Reference Manual

VL-ENCL-4

Development Enclosure for PC/104 and PC/104 -Plus

VERSALOGIC
CORPORATION

VL-MODEL ENCL-4
Development Enclosure for
PC/104 and PC/104-Plus

REFERENCE MANUAL

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Description

Ruggedized enclosure for PC/104-Plus and PC/104 modules. The VL-ENCL-4A version has been specially designed to work with the VersaLogic Panther series of PC/104-Plus CPU modules.

FEATURES

- Larger than other "can" type enclosures
- Rugged single-piece extruded body
- Internal module vibration mount
- External isolating shock mount

- Heat-dissipating fins
- 4", 6" and 8" lengths
- Accommodates VersaLogic's Panther CPU module

INCLUDES

- VersaTainer body in selected lengths
- Rubber mounting rails
- Power connector end panel

- I/O connector end panel
- Anti-shock mounting pad

Technical Specifications

Size:
7.1"W x 5.7" H

I/O Connector End Panel:
Accommodates VGA, KBD, mouse, 2x COM, 1x LPT, RJ45 (Ethernet), 2x USB, reset switch, 2x activity LEDs, speaker, air filter

Power Connector End Panel:
Accommodates male ATX power connector and 60mm fan or air filter

Material:
Extruded aluminum body, .060" aluminum end panels

Finish:
Black anodized with laser etched lettering

Packing List

The enclosure includes the following hardware.

METAL PARTS

- One-piece extruded body with rubber base mounting plate and PC/104 mounts
- Power supply end plate
- Connector end plate
- Mounting hardware and air filters

Accessories / Options

The following accessories and options for the VL-ENCL-4 are available from VersaLogic.

- VL-ENCL-4P1   Blank end plate 1/16" aluminum
- PS200-ATX   200 Watt ATX style power supple
- VL-CBL-8001   Panther utility breakout cable
- VL-CBL-1008   Panther to ATX power cable

Enclosure Assembly

The ENCL-4 is specifically designed to accommodate the VersaLogic Panther series of PC/104-Plus CPU modules. The I/O Connector End Panel accommodates all of the connectors on a Panther VL-CBL-8001 breakout cable as listed in the table below, along with a 60mm air filter. The Power Connector End Panel will accept the male ATX power connector as found on the VL-CBL-1008 ATX to Panther power adapter cable, and a 60mm air filter (and/or a 60mm fan).

Table 1: I/O Connector End Panel Cutouts

Function Label	Cutout type
Video	HD-15 VGA connector
LPT1	DB-25 connector
COM1, COM2	Two DB-9 connectors
USB	Male 10-pin header
Etherne	8-pin RJ-45 connector
LEDs	Two T1 mounting rings
Keyboard	6-pin mini-DIN connector
Mouse	6-pin mini-DIN connector
Reset Sw.	.25" hole
Speaker	1.2" square speaker
Filter / fan	60mm

Table 2: Power Connector End Panel Cutouts

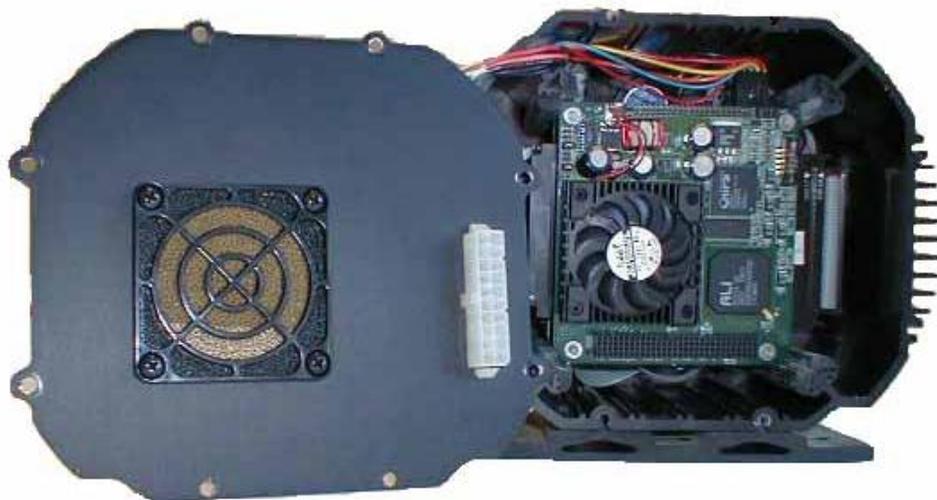| Function Label	Cutout type
ATX PWR	Male ATX connector
Filter / fan	60mm

ASSEMBLY OVERVIEW

The end panel mounting hardware is supplied. Use the jack-screws for the "DB" style connectors, 6-32 hardware for the filter, and 4-40 hardware for rest of the connectors. The end panels are attached using the self-tapping hex-head screws.

The PC/104 rubber mounting rails will slide in and out of the extruded enclosure body. The small rubber stops can be glued onto the mounting rails as needed to prevent the PC/104 stack of modules from moving on the rails.

SPECIAL PANTHER MOUNTING CONSIDERATIONS

Unlike other lower power / performance CPU modules, the Pentium / K6 Panther uses CPUs running up to 400MHz and will dissipate up to about 22 Watts. To remove this heat, ventilation holes with filters are provided in the end-panels. To effectively use the ventilation holes, the Panther module should be mounted as shown with it's fan / heatsink directly behind the filter on the Power Connector End Panel. Clearance between the CPU fan and the Power Connector End Panel should be in the .1" to .2" range.

Thermal Performance - With Air Flow

A 400MHz Panther installed in an ENCL-4A enclosure as specified above will experience a 10°C internal air temperature rise over the outside ambient temperature. This effectively derates the Panther temperature specification from the normal 0°C - 60°C ambient to 0°C - 50°C ambient. If higher ambient temperature operation is needed, some form of additional cooling will be required.

Any other heat sources mounted within the enclosure (i.e. any PC/104 module, power supply, or hard drive) will have an effect on the thermal characteristics of the overall unit. If operation near the upper temperature limits is expected, thermal testing should be performed using the actual target system hardware.

If additional flow-through air is necessary, the 60mm air filter mounts will also accommodate a standard 60mm DC fan. The air filters can still be used by either mounting them directly onto the fan body, or on the opposite side of the panel from the fan.

Thermal Performance - Sealed Unit

When a sealed enclosure is desired, the thermal issues become more difficult to manage. A 400MHz Panther inside a sealed ENCL-4A will see it's internal air temperature rise to about 20°C over the outside ambient temperature. This would reduce the ambient outside operating temperature from the normal 60°C to 40°C. If this lowered operating temperature doesn't meet design criteria, several temperature mitigating changes could be explored:

- Using the extended temperature version of the Panther, the EPM-CPU-6j.

- Supplying more internal air movement to move heat to the VersaTainer walls.

- Adding internal heatsinks to the VersaTainer walls.

- Use heat pipes or other means to remove heat from the enclosure.

Enclosure Assembly

Side View

I/O Connector End Panel

Power Connector End Panel

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