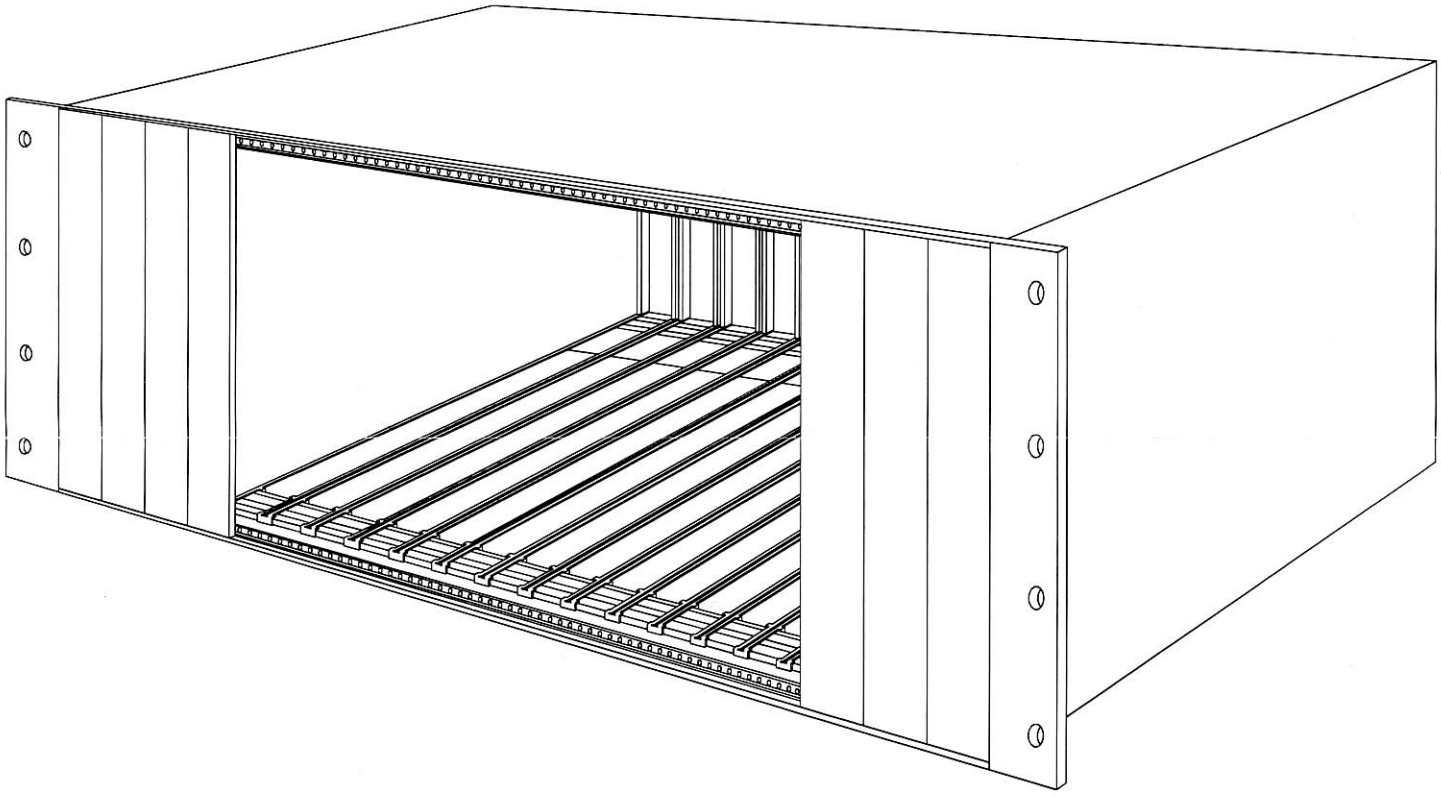
The Complete Shielding Solution For Your VME Design!



VME Shielded Enclosure
Figure 1

The VME (and VXI) standard specifies a high performance back plane bus for use in microcomputer systems that employ single or multiple microprocessors. The standard defines a mechanical and electrical/electronic interfacing system used to interconnect data processing, data storage and peripheral control devices.

The digital circuits housed in the VME and VME type cabinets often generate electromagnetic interference (EMI) which exceeds the EU and FCC EMI radiated emissions requirements. Shielding the housing using standard shielding/gasketing techniques is fairly simple, however the relatively narrow front panels present several design challenges.

