

To: T10 Membership  
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 Subject: Margin Control  
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## 1. Margin Control Command

**Table x1 Margin Control Command**

Byte	Bit 7	6	5	4	3	2	1	Bit 0
0	Margin Control Command (nnh)							
1	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
2	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
3	Reserved	Reserved	Reserved	Reserved	Reserved	Experimental Test		
4	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
5	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
6	Reserved	General Purpose			Reserved	Signal Ground Bias		
7	Reserved	Driver Strength			Reserved	REQ/ACK Timing Shift		
9	Reserved	Slew Rate			Reserved	Clock Frequency		
10	Reserved							
11	Control Byte							

The margin control command provides a means to adjust the target driver margin parameters during the domain validation sequence. It is recommended that all parameters be adjusted to their nominal setting following the domain validation sequence.

The experimental test parameter is for use in developing margin tests. It shall not be used on a permanent basis; useful margin test parameters should be encoded into the reserved fields via a request to the T10 committee.

The general purpose parameter is used in lieu of the five specific parameters. It indicates that the receiving device should adjust its margin parameters on transmitters to according to its algorithm for margining.

The remaining five fields are self-explanatory based on their titles. The exact adjustment to the parameter is defined by the vendor since it is closely tied the implementation.

**Table x2 - Margin Parameter Adjustment**

Value	Bit 7	6	5	4	3	2	1	Bit 0
111h	Offset three steps in negative direction							
110h	Offset two steps in negative direction							
101h	Offset one step in negative direction							
100h	Nominal Setting							
000h	Not changed							
001h	Offset one step in positive direction							
010h	Offset two steps in positive direction							
011h	Offset three steps in positive direction							

The margin parameter adjustment is a 3-bit two's complement field allowing for three steps in each direction, a return to nominal and an unchanged option. This allows margin parameters to be tested in various combinations for maximum flexibility.

## 2. Option for Margin Control Message

In some cases, for example communication with terminators, where a minimum of logic is desired defining a two-byte message to convey the margin parameter may be appropriate. Table x2 defines the message format.

**Table x3 - Margin Control Message**

Byte	Bit 7	6	5	4	3	2	1	Bit 0	
0	Message Code (nnh)								
9	Margin Parameter				Reserved		Margin Parameter Offset		

**Table x4 - Margin Parameter**

Value	Margin Parameter
0000b	Reserved
0001b	Signal Ground Bias
0010b	REQ/ACK Timing Shift
0011b	Clock Frequency
0100b	Driver Strength
0101b	Slew Rate
0110b	Terminator Impedance
0111b-1101b	Reserved
1110b	General Purpose
1111b	Experimental Test

The signal ground bias is disabled when the margin parameter offset is 001b and enabled when the margin parameter offset is 100b.

The terminator impedance parameter allows for adjusting the impedance of terminators to reduce reflections. The steps are recommended to be in 5 ohm increments.