

Signal Assignments for MVD Connectors and Cables

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Revision History:

Nov. 20, 1997----updated Monitor Signals (Section 7) to reflect the new serial readout scheme for MCM temperature, LDO voltage and AMU spy channel.)

Feb. 23, 1997----There is no change in pin assignments since last revision, but many signal names have been unified for better consistency within this document as well as between this document and the circuit schematics for MCM, Power-Comm board and Motherboard. Some of the names were left alone when they were easily identified as straight initials or shortening of names i.e. Serial Enable <-> SE, clk <-> clock, etc.

1. MCM Output Cable Signals Types

(The following list, while not a pin-assignment, makes the signal types more readily recognizable.)

Silicon Detector Bias and Return	2
< Analog Power and Return	9
< Digital Power and Return	10
< MCM Temperature Monitor	1
< Current Sum Output (discriminator)	2
< Serial Link Signals	6
< Xilinx Program (input to MCM)	1
< MCM Reset	1
< Preamp/AMUADC Out (spy channels)	2
< 9.5MHz/38MHz CLK	2
< Mode Bits	6
< Level-1 Accept	1
< PECL Clock (A/B) for ADC	2
< MCM_DATA_OUT & CLK (LVDS)	3
< ((spare) pin)	1
< (no connection)	1

50 Total

2. Power-Communication Board Signal Types

(The following list, while not a pin-assignment, makes the signal types more readily recognizable.)

< Silicon Detector Bias and Return	12
< Analog Power and Return	20
< Digital Power and Return	38
< MCM Temperature Monitors	6
< Current Sum Outputs	6
< 9.5MHz/38MHz CLK	2
< Mode Bits	6
< Level-1 Accept	1
< Serial Link Signals	16
< Xilinx Program (input to MCM)	1
< MCM Reset	1
< Preamp/AMUADC Out (spy channel)	12
< PECL Clock (A/B) for ADC	2
< MCM_DATA_OUT_and CLK (LVDS)	36
< Board temperature monitor	1

160 Total

3. MCM to Power Communication (or Daughter) Board Pin Assignments

*MCM Output Cable Connector (1ea Elco 50-contact, .5mm pitch
surface mount horizontal ZIF, 0.4 amp, model # 04-6240-050-003-800)*

1. sil_bias (silicon detector bias)
2. (no connection, no trace)
3. sil_bias_return (silicon bias return)
4. +5V analog, tgv preamp
5. analog gnd, tgv, amu, isum amp
6. ((spare)) (grounded on power-comm board)
7. discr sum out
8. discr sum out gnd
9. +5V analog: comparator
10. analog gnd, comparator
11. +5V analog, amu, isum amp
12. analog gnd, tgv, amu, isum amp
13. - 5V analog, isum amp
14. +2.5V, Vmid
15. mcm temp sensor
16. preamp spy
17. analog gnd, tgv, amu, isum amp
18. amu spy
19. serial enable ;SEN
20. read back enable ;RBEN (enables mirror register read back)
21. serial clock ;SCLK (XCLK)
22. serial data in ;SDIN (XDIN)
23. serial data out ;SDOUT (xilinx done when PROG asserted)
24. serial latch ;SLATCH
25. xilinx program ;PROGB (clears FPGA program)
26. mcm_rst ;MCMRST (resets all data registers)
27. +V, digital, HM & ADC
28. digital gnd, HM & ADC
29. +5V, digital, HM & ADC
30. digital gnd, HM & ADC
31. mode bit 0
32. mode bit 1
33. mode bit 2
34. mode bit 3
35. mode bit 4
36. mode bit 5
37. lvl-1 accept
38. digital gnd
39. mcm_DATA_OUT_clock ;4X Beam Clock
40. digital gnd
41. MCM_DATA_OUT_1 ;serial data link #1
42. digital gnd
43. MCM_DATA_OUT_2 ;serial data link #2
44. digital gnd
45. 9.5 MHz beam clock
46. digital gnd
47. 38 MHz clock ;4X Beam Clock

- 48. Digital Gnd
- 49. PECL clock A ;for ADC
- 50. PECL clock B ;for ADC

Note: 40 Mbit/sec MCM data and clock go to LVDS chips which are mounted on the Power/Communication circuit board (or Daughter board).

