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To: John Lohmeyer  
Re: SCSI-3 Cable Pin Outs

John,

I'm sending you pin outs that I proposed at the October 29 low power differential (LPD) working group in Austin. I'll explain the benefits of my proposal in this letter.

Backward compatibility of some type was one of the goals set at the Plenary meeting in Ft. Lauderdale (10/15-16). The cable pin outs I'm proposing primarily allow the design of an integratable LPD transceiver that can switch from LPD mode to single-ended mode when connected to a single-ended SCSI system. The interface switches back to LPD mode when connected to a system where all peripherals are LPD. This feature allows backward compatibility with single-ended systems while providing an upgrade path to LPD. The mode switching can be performed automatically by making the transceiver sense the state of the DIFFSENS pin. In single-ended system the DIFFSENS pin is grounded. In differential systems it is open (high).

The advantage of a switchable transceiver to peripheral makers is that manufacturing is simplified. Peripherals can be manufactured with just one interface. The advantage to peripheral users is that their investment is protected. A peripheral can be used in a single-ended system today and be used in a LPD system tomorrow if system needs grow. Another advantage to users is that the same cable can be used for both systems.

National Semiconductor has a patent pending on what I feel is the best way to switch from LPD to single-ended and vice-versa. There are other ways to get the same functionality.

Basically, the pin outs I'm proposing conform to the single-ended pin outs in that differential mode signals are sent over lines that are grounded in a single-ended system (in single-ended systems there is a ground line between each signal line. These grounds become signal lines for the non-inverting half of the differential signal pair when all the peripherals attached to the SCSI bus are "new pin out" differential peripherals). The present differential pin outs do not allow this.

Since the P, Q and L differential pin outs are not an official standard, I propose that they be replaced with new pin outs for both LPD and "old" RS-485 high power differential (HPD). The LPD pin out allows, as explained above, backward compatibility with single-ended systems. A pin out for HPD that is the same as the LPD pin out, except for a second diffsense line (DIFFSENS2), would allow (if proven feasible) interoperation between LPD and HPD peripherals. The DIFFSENS2 pin could be used to tri-state LPD peripherals connected to HPD peripherals in order to allow a switch to lower power terminators or to simply prevent interoperation.

I also propose adding an LPD pin out for the A connector.

In proposing these new pin outs I have assumed that easy backward compatibility with single-ended peripherals is the most desirable. "Old" differential peripherals using A cables would need adapters to interoperate with these new pin outs.

I realize that prospect of discussing new pin outs will not warm the hearts of many folks. But I think this effort could result in useful backward compatibility and interoperability.

Table 4-2: Single-Ended Contact Assignments - A Cable

Signal Name	Connector Contact Number	Cable Conductor Number	Connector Contact Number	Signal Name
GROUND	1	1	2	-DB(0)
GROUND	3	3	4	-DB(1)
GROUND	5	5	6	-DB(2)
GROUND	7	7	8	-DB(3)
GROUND	9	9	10	-DB(4)
GROUND	11	11	12	-DB(5)
GROUND	13	13	14	-DB(6)
GROUND	15	15	16	-DB(7)
GROUND	17	17	18	-DB(P)
GROUND	19	19	20	GROUND
GROUND	21	21	22	GROUND
RESERVED	23	23	24	RESERVED
OPEN	25	25	26	TERMPWR
RESERVED	27	27	28	RESERVED
GROUND	29	29	30	GROUND
GROUND	31	31	32	-ATN
GROUND	33	33	34	GROUND
GROUND	35	35	36	-BSY
GROUND	37	37	38	-ACK
GROUND	39	39	40	-RST
GROUND	41	41	42	-MSG
GROUND	43	43	44	-SEL
GROUND	45	45	46	-C/D
GROUND	47	47	48	-REQ
GROUND	49	49	50	-I/O

Table 4-4a: **PROPOSED** Low Power Differential Contact Assignments - A Cable

Signal Name	Connector Contact Number	Cable Conductor Number	Connector Contact Number	Signal Name
+DB(0)	1	1 2	2	-DB(0)
+DB(1)	3	3 4	4	-DB(1)
+DB(2)	5	5 6	6	-DB(2)
+DB(3)	7	7 8	8	-DB(3)
+DB(4)	9	9 10	10	-DB(4)
+DB(5)	11	11 12	12	-DB(5)
+DB(6)	13	13 14	14	-DB(6)
+DB(7)	15	15 16	16	-DB(7)
+DB(P)	17	17 18	18	-DB(P)
GROUND	19	19 20	20	GROUND
DIFFSENS	21	21 22	22	DIFFSENS2
RESERVED	23	23 24	24	RESERVED
OPEN	25	25 26	26	TERMPWR
RESERVED	27	27 28	28	RESERVED
GROUND	29	29 30	30	GROUND
+ATN	31	31 32	32	-ATN
GROUND	33	33 34	34	GROUND
+BSY	35	35 36	36	-BSY
+ACK	37	37 38	38	-ACK
+RST	39	39 40	40	-RST
+MSG	41	41 42	42	-MSG
+SEL	43	43 44	44	-SEL
+C/D	45	45 46	46	-C/D
+REQ	47	47 48	48	-REQ
+I/O	49	49 50	50	-I/O

