VME64x P0, P1, and P2 Connector Configurations

Examination of Platform Specific, Level 2 Interconnects

Michael N. Perugini
President

P1/J1 and P2/J2 Connectors

The VME64x specification describes three connectors for VMEbus modules. These are called the P0/J0, P1/J1 and P2/J2. The 'P' and 'J' nomenclature refers to the PLUG (male) and JACK (female) connectors, which reside on the bus module (daughtercard) and backpanel respectively.

Originally, all VMEbus products used a 96-pin DIN 41612 connector. The VME64 and VME64x standards now permit a new 160 pin connector, (ref. below illustration). The 160 pin connector has thirty-two additional pins located on both sides of the original DIN 41612 connector. These are designated as the "z" and "d" rows. The new connector was added for two reasons:
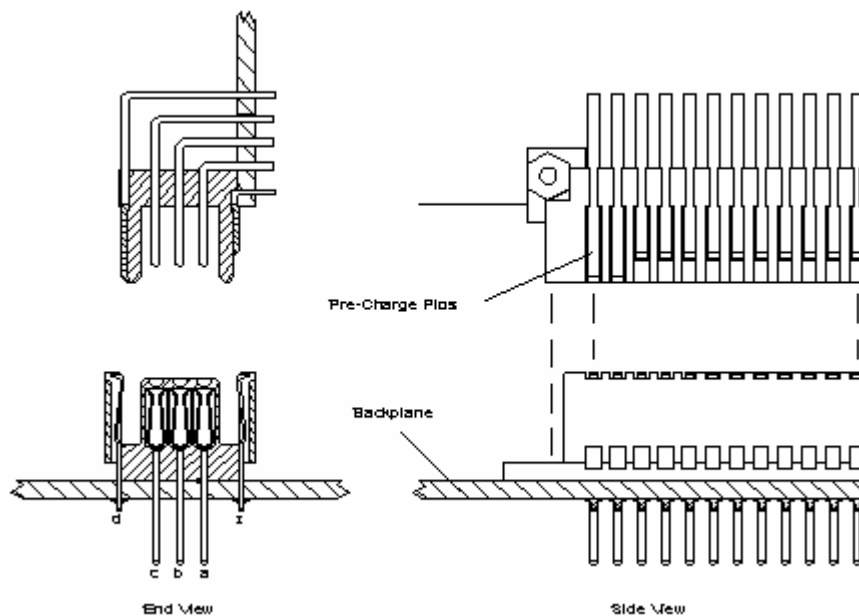
- Additional signal connections allow more backpanel functions.
- Additional ground pins suppress ground-bounce and cross-talk.

The P1 & P2 connectors include four (4) first-make / last-break (fmlb) contact positions for hot-swap boards, and are used to pre-charge bus interface circuitry.

These connectors are available from Harting and AMP Inc.

The 160 pin connector is completely optional in the VME64 standard. The connector itself is not needed to support any of the newly defined functions. For example, it is not needed to support the new sixty-four bit address and data cycles. However, in VME64x systems, the new connector is needed to support additional pins such as +3.3V power and logistics addressing.

The 160 pin connector is designed to allow full forward and backward compatibility which means that legacy daughtercards will plug into new VME64x backpanels (and vice-versa).

P0/J0 Connector

The VME64x standard allows the use of a 95 pin 0/J0 connector. This connector is placed between the P1/J1 and P2/J2 connectors. The P0/J0 connector was added because of the higher I/O demands now placed on VMEbus systems in military and telecom applications.

The P0/J0 connector conforms to the IEC 1076-4-101 standard (2 mm Hard Metric type) and are available from AMP, FCI, ERNI and other sources as well. Unlike the DIN 41612 connector family, they include specifications for mating impedance and maximum capacitance for high speed signals. These connectors offer scalability in several configurations, however, only the 5 x 19 is supported by the VME standard. Other connectors may include the 5+2 x 19, 5 x 22, and 5+2 x 22. to The VME64x standard also allows the use of custom connectors in the area between the P1/J1 and P2/J2 connectors, i.e., coaxial cable or fiber-optic connectors. Although a misnomer, these are sometimes referred to P0 connectors also. I/O from the P0/J0 connector can be routed:

- Out the rear of the backpanel using ribbon cable connectors.
- Onto a rear transition module (plug-in unit).
- Bussed across the backpanel.

At first glance it would appear that all of these options on the P0/J0 connector could lead to incompatibilities. However, this problem is no worse than on the P2/J2 user defined pins. Also, VME64x module keying can also be used to insure that VMEbus modules are placed into compatible backpanel slots.