4. Power Communication Board to Motherboard Pin Assignments

*JAE KX15-160-NLNL Right Angle, 160 contact (2 x 80),
.8mm spacing, 0.5 amp. current capacity (mating connector on
motherboard: JAE KX14-160-N5D)*

1. MB0 ;mode bit 0	2. MB1 ;mode bit 1
3. MB2 ;mode bit 2	4. MB3 ;mode bit 3
5. MB4 ;mode bit 4	6. MB5 ;mode bit 5
7. digital gnd	8. digital gnd
9. L1A ;level 1 accept	10. 9.5 MHz beam clock
11. digital gnd	12. digital gnd
13. PECL_DIFF_CLK_A	14. 38 MHz clock (4 X beam clock)
15. PECL_DIFF_CLK_B	16. digital gnd
17. MCM1 LVDS_DATA_OUT_CLK_A	18. MCM1 LVDS_DATA_OUT_1A
19. MCM1 LVDS_DATA_OUT_CLK_B	20. MCM1 LVDS_DATA_OUT_1B
21. MCM1 LVDS_DATA_OUT_2A	22. MCM2 LVDS_DATA_OUT_CLK_A
23. MCM1 LVDS_DATA_OUT_2B	24. MCM2 LVDS_DATA_OUT_CLK_B
25. MCM2 LVDS_DATA_OUT_1A	26. MCM2 LVDS_DATA_OUT_2A
27. MCM2 LVDS_DATA_OUT_1B	28. MCM2 LVDS_DATA_OUT_2B
29. MCM3 LVDS_DATA_OUT_CLK_A	30. MCM3 LVDS_DATA_OUT_1A
31. MCM3 LVDS_DATA_OUT_CLK_B	32. MCM3 LVDS_DATA_OUT_1B
33. MCM3 LVDS_DATA_OUT_2A	34. MCM4 LVDS_DATA_OUT_CLK_A
35. MCM3 LVDS_DATA_OUT_2B	36. MCM4 LVDS_DATA_OUT_CLK_B
37. MCM4 LVDS_DATA_OUT_1A	38. MCM4 LVDS_DATA_OUT_2A
39. MCM4 LVDS_DATA_OUT_1B	40. MCM4 LVDS_DATA_OUT_2B
41. MCM5 LVDS_DATA_OUT_CLK_A	42. MCM5 LVDS_DATA_OUT_1A
43. MCM5 LVDS_DATA_OUT_CLK_B	44. MCM5 LVDS_DATA_OUT_1B
45. MCM5 LVDS_DATA_OUT_2A	46. MCM6 LVDS_DATA_OUT_CLK_A
47. MCM5 LVDS_DATA_OUT_2B	48. MCM6 LVDS_DATA_OUT_CLK_B
49. MCM6 LVDS_DATA_OUT_1A	50. MCM6 LVDS_DATA_OUT_2A
51. MCM6 LVDS_DATA_OUT_1B	52. MCM6 LVDS_DATA_OUT_2B
53. digital gnd	54. digital gnd
55. mcm 1 serial enable	56. mcm 2 serial enable
57. mcm 3 serial enable	58. mcm 4 serial enable
59. mcm 5 serial enable	60. mcm 6 serial enable
61. digital gnd	62. digital gnd
63. serial clock	64. serial data in
65. digital gnd	66. digital gnd
67. serial_DATA_OUT_mcm1	68. serial_DATA_OUT_mcm2
69. serial_DATA_OUT_mcm3	70. serial_DATA_OUT_mcm4
71. serial_DATA_OUT_mcm5	72. serial_DATA_OUT_mcm6
73. digital gnd	74. digital gnd
75. serial latch	76. read back enable
77. xilinx program	78. mcm_rst
79. power/comm. board temperature	80. analog gnd
81. mcm 1 preamp out spy	82. mcm 1 amu out spy
83. mcm 2 preamp out spy	84. mcm 2 amu out spy
85. mcm 3 preamp out spy	86. mcm 3 amu out spy
87. mcm 4 preamp out spy	88. mcm 4 amu out spy
89. mcm 5 preamp out spy	90. mcm 5 amu out spy
91. mcm 6 preamp out spy	92. mcm 6 amu out spy

