan
 T10 Principal Member