Table 4-4: Differential Contact Assignments - A Cable

Signal Name	Connector Contact Number	Cable Conductor Number	Connector Contact Number	Signal Name
GROUND	1	1 2	2	GROUND
+DB(0)	3	3 4	4	-DB(0)
+DB(1)	5	5 6	6	-DB(1)
+DB(2)	7	7 8	8	-DB(2)
+DB(3)	9	9 10	10	-DB(3)
+DB(4)	11	11 12	12	-DB(4)
+DB(5)	13	13 14	14	-DB(5)
+DB(6)	15	15 16	16	-DB(6)
+DB(7)	17	17 18	18	-DB(7)
+DB(P)	19	19 20	20	-DB(P)
DIFFSENS	21	21 22	22	GROUND
RESERVED	23	23 24	24	RESERVED
TERMPWR	25	25 26	26	TERMPWR
RESERVED	27	27 28	28	RESERVED
+ATN	29	29 30	30	-ATN
GROUND	31	31 32	32	GROUND
+BSY	33	33 34	34	-BSY
+ACK	35	35 36	36	-ACK
+RST	37	37 38	38	-RST
+MSG	39	39 40	40	-MSG
+SEL	41	41 42	42	-SEL
+C/D	43	43 44	44	-C/D
+REQ	45	45 46	46	-REQ
+I/O	47	47 48	48	-I/O
GROUND	49	49 50	50	GROUND

Table 4-3: Single-Ended Contact Assignments - B cable

Signal Name	Connector Contact Number	Cable Conductor Number	Connector Contact Number	Signal Name
GROUND	1	1	2	GROUND
GROUND	2	3	4	-DB(8)
GROUND	3	5	6	-DB(9)
GROUND	4	7	8	-DB(10)
GROUND	5	9	10	-DB(11)
GROUND	6	11	12	-DB(12)
GROUND	7	13	14	-DB(13)
GROUND	8	15	16	-DB(14)
GROUND	9	17	18	-DB(15)
GROUND	10	19	20	-DB(P1)
GROUND	11	21	22	-ACKB
GROUND	12	23	24	GROUND
GROUND	13	25	26	-REQB
GROUND	14	27	28	-DB(16)
GROUND	15	29	30	-DB(17)
GROUND	16	31	32	-DB(18)
TERMPWRB	17	33	34	TERMPWRB
TERMPWRB	18	35	36	TERMPWRB
GROUND	19	37	38	-DB(19)
GROUND	20	39	40	-DB(20)
GROUND	21	41	42	-DB(21)
GROUND	22	43	44	-DB(22)
GROUND	23	45	46	-DB(23)
GROUND	24	47	48	-DB(P2)
GROUND	25	49	50	-DB(24)
GROUND	26	51	52	-DB(25)
GROUND	27	53	54	-DB(26)
GROUND	28	55	56	-DB(27)
GROUND	29	57	58	-DB(28)
GROUND	30	59	60	-DB(29)
GROUND	31	61	62	-DB(30)
GROUND	32	63	64	-DB(31)
GROUND	33	65	66	-DB(P3)
GROUND	34	67	68	GROUND

Table 4-5a: **PROPOSED** Low Power Differential Contact Assignments - B cable

Signal Name	Connector Contact Number	Cable Conductor Number	Connector Contact Number	Signal Name
GROUND	1	1 2	35	GROUND
+DB(8)	2	3 4	36	-DB(8)
+DB(9)	3	5 6	37	-DB(9)
+DB(10)	4	7 8	38	-DB(10)
+DB(11)	5	9 10	39	-DB(11)
+DB(12)	6	11 12	40	-DB(12)
+DB(13)	7	13 14	41	-DB(13)
+DB(14)	8	15 16	42	-DB(14)
+DB(15)	9	17 18	43	-DB(15)
+DB(P1)	10	19 20	44	-DB(P1)
+ACKB	11	21 22	45	-ACKB
DIFFSENS2	12	23 24	46	DIFFSENS
+REQB	13	25 26	47	-REQB
+DB(16)	14	27 28	48	-DB(16)
+DB(17)	15	29 30	49	-DB(17)
+DB(18)	16	31 32	50	-DB(18)
TERMPWRB	17	33 34	51	TERMPWRB
TERMPWRB	18	35 36	52	TERMPWRB
+DB(19)	19	37 38	53	-DB(19)
+DB(20)	20	39 40	54	-DB(20)
+DB(21)	21	41 42	55	-DB(21)
+DB(22)	22	43 44	56	-DB(22)
+DB(23)	23	45 46	57	-DB(23)
+DB(P2)	24	47 48	58	-DB(P2)
+DB(24)	25	49 50	59	-DB(24)
+DB(25)	26	51 52	60	-DB(25)
+DB(26)	27	53 54	61	-DB(26)
+DB(27)	28	55 56	62	-DB(27)
+DB(28)	29	57 58	63	-DB(28)
+DB(29)	30	59 60	64	-DB(29)
+DB(30)	31	61 62	65	-DB(30)
+DB(31)	32	63 64	66	-DB(31)
+DB(P3)	33	65 66	67	-DB(P3)
GROUND	34	67 68	68	GROUND