93.	analog gnd	94.	analog gnd
95.	mcm1 discr sum	96.	mcm2 discr sum
97.	mcm3 discr sum	98.	mcm4 discr sum
99.	mcm5 discr sum	100.	mcm6 discr sum
101.	digital gnd, mcm 1	102.	digital gnd, mcm 1
103.	+5V, digital, HM & ADC, mcm 1	104.	+5V, digital, HM & ADC, mcm 1
105.	digital gnd, mcm2	106.	analog gnd, comparator, mcm 1, 2
107.	+5V, digital, HM & ADC, mcm 2	108.	+5V, analog, comparator, mcm 1, 2
109.	digital gnd, mcm2	110.	analog gnd, comparator, mcm 3, 4
111.	+5V, digital, HM & ADC, mcm 2	112.	+5V, analog, comparator, mcm 3, 4
113.	digital gnd, mcm3	114.	analog gnd, comparator, mcm 5, 6
115.	+5V, digital, HM & ADC, mcm 3	116.	+5V, analog, discr, mcm 5, 6
117.	digital gnd, mcm3	118.	analog gnd, TGV, AMU, mcm 1, 2
119.	+5V, digital, HM & ADC, mcm 3	120.	+5V, analog, TGV, AMU, mcm 1, 2
121.	digital gnd, mcm4	122.	analog gnd, TGV, AMU, mcm 3, 4
123.	+5V, digital, HM & ADC, mcm 4	124.	+5V, analog, TGV, AMU, mcm 3, 4
125.	digital gnd, mcm4	126.	analog gnd, TGV, AMU, mcm 5, 6
127.	+5V, digital, HM & ADC, mcm 4	128.	+5V, analog, TGV, AMU, mcm 5, 6
129.	digital gnd, mcm5	130.	-5V, analog, isum amp, mcm 1, 2
131.	+5V, digital, HM & ADC, mcm 5	132.	-5V, analog, isum amp, mcm 3, 4
133.	digital gnd, mcm5	134.	-5V, analog, isum amp, mcm 5, 6
135.	+5V, digital, HM & ADC, mcm 5	136.	+2.5V, Vmid, mcm 1, 2
137.	digital gnd, mcm6	138.	+2.5V, Vmid, mcm 3, 4
139.	+5V, digital, HM & ADC, mcm 6	140.	+2.5V, Vmid, mcm 5, 6
141.	digital gnd, mcm6	142.	MCM1 temperature monitor
143.	+5V, digital, HM & ADC, mcm 6	144.	MCM2 temperature monitor
145.	MCM3 temperature monitor	146.	MCM4 temperature monitor
147.	MCM5 temperature monitor	148.	MCM6 temperature monitor
149.	silicon_bias, mcm 1	150.	silicon bias return, mcm 1
151.	silicon_bias, mcm 2	152.	silicon bias return, mcm 2
153.	silicon_bias, mcm 3	154.	silicon bias return, mcm 3
155.	silicon_bias, mcm 4	156.	silicon bias return, mcm 4
157.	silicon_bias, mcm 5	158.	silicon bias return, mcm 5
159.	silicon_bias, mcm 6	160.	silicon bias return, mcm 6

Note:

- The daughter board servicing the pad detector MCMs has the same signals as the Power/Communications Circuit Board for the central inner detector MCMs. On the daughter board, there are 2 each Samtec TFM-140-12-S-D 80 contact header surface mount connectors. The connector located at larger radius maps to the first 80 signals of the 160 contact connector. The second 80 contact connector maps to signals 81-160 of the 160 contact connector. The mating connectors on the motherboard are Samtec SFM-140-02 80 contact surface mount socket connectors.
- Pin 1 of the KX15 right angle connector is defined by the mating KX14 connector on the motherboard (pin 1 upper left-hand corner).
- The discriminator sum output is not used for the outer layer strip detectors.

