



CONTROLLING PXI-SYSTEMS WITH A NOTEBOOK

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BACKGROUND

The PXI chassis can either use an embedded controller in its slot 1 position, or an interface module allowing connection to an external controller such as a PC. The interface module is typically based on a proprietary serial interface sent over cabling between the controller and the module in the PXI chassis. The interface behaves as a PCI to PCI bridge and is therefore transparent to the system software. A PCI interface card is required in the controller to provide the serial output and a PXI interface module in the chassis to decode the data and transfers it to the PCI bus.

There is an increasing trend to use a notebook (laptop) computer to carry out software development tasks. Having a mobile platform for development allows the designer work conveniently away from his desk or away from a test system under development. The use of notebook, however generates a cost problem and convenience problem for the developer because of software licensing issues. It is not easy to interface the notebook directly with a PXI chassis since it lacks PCI slots. If a desk top machine is used it can only run an execute only version of the software unless it has the software tools installed (e.g. Test Stand, LabView, Agilent Vee). The software on the notebook could be removed and then installed on the desktop, but that takes time and eventually the engineer will want his software license back on the notebook. Purchasing additional copies of the software to avoid this can be expensive and not good use of capital resources. So are there ways of getting the notebook to control a PXI chassis in a development environment?

SOLUTION

To enable a Notebook to control a PXI system a PCI slot has to be "added" to the Notebook's peripheral interface.

The approach shown in the pictures below picture below show a solution based on the MAGMA PCI Expansion System, which has 1 slot to 16 slot PCI slots available, information on which can be found at <http://www.mobl.com/expansion/pci/index.html>. The expansion system is fully compliant with the PCI (Peripheral Component Interconnect) Local Bus Specification. It provides a single full-length or half-length PCI slot in a separate chassis that connects to the Notebook through a 32-bit CardBus slot (PCMCIA card). Solutions for PCI expansion can be supplied from other manufacturers based on the same principle

The arrangement shown in Figure 1 shows a configuration successfully tested with the PI 41-921, Adlink 9570 and the NI MXI-3 PCI to PXI interface kits. The expansion system was mounted on the side of the PXI chassis for convenience, but other mechanical mounting methods and locations can be used.