Table 4-5: Differential Contact Assignments - B cable

Signal Name	Connector Contact Number	Cable Conductor Number	Connector Contact Number	Signal Name
GROUND	1	1 2	35	GROUND
+DB(8)	2	3 4	36	-DB(8)
+DB(9)	3	5 6	37	-DB(9)
+DB(10)	4	7 8	38	-DB(10)
+DB(11)	5	9 10	39	-DB(11)
+DB(12)	6	11 12	40	-DB(12)
+DB(13)	7	13 14	41	-DB(13)
+DB(14)	8	15 16	42	-DB(14)
+DB(15)	9	17 18	43	-DB(15)
+DB(P1)	10	19 20	44	-DB(P1)
+ACKB	11	21 22	45	-ACKB
GROUND	12	23 24	46	DIFFSENS
+REQB	13	25 26	47	-REQB
+DB(16)	14	27 28	48	-DB(16)
+DB(17)	15	29 30	49	-DB(17)
+DB(18)	16	31 32	50	-DB(18)
TERMPWRB	17	33 34	51	TERMPWRB
TERMPWRB	18	35 36	52	TERMPWRB
+DB(19)	19	37 38	53	-DB(19)
+DB(20)	20	39 40	54	-DB(20)
+DB(21)	21	41 42	55	-DB(21)
+DB(22)	22	43 44	56	-DB(22)
+DB(23)	23	45 46	57	-DB(23)
+DB(P2)	24	47 48	58	-DB(P2)
+DB(24)	25	49 50	59	-DB(24)
+DB(25)	26	51 52	60	-DB(25)
+DB(26)	27	53 54	61	-DB(26)
+DB(27)	28	55 56	62	-DB(27)
+DB(28)	29	57 58	63	-DB(28)
+DB(29)	30	59 60	64	-DB(29)
+DB(30)	31	61 62	65	-DB(30)
+DB(31)	32	63 64	66	-DB(31)
+DB(P3)	33	65 66	67	-DB(P3)
GROUND	34	67 68	68	GROUND

Table 4-2: Single-Ended Contact Assignments - P cable

Signal Name	Connector Contact Number	Cable Conductor Number	Connector Contact Number	Signal Name	
GROUND	1	1	2	35	-DB(12)
GROUND	2	3	4	36	-DB(13)
GROUND	3	5	6	37	-DB(14)
GROUND	4	7	8	38	-DB(15)
GROUND	5	9	10	39	-DB(P1)
GROUND	6	11	12	40	-DB(0)
GROUND	7	13	14	41	-DB(1)
GROUND	8	15	16	42	-DB(2)
GROUND	9	17	18	43	-DB(3)
GROUND	10	19	20	44	-DB(4)
GROUND	11	21	22	45	-DB(5)
GROUND	12	23	24	46	-DB(6)
GROUND	13	25	26	47	-DB(7)
GROUND	14	27	28	48	-DB(P)
GROUND	15	29	30	49	GROUND
GROUND	16	31	32	50	GROUND
TERMPWR	17	33	34	51	TERMPWR
TERMPWR	18	35	36	52	TERMPWR
RESERVED	19	37	38	53	RESERVED
GROUND	20	39	40	54	GROUND
GROUND	21	41	42	55	-ATN
GROUND	22	43	44	56	GROUND
GROUND	23	45	46	57	-BSY
GROUND	24	47	48	58	-ACK
GROUND	25	49	50	59	-RST
GROUND	26	51	52	60	-MSG
GROUND	27	53	54	61	-SEL
GROUND	28	55	56	62	-C/D
GROUND	29	57	58	63	-REQ
GROUND	30	59	60	64	-I/O
GROUND	31	61	62	65	-DB(8)
GROUND	32	63	64	66	-DB(9)
GROUND	33	65	66	67	-DB(10)
GROUND	34	67	68	68	-DB(11)