* PECL clock distribution circuit is on Power-Communications Circuit Board

5. MVD Endplate Pin Assignments

A. DC Power

Panduit MAS-CON IDC: 10 contact, 8 amp contact rating, (.156 pitch), and 18-gauge wire. Header (MLSS156-10TA): 31.7mm x 3.7mm x 3.2mm high Right Angle Plug (CT156F18-10): 31.7mm x 9.0mm x 19.6mm high.

For each set of 6 MCMs (corresponds to power/communications circuit board), require 10 each 18 gauge wire. The ampacity of the 18-gauge wire is 3A. 3 each +5V, 3 each digital gnd, 1 each -5V, 1 each analog gnd. For 7 groups of 6 MCMs, we have 70 each 18 gauge wire. Assuming 2 mm O.D. of insulated wire + 2/3 packing factor, get a cross sectional area of 328mm² (18mm x 18mm). Associated with each connector are 5 each voltage regulators with a capacity of 3 amps each. The regulator outputs are protected by Raychem PolySwitch resettable fuses. In addition, need to current limit lines to the 160 contact connector to avoid using the connector as a fuse.

Typical Power Connector Pin Assignments

1. +5V digital
2. +5V digital return
3. +5V digital
4. +5V digital return
5. +5V analog
6. +5V analog return
7. +5V analog
8. +5V analog return
9. -5V
10. -5V return
11. (spare)
12. Power cable shield termination
13. Inner enclosure shield termination
14. Outer enclosure shield termination

(Note: The connector for motherboard power uses pins 1-8 only.)

B. Silicon Bias Pin Assignments

Maximum of 42 silicon detectors/quadrant => 42 bias + 42 bias returns. Low current requirement (130V Max), so use shielded 25 mil pitch cable and IDC connectors. These connectors are rated for 500Vrms at sea level. Require 2 connectors, 1 ea. 50 contact connector and 1 ea. 40 contact connector. These cables go to the power distribution box.

Silicon Bias Connector 1

50 contact header:

3M 81050-660X0X

50 contact mating socket connector:

3M 82050-6006

- | | |
|----------------------------------|---|
| 1. group 1, mcm 1, silicon bias | 2. group 1, mcm 1, silicon bias return |
| 3. group 1, mcm 2, silicon bias | 4. group 1, mcm 2, silicon bias return |
| 5. group 1, mcm 3, silicon bias | 6. group 1, mcm 3, silicon bias return |
| 7. group 1, mcm 4, silicon bias | 8. group 1, mcm 4, silicon bias return |
| 9. group 1, mcm 5, silicon bias | 10. group 1, mcm 5, silicon bias return |
| 11. group 1, mcm 6, silicon bias | 12. group 1, mcm 6, silicon bias return |
| 13. group 2, mcm 1, silicon bias | 14. group 2, mcm 1, silicon bias return |
| 15. group 2, mcm 2, silicon bias | 16. group 2, mcm 2, silicon bias return |
| 17. group 2, mcm 3, silicon bias | 18. group 2, mcm 3, silicon bias return |
| 19. group 2, mcm 4, silicon bias | 20. group 2, mcm 4, silicon bias return |
| 21. group 2, mcm 5, silicon bias | 22. group 2, mcm 5, silicon bias return |
| 23. group 2, mcm 6, silicon bias | 24. group 2, mcm 6, silicon bias return |
| 25. group 3, mcm 1, silicon bias | 26. group 3, mcm 1, silicon bias return |
| 27. group 3, mcm 2, silicon bias | 28. group 3, mcm 2, silicon bias return |
| 29. group 3, mcm 3, silicon bias | 30. group 3, mcm 3, silicon bias return |
| 31. group 3, mcm 4, silicon bias | 32. group 3, mcm 4, silicon bias return |
| 33. group 3, mcm 5, silicon bias | 34. group 3, mcm 5, silicon bias return |
| 35. group 3, mcm 6, silicon bias | 36. group 3, mcm 6, silicon bias return |
| 37. group 4, mcm 1, silicon bias | 38. group 4, mcm 1, silicon bias return |
| 39. group 4, mcm 2, silicon bias | 40. group 4, mcm 2, silicon bias return |
| 41. group 4, mcm 3, silicon bias | 42. group 4, mcm 3, silicon bias return |
| 43. group 4, mcm 4, silicon bias | 44. group 4, mcm 4, silicon bias return |
| 45. group 4, mcm 5, silicon bias | 46. group 4, mcm 5, silicon bias return |
| 47. group 4, mcm 6, silicon bias | 48. group 4, mcm 6, silicon bias return |
| 49. (spare) | 50. (spare) |

