

**MINOS  
VME TIMING MODULE  
(VTM)**

**Printed Circuit Board review**

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Nov. 4, 2002**

**I. VTM**

***NOTE:*** Final version layout nearly complete. Final layout is very similar to the prototype. See PDF files vtm\_layout.pdf for pictures of the PC board layers.

# VTM PCB Review

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## **I. VTM (Cont.)**

### **A. General Description**

- Schematics Provided in PDF File  
(vtm\_schematic.pdf)
- Connector Types
  - (2) 96-pin DIN Male Backplane Connectors  
(See conn.pdf pg 1)
  - (1) RJ45 CAT 3 Keyed Shielded Connector  
(See conn.pdf pg 2)
  - (1) RJ45 CAT 5 Shielded Connector  
(See conn.pdf pg 3)
  - (1) 10-pin DIN Male Connector  
(See conn.pdf pg 4)
- Connector Pinouts Provided in PDF File  
(VTM\_pinout.pdf)

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## I. VTM (Cont.)

### B. Mechanical Description

- Mechanical Drawings Provided in PDF File
  - Provided in PDF File (VTM\_fab.pdf)  
Board Size: 15.748” x 14.437”  
(400 mm x 9U)
- Board Thickness: 0.093”  
Card Edge milled to 0.063”  
(VTM\_fab.pdf)
- Stiffeners: Installed (see Board)
- Warpage: Standard Acceptable
- Chamfers: Not Required, Not Specified
- Clearances: DRC 10 mill traces, 10 mil spacing
- Non-Circuitry Areas: Not Required
- Connector Types:  
Mechanical Details Provided in PDF Files
- ESD Protection: 2 Meg $\Omega$  to GND
- Front Panel:
  - With Silkscreen, Ejector Handles, LEDs Present, with Labeling (VTM\_fp.pdf)

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### **B. Mechanical Description (Cont.)**

- Connectors Isolated from Front Panel
  - Holes Will Be Enlarged Around Shielded Connectors
  - Front Panel Will Be Anodized
- Keying: None, Not Required
- Test & Repair:
  - Standard Teststand, with Open Side Panel
- Full Checkout & Support Manpower from IIT

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## I. VTM (Cont.)

### C. Electrical Description

- Special Subrack Requirements: None
- Power Pins:
  - +5 V
    - J1 A32,B32,C32
    - J2 B1,B13,B32
    - 1.1 Amps
  - Protection: Fuses & Transorbs
- I/O Connector Types
  - Front Panel (Cable): 8-pin RJ-45, PECL and LVDS, Keyed, Shielded, with Latch
  - Front Panel (Cable): 8-pin RJ-45, LVDS, Shielded, with Latch
  - Rear Panel (Backplane): 96-pin DIN, TTL, +5 V Power, & Ground
  - Rear Panel (Backplane): 96-pin DIN, TTL, +5 V Power, & Ground
- Power Density: WC 1.1A on .070" trace
- Power Distribution: Use Power Planes, Meets IPC Industry Standards
- Air Flow: Crate will have ~900 CFM,

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with “Z” Modules in Unused Slots

### **III.List of Supporting Documentation**

- Layout: vtm\_layout.pdf
- Schematics: vtm\_schematic.pdf
- Connectors: conn.pdf
- Connectors (Pinout): vtm\_pinout.pdf
- Board Outlines
  - vtm\_fab.pdf
- Front Panels
  - vtm\_fp.pdf
- smd.pdf