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Front Panel Shielding Challenges

After working with the top engineers responsible for VME shielding design in leading companies, Spira has developed a thorough understanding of the front panel shielding design requirements. The design must incorporate a means of providing a continuous electrical path across the front of the individual panels as well as electrically bonding the front panels to the sides of the enclosure. Before choosing any front panel shielding design, including the one described in the VME specification, care must be taken to avoid these common problems:

- Gasketed joint must withstand numerous insertions without failure.
- Individual printed circuit (PC) cards must be easy to insert which requires a gasket that is easy to compress with a low coefficient of friction.
- EMI gasketed panel design must provide sufficient conductivity to meet applicable EMI requirements.
- Gasketed joint design must allow for the tolerance build up of 21 cards and gaskets.

The Spira Design Advantage

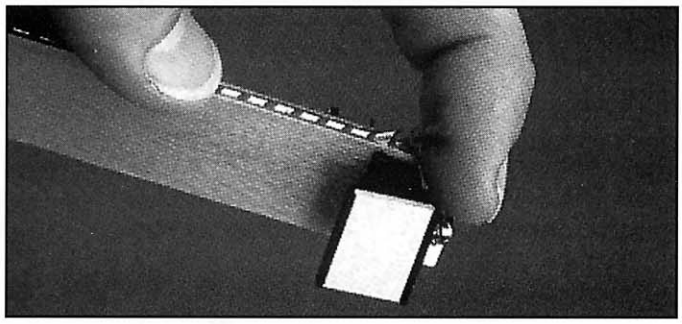
Spira has designed a gasket specifically for this type of application, the Flexi-Shield gasket. It has been field tested and chosen time and again by leading manufacturers of VME enclosures. It consists of a ribbon of stainless steel wound over a soft silicone tube and securely adhered to the tube. The specific advantages of the Flexi-Shield gasket include:

- Low coefficient of friction allows easy sliding.
- Very easy to compress.
- Very durable; tested to withstand over 1,000 insertions with little visible wear to the gasket or panel.
- The gasket is a continuous ribbon of metal, so there are no particles to break off and short out components.
- Spring design resists compression set so shielding levels are more stable over product life.
- Low cost.

Benefit of Our Front Panel Design

The design of the front panel itself is as important as the gasket choice. Together they create a shielding solution that meets the required shielding specifications, is cost effective, easy to install and maintain, and long lasting.

Figure 2 illustrates the design of a front panel that has proven very successful for VME applications. The right edge contains a dovetailed groove, which holds our Flexi-Shield gasket captive when the front panel is removed from the chassis and allows the gasket to expand laterally as it is compressed during front panel insertion. This allows for an excellent conductive path with low insertion forces and



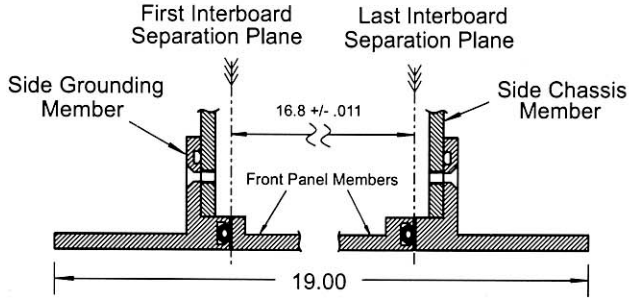
Flexi-Shield Gasket In A Typical VME Front Panel Application

minimal compression set. The configuration and tolerances illustrated can easily be obtained using aluminum extrusion technology. The build up of the tolerances provides for a minimum of .002" interference fit. This minimum interference fit is essential to insure a uniform low impedance path across the front of the housing.

Cross Section of Front Panel With Gasket Installed
Figure 2

Mating with the Chassis

Another challenge is ensuring that the edges of the chassis are electrically bonded to the front panels. We have designed a complimentary set of extrusions that make contact with the edge of the front panel members on each side of the chassis (Figure 3). They also contain a groove on the side facing the side member. The purpose of the side groove is to hold an EMI gasket in place in the event the screws holding the side bonding member to the chassis side member are not sufficient to comply with the applicable EMI requirements.



Cross Section of Rack Mounted Design
Figure 3