Silicon Bias Connector 2

40 contact header:

40 contact mating socket connector:

3M 81040-660X0X

3M 82040-6006

- | | |
|----------------------------------|---|
| 1. group 5, mcm 1, silicon bias | 2. group 5, mcm 1, silicon bias return |
| 3. group 5, mcm 2, silicon bias | 4. group 5, mcm 2, silicon bias return |
| 5. group 5, mcm 3, silicon bias | 6. group 5, mcm 3, silicon bias return |
| 7. group 5, mcm 4, silicon bias | 8. group 5, mcm 4, silicon bias return |
| 9. group 5, mcm 5, silicon bias | 10. group 5, mcm 5, silicon bias return |
| 11. group 5, mcm 6, silicon bias | 12. group 5, mcm 6, silicon bias return |
| 13. group 6, mcm 1, silicon bias | 14. group 6, mcm 1, silicon bias return |
| 15. group 6, mcm 2, silicon bias | 16. group 6, mcm 2, silicon bias return |
| 17. group 6, mcm 3, silicon bias | 18. group 6, mcm 3, silicon bias return |
| 19. group 6, mcm 4, silicon bias | 20. group 6, mcm 4, silicon bias return |
| 21. group 6, mcm 5, silicon bias | 22. group 6, mcm 5, silicon bias return |
| 23. group 6, mcm 6, silicon bias | 24. group 6, mcm 6, silicon bias return |
| 25. group 7, mcm 1, silicon bias | 26. group 7, mcm 1, silicon bias return |
| 27. group 7, mcm 2, silicon bias | 28. group 7, mcm 2, silicon bias return |
| 29. group 7, mcm 3, silicon bias | 30. group 7, mcm 3, silicon bias return |
| 31. group 7, mcm 4, silicon bias | 32. group 7, mcm 4, silicon bias return |
| 33. group 7, mcm 5, silicon bias | 34. group 7, mcm 5, silicon bias return |
| 35. group 7, mcm 6, silicon bias | 36. group 7, mcm 6, silicon bias return |
| 37. (spare) | 38. (spare) |
| 39. (spare) | 40. (spare) |

C. Analog Sum Outputs Connector Pin Assignments

24 each single ended signals. Assume shielded 25-mil pitch cable and a 50 contact connector.

50 contact header:

3M 81050-660X0X

50 contact mating socket connector:

3M 82050-6006

This cable goes to the trigger interface

- | | |
|-------------------------------------|--|
| 01.group 1, mcm1, discriminator sum | 02. group 1, mcm1, discriminator sum return |
| 03.group 1, mcm2, discriminator sum | 04. group 1, mcm2, discriminator sum return |
| 05.group 1, mcm3, discriminator sum | 06. group 1, mcm3, discriminator sum return |
| 07.group 1, mcm4, discriminator sum | 08. group 1, mcm4, discriminator sum return |
| 09.group 1, mcm5, discriminator sum | 10. group 1, mcm5, discriminator sum return |
| 11.group 1, mcm6, discriminator sum | 12. group 1, mcm6, discriminator sum return |
| 13.group 2, mcm1, discriminator sum | 14. group 2, mcm1, discriminator sum return |
| 15.group 2, mcm2, discriminator sum | 16. group 2, mcm2, discriminator sum return |
| 17.group 2, mcm3, discriminator sum | 18. group 2, mcm3, discriminator sum return |
| 19.group 2, mcm4, discriminator sum | 20. group 2, mcm4, discriminator sum return |
| 21.group 2, mcm5, discriminator sum | 22. group 2, mcm5, discriminator sum return |
| 23.group 2, mcm6, discriminator sum | 24. group 2, mcm6, discriminator sum return |
| 25.group 3, mcm1, discriminator sum | 26. group 3, mcm1, discriminator sum return |
| 27.group 3, mcm2, discriminator sum | 28. group 3, mcm2, discriminator sum return |
| 29.group 3, mcm3, discriminator sum | 30. group 3, mcm3, discriminator sum return |
| 31.group 3, mcm4, discriminator sum | 32. group 3, mcm4, discriminator sum return |
| 33.group 3, mcm5, discriminator sum | 34. group 3, mcm5, discriminator sum return |
| 35.group 3, mcm6, discriminator sum | 36. group 3, mcm6, discriminator sum return |
| 37.group 7, mcm1, discriminator sum | 38. group 7, mcm1, discriminator sum return |
| 39.group 7, mcm2, discriminator sum | 40. group 7, mcm2, discriminator sum return |
| 41.group 7, mcm3, discriminator sum | 42. group 7, mcm3, discriminator sum return |
| 43.group 7, mcm4, discriminator sum | 44. group 7, mcm4, discriminator sum return |
| 45.group 7, mcm5, discriminator sum | 46. group 7, mcm5, discriminator sum return |
| 47.group 7, mcm6, discriminator sum | 48. group 7, mcm 6, discriminator sum return |
| 49.(spare) | 50. (spare) |

D. Timing Signal Connectors Pin Assignments

7 each 20 contact connectors

20 contact header:

3M 81020-660X0X

20 contact mating socket connector:

3M 82020-6006

1.MB0 ;mode bit 0	2. digital gnd
3.MB1 ;mode bit 1	4. digital gnd
5.MB2 ;mode bit 2	6. digital gnd
7.MB3 ;mode bit 3	8. digital gnd
9.MB4 ;mode bit 4	10. digital gnd
11.MB5 ;mode bit 5	12. digital gnd
13.level 1 accept	14. digital gnd
15.9.5 MHz beam clock	16. digital gnd
17.38 Mhz (4 X beam clock)	18. digital gnd
19.digital gnd	20. digital gnd

Note:

-Assume timing signals are single ended logic consistent with 50-ohm loads (e.g. Motorola FACT CMOS). Assume 25 mil pitch pleated foil shielded cable (3M 90101/20) with IDC connectors (3M 82020-600X .050" x .100" tripolarized wiremount mini socket) and mating headers (3M 81020-6X0C0X .050" x .100" tripolarized latch/ejector header).

E. Serial/Control Signal Connectors Pin Assignments

7 each 26 contact connectors

26 contact header:

3M 81026-660X0X

26 contact mating socket connector:

3M 82026-6006

1. digital gnd	2. digital gnd
3. mcm 1 serial enable	4. mcm 2 serial enable
5. mcm3 serial enable	6. mcm 4 serial enable
7. mcm 5 serial enable	8. mcm 6 serial enable
9. digital gnd	10. digital gnd
11. serial clock	12. serial data in
13. digital gnd	14. digital gnd
15. mcm 1 serial data out	16. mcm 2 serial data out
17. mcm3 serial data out	18. mcm 4 serial data out
19. mcm 5 serial data out	20. mcm 6 serial data out
21. serial latch	22. read back enable
23. digital gnd	24. digital gnd
25. xilinx program	26. mcm reset

Note: The serial data-out signal requires a driver on the Power/Comm (42 signals).

