



Fermi National Accelerator Laboratory

The Tevatron Beam Loss Monitoring System

Tevatron BLM VME J2 Backplane Specification Document

-- PRELIMINARY --

August 18, 2004

Revised: August 20, 2004

Revised: August 23, 2004

Revised: October 15, 2004

Tevatron BLM VME J2 Backplane Specification

INTRODUCTION

This document details the requirements for the VME J2 backplane used in the Tevatron BLM system. The electronics necessary to implement the BLM system will require a 21-slot VME backplane capable of accepting standard 6U x 160-mm printed circuit boards. A total of 43 J2 backplanes are to be built.

SPECIFICATION REQUIREMENTS

SUBRACK BACKPLANE

- 1.) The backplane should be a 21 slot, VME J2 backplane that meets the applicable specifications found in IEEE Std. 1014-1987 Rev. D of the VMEbus specification.
- 2.) The connectivity of the P2 (row B pins) connectors on the backplane should follow the pin assignments listed in IEEE Std. 1014-1987 Rev. D VME specifications, section 7.6.2.
- 3.) The J2 backplane must bus the A and C rows of pins on the P2 connectors (the user I/O defined pins in the VME specification) to all other A and C rows of pins in all slots on the backplane EXCEPT slots 1, (the system controller slot) 2, and 3. The A and C rows of slots 1, 2, and 3 are NOT to be connected to any other pins in any other slot.
- 4.) The J2 backplane must have solid copper power and ground planes of a thickness appropriate for the currents required in the system. The backplane should have a minimum thickness of 0.093", thicker backplanes are allowed.
- 5.) The backplane must be rated to provide the following minimum power to each of the 21 slots at 40 deg. C ambient: 3.6 Amps @ +5 volts. Copper bus bars may be required to connect the power supply to the backplane for the +5 volt and ground connections.
- 6.) The J2 backplane connectors must be of the standard 3 row, 96-pin, DIN 41612 type. Backplane connectors on slots 1, 2, 3, 4 and 21 should have extended length pins long enough to accommodate user I/O connections or plug-in terminations. Extended length pins should have a shroud for protection. All other slots should have shorter length pins (approximately flush with backplane).
- 7.) The J2 backplane must have all P2 row B signal lines terminated in the appropriate manner. (See the IEEE Std. 1014-1987 Rev. D VME specifications, sections 6.4, 6.5 and 6.7.) In addition the bused A and C rows on slots 4 through 21 should be terminated in standard VME fashion (section 6.5). This can be accomplished either with modules that plug into the backplane or a termination scheme that is built-in to the backplane.
- 8.) The rigidity of the J2 backplane shall adhere to the VME specifications listed in IEEE Std. 1101.1-1991, section 10, paragraph 10.1.

BACKPLANE MISCELLANEOUS

- 1.) The backplane(s) shall be delivered completely assembled, and all backplane(s) will have been electrically tested to ensure continuity of conductors and the absence of shorting between power, ground, and signal lines.
- 2.) The vendor shall provide two completed backplanes for Fermilab approval before the production run starts. The Fermilab checkout and approval period may take up to 4 weeks.
- 3.) The remaining 41 units are to be delivered within 6 weeks after approval of the first 2 units.

Suggested List of VME Backplane Manufactures

Bustronic Corporation

44350 Grimmer Blvd.
Fremont, CA 94538
Telephone: (510) 490-7388
Fax: (510) 490-1853
Website: <http://www.bustronic.com>

Dawn VME Products

47915 Westinghouse Dr.
Fremont, CA 94539
Telephone: (510) 657-4444
Fax: (510) 657-3274
Website: <http://www.dawnvme.com>

Kaparel Corporation

97 Randall Drive
Waterloo, Ontario
Canada N2V 1C5
Telephone: (519) 725 0101
Fax: (519) 725 0414
Website: <http://www.kaparel.com>

RAD Engineering

65 Meadow Street
Warwick, RI 02886
Telephone: (800) 231-4RAD
Fax: (401) 732-4166
E-mail: rad_eng@worldnet.att.net

Schroff

170 Commerce Drive
Warwick, RI 02886
Telephone: (401) 732-3770
Fax: (401) 738-7988
Website: <http://www.schroff.us>

Midwest Region, Chicago, IL
Telephone: (847) 813-4070
E-mail: wbehlau@pentair-ep.com

Tracewell Systems, Inc.

567 Enterprise Drive
Westerville, OH 43081
Telephone: (800) 848-4525
Fax: (614) 846-4450
Website: <http://www.tracewellsystems.com>