

MICROPOLIS CORPORATION

Date: 3 May 1989
TO: SCSI Committee X3T9.2
FROM: Stephen Cornaby
SUBJECT: Physical Seek function within Send Diagnostic

With the advent of new technologies such as zone-bit recording and various sector-sparing techniques, it is becoming increasingly difficult for customers to measure and quantify seek timing. The difficulty lies in the fact that it is no longer possible to assume that the total number of lba's divided by the number of cylinders and heads will yield the selection of a particular head or cylinder.

Some other companies in the industry have resolved this problem by using reserved bits within the CDB, but this can be dangerous for evaluation testing. I would propose that a send/receive diagnostic page be added to the specification which allows for the selection of a physical head and cylinder. This coordinates well with the existing "translate" function already defined under Disk Devices.

I recognize that this comes at a very late time in relationship to SCSI 2, but would like to propose that this function become standardized before the proliferation of implementations continues.

Thanks.

Physical Seek Function

Purpose: to allow access to any physically accessible head and cylinder, whether system area or user area. With the advent of constant density recording, it becomes increasingly critical to support some physical functions through the SCSI bus.

Application: Ability to select any physical head and cylinder through SCSI interface. Also allows customers to generate and measure seek times for evaluation without doing reverse LBA mapping.

Implementation: Send diagnostic command, page 41h.

Page Definition:

Bit	7	6	5	4	3	2	1	0	
0	Page Code (41)								
1	Reserved								
2	(MSB)	Page Length (0005h)							
3								(L)	
4	Reserved					In/Out	Guard		
5	(MSB)	Destination Cylinder							
7								(LSB)	
8	Destination Head								

Guard (Guardband) = 1 indicates that the physical destination is in the guardband and indicates an offset from the 1st non-guardband cylinder.

Guard (Guardband) = 0 indicates that the physical destination is not in the guardband area and indicates an offset from the 1st non-guardband cylinder.

The In/Out (Inside/Outside) bit becomes valid only if the Guard bit = 1. If Guard = 1 and In/Out = 1, the destination address will be the offset from the first non-guardband cylinder towards the outer radius of the media.

If Guard = 1 and In/Out = 0, the destination address will be the offset from the first non-guardband cylinder towards the inner radius of the media.

Physical Location Function

Purpose: to allow the host to read the current physical location.

Application: Ability to read the physical head and cylinder through SCSI interface. Used in conjunction with the Physical Seek command, (Send Diagnostic page 41h) for measurement of seek timing and integrity.

Implementation: Send diagnostic command, page 41h.

Page Definition:

Bit	7	6	5	4	3	2	1	0	
Byte									
0	Page Code (41)								
1	Reserved								
2	(MSB)	Page Length (0005h)							
3							(LSB)		
4	Reserved						In/Out	Guard	
5	(MSB)	Current Cylinder							
7							(LSB)		
8	Current Head								

Guard (Guardband) = 1 indicates that the physical location is in the guardband and indicates an offset from the 1st non-guardband cylinder.

Guard (Guardband) = 0 indicates that the physical location is not in the guardband area and indicates an offset from the 1st non-guardband cylinder.

The In/Out (Inside/Outside) bit becomes valid only if the Guard bit = 1. If Guard = 1 and In/Out = 1, the destination address will be the offset from the first non-guardband cylinder towards the outer radius of the media.

If Guard = 1 and In/Out = 0, the destination address will be the offset from the first non-guardband cylinder towards the inner radius of the media.