Table 4-5a: **PROPOSED** Low Power Differential Contact Assignments - P cable

Signal Name	Connector Contact Number	Cable Conductor Number	Connector Contact Number	Signal Name
+DB(12)	1	1 2	35	-DB(12)
+DB(13)	2	3 4	36	-DB(13)
+DB(14)	3	5 6	37	-DB(14)
+DB(15)	4	7 8	38	-DB(15)
+DB(P1)	5	9 10	39	-DB(P1)
+DB(0)	6	11 12	40	-DB(0)
+DB(1)	7	13 14	41	-DB(1)
+DB(2)	8	15 16	42	-DB(2)
+DB(3)	9	17 18	43	-DB(3)
+DB(4)	10	19 20	44	-DB(4)
+DB(5)	11	21 22	45	-DB(5)
+DB(6)	12	23 24	46	-DB(6)
+DB(7)	13	25 26	47	-DB(7)
+DB(P)	14	27 28	48	-DB(P)
GROUND	15	29 30	49	GROUND
DIFFSENS	16	31 32	50	DIFFSENS2
TERMPWR	17	33 34	51	TERMPWR
TERMPWR	18	35 36	52	TERMPWR
RESERVED	19	37 38	53	RESERVED
GROUND	20	39 40	54	GROUND
+ATN	21	41 42	55	-ATN
GROUND	22	43 44	56	GROUND
+BSY	23	45 46	57	-BSY
+ACK	24	47 48	58	-ACK
+RST	25	49 50	59	-RST
+MSG	26	51 52	60	-MSG
+SEL	27	53 54	61	-SEL
+C/D	28	55 56	62	-C/D
+REQ	29	57 58	63	-REQ
+I/O	30	59 60	64	-I/O
+DB(8)	31	61 62	65	-DB(8)
+DB(9)	32	63 64	66	-DB(9)
+DB(10)	33	65 66	67	-DB(10)
+DB(11)	34	67 68	68	-DB(11)

Table 4-5b: PROPOSED Differential Contact Assignments - P cable

Signal Name	Connector Contact Number	Cable Conductor Number	Connector Contact Number	Signal Name
+DB(12)	1	1	2	-DB(12)
+DB(13)	2	3	4	-DB(13)
+DB(14)	3	5	6	-DB(14)
+DB(15)	4	7	8	-DB(15)
+DB(P1)	5	9	10	-DB(P1)
+DB(0)	6	11	12	-DB(0)
+DB(1)	7	13	14	-DB(1)
+DB(2)	8	15	16	-DB(2)
+DB(3)	9	17	18	-DB(3)
+DB(4)	10	19	20	-DB(4)
+DB(5)	11	21	22	-DB(5)
+DB(6)	12	23	24	-DB(6)
+DB(7)	13	25	26	-DB(7)
+DB(P)	14	27	28	-DB(P)
GROUND	15	29	30	GROUND
DIFFSENS	16	31	32	GROUND
TERMPWR	17	33	34	TERMPWR
TERMPWR	18	35	36	TERMPWR
RESERVED	19	37	38	RESERVED
GROUND	20	39	40	GROUND
+ATN	21	41	42	-ATN
GROUND	22	43	44	GROUND
+BSY	23	45	46	-BSY
+ACK	24	47	48	-ACK
+RST	25	49	50	-RST
+MSG	26	51	52	-MSG
+SEL	27	53	54	-SEL
+C/D	28	55	56	-C/D
+REQ	29	57	58	-REQ
+I/O	30	59	60	-I/O
+DB(8)	31	61	62	-DB(8)
+DB(9)	32	63	64	-DB(9)
+DB(10)	33	65	66	-DB(10)
+DB(11)	34	67	68	-DB(11)

Table 4-5: Differential Contact Assignments - P cable

Signal Name	Connector Contact Number	Cable Conductor Number	Connector Contact Number	Signal Name
+DB(12)	1	1	2	-DB(12)
+DB(13)	2	3	4	-DB(13)
+DB(14)	3	5	6	-DB(14)
+DB(15)	4	7	8	-DB(15)
+DB(P1)	5	9	10	-DB(P1)
GROUND	6	11	12	GROUND
+DB(0)	7	13	14	-DB(0)
+DB(1)	8	15	16	-DB(1)
+DB(2)	9	17	18	-DB(2)
+DB(3)	10	19	20	-DB(3)
+DB(4)	11	21	22	-DB(4)
+DB(5)	12	23	24	-DB(5)
+DB(6)	13	25	26	-DB(6)
+DB(7)	14	27	28	-DB(7)
+DB(P)	15	29	30	-DB(P)
DIFFSENS	16	31	32	GROUND
TERMPWR	17	33	34	TERMPWR
TERMPWR	18	35	36	TERMPWR
RESERVED	19	37	38	RESERVED
+ATN	20	39	40	-ATN
GROUND	21	41	42	GROUND
+BSY	22	43	44	-BSY
+ACK	23	45	46	-ACK
+RST	24	47	48	-RST
+MSG	25	49	50	-MSG
+SEL	26	51	52	-SEL
+C/D	27	53	54	-C/D
+REQ	28	55	56	-REQ
+I/O	29	57	58	-I/O
+GROUND	30	59	60	GROUND
+DB(8)	31	61	62	-DB(8)
+DB(9)	32	63	64	-DB(9)
+DB(10)	33	65	66	-DB(10)
+DB(11)	34	67	68	-DB(11)

