

**ATLAS Level-1 Calorimeter Trigger
Prototype Processor Backplane**

Addendum and specification update

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Samuel Silverstein

Stockholm University

1 Introduction

This document describes an error in the ATLAS Level-1 Calorimeter Trigger Processor Backplane specification, a solution for the error, and an updated specification.

The most recent specification document for the Processor Backplane (PB) was the final design review document (FDR, 2 May 2005). In Appendix D of that document, the pin layout for the Timing and Control Module (TCM) is described in table form. Connector 1 (J211), the top-most connector for that module, is specified as a 19-row Type B connector. The Geographic Address pins GEOADD(6-4) are located on pins A B and C, respectively, of Row 19 of this connector. This is unchanged from the specification of the prototype backplane, reviewed for the PB PDR in 2001.

In both the prototype and production backplane layouts, however, connector J211 was implemented as a 25-row connector instead, with GEOADD(6-4) located in Row 22 instead of Row 19. This discrepancy makes the PB incompatible with the production TCM.

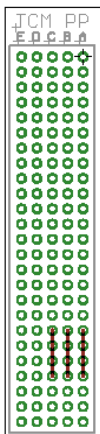
To correct this discrepancy, a patch card has been designed that, once installed, makes the PB compatible with both the prototype and production TCM.

2 TCP patch card specification

Connector J211 is implemented with long feed-through pins that provide a male header on the rear side of the backplane. A patch card mounted on a straight female B-25 connector, can be placed over this header to connect the signals on row 22 of the backplane with the pins on row 19.

The patch card itself is a 2-layer printed circuit board with dimensions 57mm × 12.5mm. It is designed with 0.8mm holes to make it easy to mount using soldering, rather than press-fitting. The larger hole diameter makes it impossible to route the 0.010" signal lines between pads without violating PCB design rules, so the connections are also connected to the intermediate pins in rows 20 and 21 of each column. This poses no problem, since these pins are unconnected on both the TCM and the PB.

Below is the layout of the TCM patch card. Note that columns A through E are enumerated right-to-left, instead of left-to-right. This reflects the fact that the patch card is mounted on the rear, rather than the front, of the PB. Appendix D, describing the revised pin list for the TCM, is intended to replace the one in the FDR specification.



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Appendix D: TCM interface connector layout (revised)

| Pos. | A | B | C | D | E |
|------|---|---|---|---|---|
|------|---|---|---|---|---|

Guide Pin (0-8mm) (AMP parts 223956-1, 223957-1, or equivalent)

Connector 1 (8-58mm) Type B-25 connector (long through-pins)

| | | | | | |
|----|-----------|------------|-----------|--------|--------|
| 1 | | <G> | VMED00 | VMED08 | VMED09 |
| 2 | | VMED01 | VMED02 | VMED10 | VMED11 |
| 3 | | | VMED03 | VMED12 | VMED13 |
| 4 | | VMED04 | VMED05 | VMED14 | VMED15 |
| 5 | | <G> | VMED06 | VMEA23 | VMEA22 |
| 6 | | VMED07 | <G> | VMEA21 | VMEA20 |
| 7 | | <G> | VMEDS0* | <G> | <G> |
| 8 | | VMEWRITE* | <G> | VMEA18 | VMEA19 |
| 9 | | | VMEDTACK* | VMEA16 | VMEA17 |
| 10 | | VMEA07 | VMEA06 | VMEA14 | VMEA15 |
| 11 | | <G> | VMEA05 | VMEA12 | VMEA13 |
| 12 | | VMEA04 | VMEA03 | VMEA10 | VMEA11 |
| 13 | | <G> | VMEA02 | VMEA08 | VMEA09 |
| 14 | | VMERESSET* | VMEA01 | <G> | <G> |
| 15 | | | | | |
| 16 | | | | | |
| 17 | | | | | |
| 18 | | | | | |
| 19 | GEOADD6 = | GEOADD5 = | GEOADD4 = | | |
| 20 | GEOADD6 = | GEOADD5 = | GEOADD4 = | | |
| 21 | GEOADD6 = | GEOADD5 = | GEOADD4 = | | |
| 22 | GEOADD6 | GEOADD5 | GEOADD4 | | |
| 23 | | | | | |
| 24 | | | | | |
| 25 | | | | | |

* Supplied by the TCM or an adapter to power VME-- bus terminators.
 = Routed to rows 19-21 by TCM patch card.

Connector 2 (286-336mm) Type B-22 connector (short through pins)

| | | | | | |
|----|------|-----|-----|--------|--------|
| 1 | | | | | |
| 2 | | | <G> | TTC1+ | TTC2+ |
| 3 | | | <G> | TTC1- | TTC2- |
| 4 | | | <G> | TTC3+ | TTC4+ |
| 5 | | | <G> | TTC3- | TTC4- |
| 6 | | | <G> | TTC5+ | TTC6+ |
| 7 | | | <G> | TTC5- | TTC6- |
| 8 | | | <G> | TTC7+ | TTC8+ |
| 9 | | | <G> | TTC7- | TTC8- |
| 10 | | | <G> | TTC9+ | TTC10+ |
| 11 | | | <G> | TTC9- | TTC10- |
| 12 | | | <G> | TTC11+ | TTC12+ |
| 13 | | | <G> | TTC11- | TTC12- |
| 14 | | | <G> | TTC13+ | TTC14+ |
| 15 | | | <G> | TTC13- | TTC14- |
| 16 | | | <G> | TTC15+ | TTC16+ |
| 17 | | | <G> | TTC15- | TTC16- |
| 18 | | | <G> | TTC17+ | TTC18+ |
| 19 | | | <G> | TTC17- | TTC18- |
| 20 | <G> | <G> | <G> | TTC19+ | TTC20+ |
| 21 | CAN+ | <G> | <G> | TTC19- | TTC20- |
| 22 | CAN- | <G> | <G> | | |

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Connector 3 (336-361mm) Type D (N) connector

| | |
|----|-----------|
| 2 | +3.3V |
| 6 | Power GND |
| 10 | +5.0V |