F. LVDS Outputs Pin Assignments

7 each 36 contact connectors

36 contact header:

36 contact mating socket connector:

3M 81036-660X0X

3M 82036-6006

01.	MCM1 LVDS_DATA_OUT_CLK_A	02.	MCM1 LVDS_DATA_OUT_CLK_B
03.	MCM1 LVDS_DATA_OUT_1A	04.	MCM1 LVDS_DATA_OUT_1B
05.	MCM1 LVDS_DATA_OUT_2A	06.	MCM1 LVDS_DATA_OUT_2B
07.	MCM2 LVDS_DATA_OUT_CLK_A	08.	MCM2 LVDS_DATA_OUT_CLK_B
09.	MCM2 LVDS_DATA_OUT_1A	10.	MCM2 LVDS_DATA_OUT_CLK_B
11.	MCM2 LVDS_DATA_OUT_2A	12.	MCM2 LVDS_DATA_OUT_2B
13.	MCM3 LVDS_DATA_OUT_CLK_A	14.	MCM3 LVDS_DATA_OUT_CLK_B
15.	MCM3 LVDS_DATA_OUT_1A	16.	MCM3 LVDS_DATA_OUT_1B
17.	MCM3 LVDS_DATA_OUT_2A	18.	MCM3 LVDS_DATA_OUT_2B
19.	MCM4 LVDS_DATA_OUT_CLK_A	20.	MCM4 VDS_DATA_OUT_CLK_B
21.	MCM4LVDS_DATA_OUT_1A	22.	MCM4 LVDS_DATA_OUT_1B
23.	MCM4 LVDS_DATA_OUT_2A	24.	MCM4 LVDS_DATA_OUT_2B
25.	MCM5 LVDS_DATA_OUT_CLK_A	26.	MCM5 LVDS_DATA_OUT_CLK_B
27.	MCM5 LVDS_DATA_OUT_1A	28.	MCM5 LVDS_DATA_OUT_1B
29.	MCM5 LVDS_DATA_OUT_2A	30.	MCM5 LVDS_DATA_OUT_2B
31.	MCM6 LVDS_DATA_OUT_CLK_A	32.	MCM6 LVDS_DATA_OUT_CLK_B
33.	MCM6 LVDS_DATA_OUT_1A	34.	MCM6 LVDS_DATA_OUT_1B
35.	MCM6 LVDS_DATA_OUT_2A	36.	MCM6 LVDS_DATA_OUT_2B

G. Monitoring Signals Pin Assignments

LDO output voltages (35) and MCM temperatures (42 fully populated, 34 nominal -Analog Devices) monitored on motherboard using 10 ea MAXIM 8-channel serial 12 bit ADCs. Serial control and readout from Power Distribution Box through 40 contact 3M header (81040-6X0X0X). Use 3M 90101 series 25-mil pitch pleated foil shielded cable.

Each MCM has two spy lines (preamp output and AMU output for any 1 of 256 channels) for a total of 42 spy line pairs assuming full population. Analog Devices ADG406 16 channel analog multiplexer (6 required) appears to be a candidate component. Some glue logic will be required to interface to a serial link.

40 Contact Monitor Connector Signals

1.	digital gnd	2.	digital gnd
3.	monitor serial clock	4.	digital gnd
5.	monitor serial data in	6.	digital gnd
7.	monitor serial data out	8.	ADC_A0
9.	monitor SSTRB	10.	ADC_A1
11.	digital gnd	12.	ADC_A2
13.	digital gnd	14.	ADC_A3
15.	(spare): 1k term. to Dig. Gnd	16.	(spare): 1k term. to Dig. Gnd
17.	digital gnd	18.	digital gnd
19.	spy_A0	20.	spy_A1
21.	spy_A2	22.	spy_A3
23.	spy_A4	24.	spy_A5
25.	digital gnd	26.	digital gnd
27.	digital gnd	28.	digital gnd
29.	(spare): 1k term. to Dig. Gnd	30.	(spare): 1k term. to Dig. Gnd
31.	analog gnd	32.	analog gnd
33.	preamp output spy channel (AMU input)	34.	analog gnd
35.	analog gnd	36.	analog gnd
37.	amu output spy channel	38.	analog gnd
39.	analog gnd	40.	analog gnd