Table 4-3: Single-Ended Contact Assignments - Q cable

Signal Name	Connector Contact Number	Cable Conductor Number	Connector Contact Number	Signal Name	
GROUND	1	1	2	35	-DB(28)
GROUND	2	3	4	36	-DB(29)
GROUND	3	5	6	37	-DB(30)
GROUND	4	7	8	38	-DB(31)
GROUND	5	9	10	39	-DB(P3)
GROUND	6	11	12	40	-DB(16)
GROUND	7	13	14	41	-DB(17)
GROUND	8	15	16	42	-DB(18)
GROUND	9	17	18	43	-DB(19)
GROUND	10	19	20	44	-DB(20)
GROUND	11	21	22	45	-DB(21)
GROUND	12	23	24	46	-DB(22)
GROUND	13	25	26	47	-DB(23)
GROUND	14	27	28	48	-DB(P2)
GROUND	15	29	30	49	GROUND
GROUND	16	31	32	50	GROUND
TERMPWRQ	17	33	34	51	TERMPWRQ
TERMPWRQ	18	35	36	52	TERMPWRQ
RESERVED	19	37	38	53	RESERVED
GROUND	20	39	40	54	GROUND
GROUND	21	41	42	55	TERMINATED
GROUND	22	43	44	56	GROUND
GROUND	23	45	46	57	TERMINATED
GROUND	24	47	48	58	-ACKQ
GROUND	25	49	50	59	TERMINATED
GROUND	26	51	52	60	TERMINATED
GROUND	27	53	54	61	TERMINATED
GROUND	28	55	56	62	TERMINATED
GROUND	29	57	58	63	-REQQ
GROUND	30	59	60	64	TERMINATED
GROUND	31	61	62	65	-DB(24)
GROUND	32	63	64	66	-DB(25)
GROUND	33	65	66	67	-DB(26)
GROUND	34	67	68	68	-DB(27)

Table 4-6a: PROPOSED Low Power Differential Contact Assignments - Q cable

Signal Name	Connector Contact Number	Cable Conductor Number	Connector Contact Number	Signal Name
+DB(28)	1	1 2	35	-DB(28)
+DB(29)	2	3 4	36	-DB(29)
+DB(30)	3	5 6	37	-DB(30)
+DB(31)	4	7 8	38	-DB(31)
+DB(P3)	5	9 10	39	-DB(P3)
+DB(16)	6	11 12	40	-DB(16)
+DB(17)	7	13 14	41	-DB(17)
+DB(18)	8	15 16	42	-DB(18)
+DB(19)	9	17 18	43	-DB(19)
+DB(20)	10	19 20	44	-DB(20)
+DB(21)	11	21 22	45	-DB(21)
+DB(22)	12	23 24	46	-DB(22)
+DB(23)	13	25 26	47	-DB(23)
+DB(P2)	14	27 28	48	-DB(P2)
GROUND	15	29 30	49	GROUND
DIFFSENS	16	31 32	50	DIFFSENS2
TERMPWRQ	17	33 34	51	TERMPWRQ
TERMPWRQ	18	35 36	52	TERMPWRQ
RESERVED	19	37 38	53	RESERVED
GROUND	20	39 40	54	GROUND
OPEN	21	41 42	55	OPEN
GROUND	22	43 44	56	GROUND
OPEN	23	45 46	57	OPEN
+ACKQ	24	47 48	58	-ACKQ
OPEN	25	49 50	59	OPEN
OPEN	26	51 52	60	OPEN
OPEN	27	53 54	61	OPEN
OPEN	28	55 56	62	OPEN
+REQQ	29	57 58	63	-REQQ
OPEN	30	59 60	64	OPEN
+DB(24)	31	61 62	65	-DB(24)
+DB(25)	32	63 64	66	-DB(25)
+DB(26)	33	65 66	67	-DB(26)
+DB(27)	34	67 68	68	-DB(27)

Table 4-6b: PROPOSED Differential Contact Assignments - Q cable

Signal Name	Connector Contact Number	Cable Conductor Number	Connector Contact Number	Signal Name
+DB(28)	1	1	2	-DB(28)
+DB(29)	2	3	4	-DB(29)
+DB(30)	3	5	6	-DB(30)
+DB(31)	4	7	8	-DB(31)
+DB(P3)	5	9	10	-DB(P3)
+DB(16)	6	11	12	-DB(16)
+DB(17)	7	13	14	-DB(17)
+DB(18)	8	15	16	-DB(18)
+DB(19)	9	17	18	-DB(19)
+DB(20)	10	19	20	-DB(20)
+DB(21)	11	21	22	-DB(21)
+DB(22)	12	23	24	-DB(22)
+DB(23)	13	25	26	-DB(23)
+DB(P2)	14	27	28	-DB(P2)
GROUND	15	29	30	GROUND
DIFFSENS	16	31	32	GROUND
TERMPWRQ	17	33	34	TERMPWRQ
TERMPWRQ	18	35	36	TERMPWRQ
RESERVED	19	37	38	RESERVED
GROUND	20	39	40	GROUND
OPEN	21	41	42	OPEN
GROUND	22	43	44	GROUND
OPEN	23	45	46	OPEN
+ACKQ	24	47	48	-ACKQ
OPEN	25	49	50	OPEN
OPEN	26	51	52	OPEN
OPEN	27	53	54	OPEN
OPEN	28	55	56	OPEN
+REQQ	29	57	58	-REQQ
OPEN	30	59	60	OPEN
+DB(24)	31	61	62	-DB(24)
+DB(25)	32	63	64	-DB(25)
+DB(26)	33	65	66	-DB(26)
+DB(27)	34	67	68	-DB(27)

