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Real Computing Challenges, Real Answers

TECH TALK
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What is HP?

HP stands for Horizontal Pitch and is equal to .2 inches. Usually in reference to width, this unit of length is commonly used to size VMEbus, CompactPCI, and Advanced TCA enclosures and backplanes.

For example, the width of a VMEbus and CompactPCI board is 4 HP or .8 inches and AdvancedTCA is 6 HP or 1.2 inches.

Crash Course: CompactPCI Voltage (I/O)

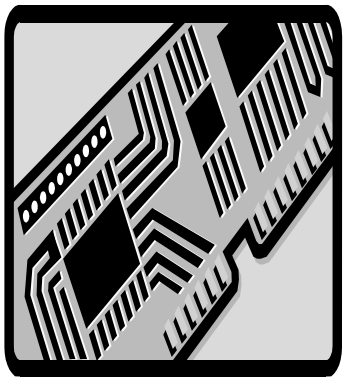
By Kelvin Aist

Have you ever turned on your CompactPCI chassis for the first time to find some boards didn't power up? It is not uncommon to discover that the cause is a missing Voltage (I/O) jumper. Not only is this very irritating, it's compounded by a lack of documentation. Many times, the CompactPCI enclosure is shipped with the V (I/O) jumper and keys uninstalled leaving you responsible for properly configuring the V (I/O). The following provides background on V(I/O) you should know to solve your dilemma.

Backplane Construction & V(I/O) Jumper

The P1 and P2 connectors have power pins for +3.3V, +5V, +12V, and -12V plus eleven additional pins called Voltage I/O, labeled V(I/O). The V(I/O) pins are configured to 5V or 3.3V to power boards with buffers that drive the backplane signals. However, CompactPCI specification requires that boards with PCI I/O buffers draw power from V(I/O) pins - *not* from the 5V or 3.3V power pins.

Within the CompactPCI backplane, there is a V(I/O) power plane. This plane is not directly connected to power but is powered by physically connecting a jumper from the V(I/O) plane to either the 3.3V or 5V power planes. With no jumper in place, the V(I/O) pins are 0 volts leading to power up problems for boards looking for power on these pins. Although



some backplanes provide multiple jumper positions, only one V(I/O) jumper should be used.

V(I/O) Keying

CompactPCI implements a keying mechanism to differentiate

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VMEbus & CompactPCI Connectors: Keep 'Em Straight

What's Up With J and P?

By Kelvin Aist

If you work with both VMEbus and CompactPCI, you know these architectures specify a large number of pins and numerous pin labels. The two buses specify *reversed* socket and plug positions. Keeping all this straight is enough to induce an aneurism. I compiled the essentials into the simple matrix printed below. Hopefully, you'll find it handy, but first some basics...

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CompactPCI Voltage (continued)

between 5V and 3.3V signaling. This is designed to prevent a board requiring 3.3V or 5V from being inserted into a system jumpered to the other voltage. Keys are inserted into the P1 connector. Blue keys indicate 5V and yellow keys, 3.3V. Every slot needs a key of the same color. Do not attempt to plug a 5V board into a system jumpered to 3.3V or vice versa. *You cannot mix the signaling!*

Fortunately, the market is providing universal boards that may operate in either 5V or 3.3V systems. These boards are not keyed. However, they still require a V(I/O) voltage.

To avoid a headache, ask the backplane manufacturer to jumper and key your backplane before shipping. Take time to understand the voltages required by your CompactPCI boards.

Contact me if you would like further information. I have complete instructions on configuring your CompactPCI backplane's V(I/O). ■

Tech Specs

Where can I find bus specifications?

Contact the trade organization representing the respective architecture. You can start by viewing our list at **www.sierrasales.com/technical_corner.html**

Tech Talk is available online. To sign up for our e-newsletter go to:

SierraSales.com

Go ahead: forward Tech Talk to colleagues and others who might be interested.

"Buying the right computer and getting it to work properly is no more complicated than building a nuclear reactor from wristwatch parts in a darkened room using only your teeth."

Dave Barry

VMEbus & CompactPCI Connectors (continued)

Stick your head inside the card cages of a VMEbus and a CompactPCI system. You'll see sockets mounted on a VMEbus backplane. On a CompactPCI backplane you'll see an array of pins. A socket, also known as a jack, and a bank of pins, likewise called a plug, are designated "J" and "P" respectively.

The two jacks on the VMEbus backplane are denoted J1 and J2. A VMEbus board has mates named P1 and P2. VME64X adds an optional third connector between J1 and J2 called J0. J0 is mostly nonbused and used to pass I/O from the board to the rear of the enclosure. Emerging standards like VITA 41 propose a switched fabric over J0. A CompactPCI backplane designates five plugs, P1 through P5, which mate to five jacks on a CompactPCI board, J1 through J5. P1 and P2 host the PCI bus and P3, P4, and P5 are optional and mostly used for user I/O. Note that the CompactPCI bus is located at the bottom half of a 6U space whereas the VMEbus is at the top half of a 6U space. ■

VMEbus & CompactPCI Connector Summary

Cut here and save ✂

VMEbus & CompactPCI Backplane Connectors

VMEbus				VME64X				CompactPCI			
Backplane	Board	Pins	Use	Backplane	Board	Pins	Use	Backplane	Board	Pins	Use
J1	P1	96	VME	J1	P1	160	VME64X	P5	J5	110	I/O
J2	P2	96	I/O, VME64	J0	P0	133	I/O, VITA 41	P4	J4	110	I/O, H.110
				J2	P2	160	I/O,VME64X	P3	J3	95	I/O, 2.16
								P2	J2	110	64 bit bus
								P1	J1	110	32 bit bus

I/O = User defined I/O or undefined