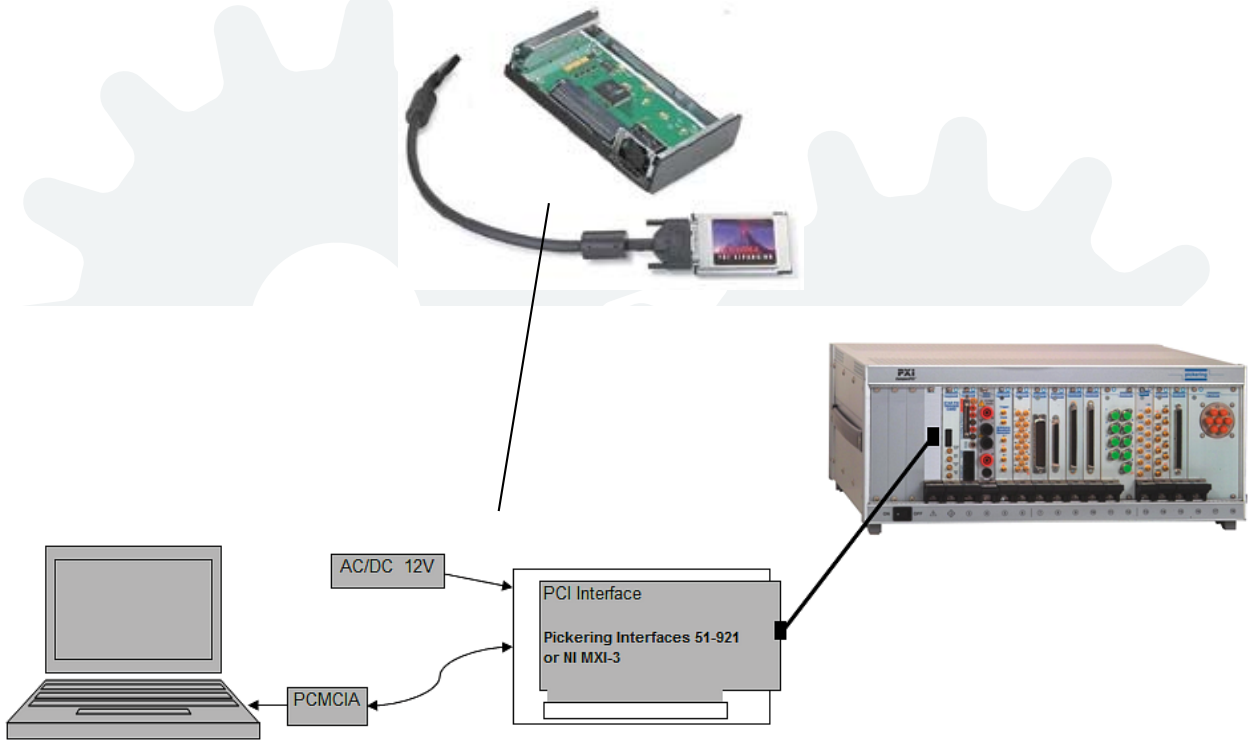


Figure 1 - Configuration successfully tested with the PI 41-921, Adlink 9570 and the NI MXI-3 PCI to PXI interface kits

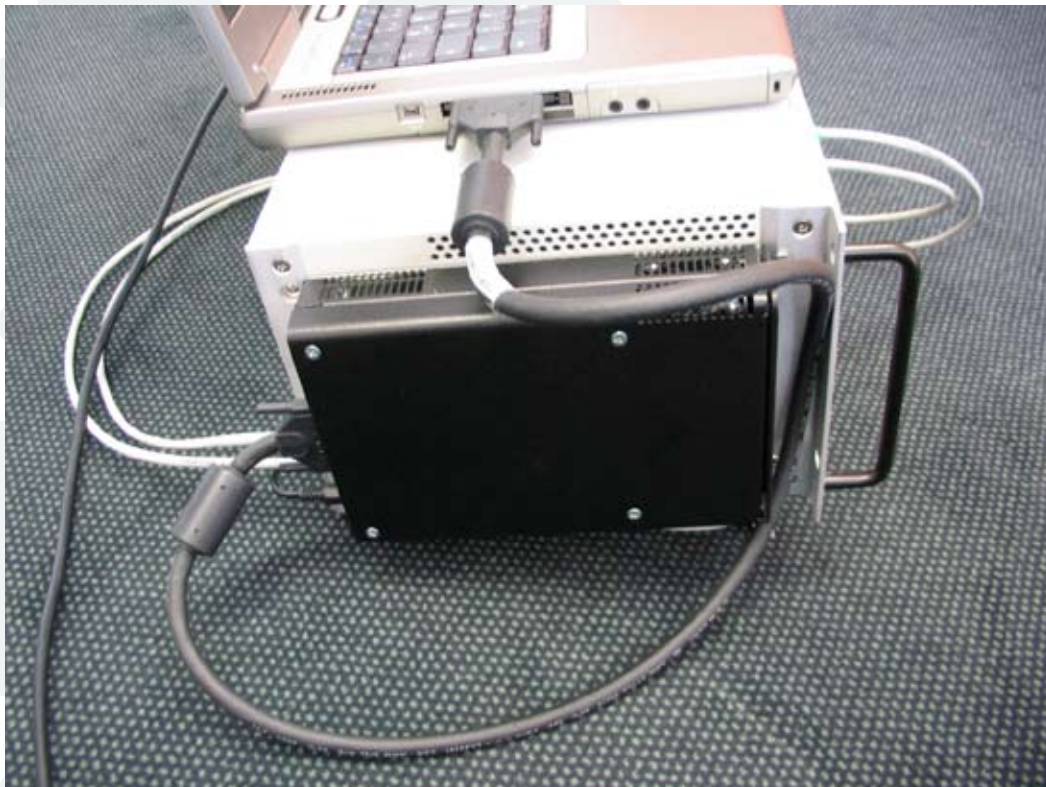


Figure 2 - Expansion Box mounted on left side of the PXI Chassis



Figure 3 - Expansion box rear view, connection to PXI Interface and PCMCIA card



Figure 4 - Notebook connected to chassis via PCI Expansion Box



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