Table 4-6: Differential Contact Assignments - Q cable

Signal Name	Connector Contact Number	Cable Conductor Number	Connector Contact Number	Signal Name	
+DB(28)	1	1	2	35	-DB(28)
+DB(29)	2	3	4	36	-DB(29)
+DB(30)	3	5	6	37	-DB(30)
+DB(31)	4	7	8	38	-DB(31)
+DB(P3)	5	9	10	39	-DB(P3)
GROUND	6	11	12	40	GROUND
+DB(16)	7	13	14	41	-DB(16)
+DB(17)	8	15	16	42	-DB(17)
+DB(18)	9	17	18	43	-DB(18)
+DB(19)	10	19	20	44	-DB(19)
+DB(20)	11	21	22	45	-DB(20)
+DB(21)	12	23	24	46	-DB(21)
+DB(22)	13	25	26	47	-DB(22)
+DB(23)	14	27	28	48	-DB(23)
+DB(P2)	15	29	30	49	-DB(P2)
DIFFSENS	16	31	32	50	GROUND
TERMPWRQ	17	33	34	51	TERMPWRQ
TERMPWRQ	18	35	36	52	TERMPWRQ
RESERVED	19	37	38	53	RESERVED
TERMINATED	20	39	40	54	TERMINATED
GROUND	21	41	42	55	GROUND
TERMINATED	22	43	44	56	TERMINATED
+ACKQ	23	45	46	57	-ACKQ
TERMINATED	24	47	48	58	TERMINATED
TERMINATED	25	49	50	59	TERMINATED
TERMINATED	26	51	52	60	TERMINATED
TERMINATED	27	53	54	61	TERMINATED
+REQQ	28	55	56	62	-REQQ
TERMINATED	29	57	58	63	TERMINATED
GROUND	30	59	60	64	GROUND
+DB(24)	31	61	62	65	-DB(24)
+DB(25)	32	63	64	66	-DB(25)
+DB(26)	33	65	66	67	-DB(26)
+DB(27)	34	67	68	68	-DB(27)

Table 4-4: Single-Ended Contact Assignments - L cable

Signal Name	Connector Contact Number	Cable Conductor Number	Connector Contact Number	Signal Name	
TERMPWR	1	1	2	56	TERMPWR
GROUND	2	3	4	57	-DB(24)
GROUND	3	5	6	58	-DB(25)
GROUND	4	7	8	59	-DB(26)
GROUND	5	9	10	60	-DB(27)
GROUND	6	11	12	61	-DB(28)
GROUND	7	13	14	62	-DB(29)
GROUND	8	15	16	63	-DB(30)
GROUND	9	17	18	64	-DB(31)
GROUND	10	19	20	65	-DB(P3)
GROUND	11	21	22	66	-DB(12)
GROUND	12	23	24	67	-DB(13)
GROUND	13	25	26	68	-DB(14)
GROUND	14	27	28	69	-DB(15)
GROUND	15	29	30	70	-DB(P1)
GROUND	16	31	32	71	-DB(0)
GROUND	17	33	34	72	-DB(1)
GROUND	18	35	36	73	-DB(2)
GROUND	19	37	38	74	-DB(3)
GROUND	20	39	40	75	-DB(4)
GROUND	21	41	42	76	-DB(5)
GROUND	22	43	44	77	-DB(6)
GROUND	23	45	46	78	-DB(7)
GROUND	24	47	48	79	-DB(P)
GROUND	25	49	50	80	GROUND
GROUND	26	51	52	81	GROUND
TERMPWR	27	53	54	82	TERMPWR
TERMPWR	28	55	56	83	TERMPWR
TERMPWR	29	57	58	84	TERMPWR
GROUND	30	59	60	85	GROUND
GROUND	31	61	62	86	-ATN
GROUND	32	63	64	87	GROUND
GROUND	33	65	66	88	-BSY
GROUND	34	67	68	89	-ACK
GROUND	35	69	70	90	-RST
GROUND	36	71	72	91	-MSG
GROUND	37	73	74	92	-SEL
GROUND	38	75	76	93	-C/D
GROUND	39	77	78	94	-REQ
GROUND	40	79	80	95	-I/O
GROUND	41	81	82	96	-DB(8)
GROUND	42	83	84	97	-DB(9)
GROUND	43	85	86	98	-DB(10)
GROUND	44	87	88	99	-DB(11)
GROUND	45	89	90	100	GROUND
GROUND	46	91	92	101	-DB(16)
GROUND	47	93	94	102	-DB(17)
GROUND	48	95	96	103	-DB(18)
GROUND	49	97	98	104	-DB(19)
GROUND	50	99	100	105	-DB(20)
GROUND	51	101	102	106	-DB(21)
GROUND	52	103	104	107	-DB(22)
GROUND	53	105	106	108	-DB(23)
GROUND	54	107	108	109	-DB(P2)
TERMPWR	55	109	110	110	TERMPWR



Table 4-7a: PROPOSED Low Power Differential Contact Assignments - L cable

Signal Name	Connector Contact Number	Cable Number	Conductor	Connector Contact Number	Signal Name
TERMPWR	1	1	2	56	TERMPWR
+DB(24)	2	3	4	57	-DB(24)
+DB(25)	3	5	6	58	-DB(25)
+DB(26)	4	7	8	59	-DB(26)
+DB(27)	5	9	10	60	-DB(27)
+DB(28)	6	11	12	61	-DB(28)
+DB(29)	7	13	14	62	-DB(29)
+DB(30)	8	15	16	63	-DB(30)
+DB(31)	9	17	18	64	-DB(31)
+DB(P3)	10	19	20	65	-DB(P3)
+DB(12)	11	21	22	66	-DB(12)
+DB(13)	12	23	24	67	-DB(13)
+DB(14)	13	25	26	68	-DB(14)
+DB(15)	14	27	28	69	-DB(15)
+DB(P1)	15	29	30	70	-DB(P1)
+DB(0)	16	31	32	71	-DB(0)
+DB(1)	17	33	34	72	-DB(1)
+DB(2)	18	35	36	73	-DB(2)
+DB(3)	19	37	38	74	-DB(3)
+DB(4)	20	39	40	75	-DB(4)
+DB(5)	21	41	42	76	-DB(5)
+DB(6)	22	43	44	77	-DB(6)
+DB(7)	23	45	46	78	-DB(7)
+DB(P)	24	47	48	79	-DB(P)
GROUND	25	49	50	80	GROUND
DIFFSENS	26	51	52	81	DIFFSENS2
TERMPWR	27	53	54	82	TERMPWR
TERMPWR	28	55	56	83	TERMPWR
TERMPWR	29	57	58	84	TERMPWR
GROUND	30	59	60	85	GROUND
+ATN	31	61	62	86	-ATN
GROUND	32	63	64	87	GROUND
+BSY	33	65	66	88	-BSY
+ACK	34	67	68	89	-ACK
+RST	35	69	70	90	-RST
+MSG	36	71	72	91	-MSG
+SEL	37	73	74	92	-SEL
+C/D	38	75	76	93	-C/D
+REQ	39	77	78	94	-REQ
+I/O	40	79	80	95	-I/O
+DB(8)	41	81	82	96	-DB(8)
+DB(9)	42	83	84	97	-DB(9)
+DB(10)	43	85	86	98	-DB(10)
+DB(11)	44	87	88	99	-DB(11)
GROUND	45	89	90	100	GROUND
+DB(16)	46	91	92	101	-DB(16)
+DB(17)	47	93	94	102	-DB(17)
+DB(18)	48	95	96	103	-DB(18)
+DB(19)	49	97	98	104	-DB(19)
+DB(20)	50	99	100	105	-DB(20)
+DB(21)	51	101	102	106	-DB(21)
+DB(22)	52	103	104	107	-DB(22)
+DB(23)	53	105	106	108	-DB(23)
+DB(P2)	54	107	108	109	-DB(P2)
TERMPWR	55	109	110	110	TERMPWR

Table 4-7b: PROPOSED Differential Contact Assignments - L cable

Signal Name	Connector Contact Number	Cable Number	Conductor	Connector Contact Number	Signal Name
TERMPWR	1	1	2	56	TERMPWR
+DB(24)	2	3	4	57	-DB(24)
+DB(25)	3	5	6	58	-DB(25)
+DB(26)	4	7	8	59	-DB(26)
+DB(27)	5	9	10	60	-DB(27)
+DB(28)	6	11	12	61	-DB(28)
+DB(29)	7	13	14	62	-DB(29)
+DB(30)	8	15	16	63	-DB(30)
+DB(31)	9	17	18	64	-DB(31)
+DB(P3)	10	19	20	65	-DB(P3)
+DB(12)	11	21	22	66	-DB(12)
+DB(13)	12	23	24	67	-DB(13)
+DB(14)	13	25	26	68	-DB(14)
+DB(15)	14	27	28	69	-DB(15)
+DB(P1)	15	29	30	70	-DB(P1)
+DB(0)	16	31	32	71	-DB(0)
+DB(1)	17	33	34	72	-DB(1)
+DB(2)	18	35	36	73	-DB(2)
+DB(3)	19	37	38	74	-DB(3)
+DB(4)	20	39	40	75	-DB(4)
+DB(5)	21	41	42	76	-DB(5)
+DB(6)	22	43	44	77	-DB(6)
+DB(7)	23	45	46	78	-DB(7)
+DB(P)	24	47	48	79	-DB(P)
GROUND	25	49	50	80	GROUND
DIFFSENS	26	51	52	81	GROUND
TERMPWR	27	53	54	82	TERMPWR
TERMPWR	28	55	56	83	TERMPWR
TERMPWR	29	57	58	84	TERMPWR
GROUND	30	59	60	85	GROUND
+ATN	31	61	62	86	-ATN
GROUND	32	63	64	87	GROUND
+BSY	33	65	66	88	-BSY
+ACK	34	67	68	89	-ACK
+RST	35	69	70	90	-RST
+MSG	36	71	72	91	-MSG
+SEL	37	73	74	92	-SEL
+C/D	38	75	76	93	-C/D
+REQ	39	77	78	94	-REQ
+I/O	40	79	80	95	-I/O
+DB(8)	41	81	82	96	-DB(8)
+DB(9)	42	83	84	97	-DB(9)
+DB(10)	43	85	86	98	-DB(10)
+DB(11)	44	87	88	99	-DB(11)
GROUND	45	89	90	100	GROUND
+DB(16)	46	91	92	101	-DB(16)
+DB(17)	47	93	94	102	-DB(17)
+DB(18)	48	95	96	103	-DB(18)
+DB(19)	49	97	98	104	-DB(19)
+DB(20)	50	99	100	105	-DB(20)
+DB(21)	51	101	102	106	-DB(21)
+DB(22)	52	103	104	107	-DB(22)
+DB(23)	53	105	106	108	-DB(23)
+DB(P2)	54	107	108	109	-DB(P2)
TERMPWR	55	109	110	110	TERMPWR

Table 4-7: Differential Contact Assignments - L cable

Signal Name	Connector Contact Number	Cable Conductor Number	Connector Contact Number	Signal Name
TERMPWR	1	1	2	TERMPWR
+DB(24)	2	3	4	-DB(24)
+DB(25)	3	5	6	-DB(25)
+DB(26)	4	7	8	-DB(26)
+DB(27)	5	9	10	-DB(27)
+DB(28)	6	11	12	-DB(28)
+DB(29)	7	13	14	-DB(29)
+DB(30)	8	15	16	-DB(30)
+DB(31)	9	17	18	-DB(31)
+DB(P3)	10	19	20	-DB(P3)
+DB(12)	11	21	22	-DB(12)
+DB(13)	12	23	24	-DB(13)
+DB(14)	13	25	26	-DB(14)
+DB(15)	14	27	28	-DB(15)
+DB(P1)	15	29	30	-DB(P1)
GROUND	16	31	32	GROUND
+DB(0)	17	33	34	-DB(0)
+DB(1)	18	35	36	-DB(1)
+DB(2)	19	37	38	-DB(2)
+DB(3)	20	39	40	-DB(3)
+DB(4)	21	41	42	-DB(4)
+DB(5)	22	43	44	-DB(5)
+DB(6)	23	45	46	-DB(6)
+DB(7)	24	47	48	-DB(7)
+DB(P)	25	49	50	-DB(P)
DIFFSENS	26	51	52	GROUND
TERMPWR	27	53	54	TERMPWR
TERMPWR	28	55	56	TERMPWR
TERMPWR	29	57	58	TERMPWR
+ATN	30	59	60	-ATN
GROUND	31	61	62	GROUND
+BSY	32	63	64	-BSY
+ACK	33	65	66	-ACK
+RST	34	67	68	-RST
+MSG	35	69	70	-MSG
+SEL	36	71	72	-SEL
+C/D	37	73	74	-C/D
+REQ	38	75	76	-REQ
+I/O	39	77	78	-I/O
GROUND	40	79	80	GROUND
+DB(8)	41	81	82	-DB(8)
+DB(9)	42	83	84	-DB(9)
+DB(10)	43	85	86	-DB(10)
+DB(11)	44	87	88	-DB(11)
GROUND	45	89	90	GROUND
+DB(16)	46	91	92	-DB(16)
+DB(17)	47	93	94	-DB(17)
+DB(18)	48	95	96	-DB(18)
+DB(19)	49	97	98	-DB(19)
+DB(20)	50	99	100	-DB(20)
+DB(21)	51	101	102	-DB(21)
+DB(22)	52	103	104	-DB(22)
+DB(23)	53	105	106	-DB(23)
+DB(P2)	54	107	108	-DB(P2)
TERMPWR	55	109	110	TERMPWR