



CONFIGURING A PXI SYSTEM FOR 33 MHz INSTEAD OF 66 MHz BUS SPEED

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BACKGROUND

The PXI standard allows for operation at 66 MHz as well as 33 MHz bus speeds. There are, however, limitations as to the use of the 66 MHz bus speed.

In accordance with the PXI standard, no more than 5 peripheral slots can be supported while using the 66 MHz bus speed. In addition, peripheral cards have to be able to operate at this speed. Most PXI peripheral cards including Pickering switch modules will not operate at this speed.

If using the 33 MHz bus speed, 7 peripheral slots per segment can be used. Multiple segments can be created with the use of a PCI bridge. Chassis come in various sizes but any chassis over 8 slots (1 controller plus 7 peripheral slots) needs to have a PCI bridge to create further peripheral slots. The actual PCI bridge chip is installed on the PXI chassis backplane and forces the bus speed operation to 33 MHz and maintains the PXI specification. An 8 slot PXI chassis, because it doesn't have a PCI bridge chip, would normally allow the bus speed to operate at 66 MHz.

PROBLEM

Symptoms of this problem may be that some or all of the cards may not be seen at all, or are not seen as a VISA resource, or a card may operate erratically. Since an 8 slot PXI chassis will run at 66 MHz, all peripheral cards need to be capable of operating at 66 MHz or the bus speed needs to be set to 33 MHz. Pickering switch cards will only operate at 33 MHz. In addition, since the PXI specification allows only 5 peripheral slots at 66 MHz, not all 7 peripheral slots can be supported. The speed should be set to 33 MHz when using more than the first 5 peripheral card slots of an 8 slot chassis.

How is this speed set? Please see next paragraph Solution.

SOLUTION

The PXI hardware specification allows this speed to be configured by means a signal (M66 EN) which is present on every slot on the chassis backplane. Connecting this signal to ground will force the bus speed to operate at 33 MHz.

The ideal location for this would be on the controller slot of the PXI chassis. In all probability access to this connector would be difficult. If you decide to use this method you should contact your chassis vendor for advice. A more practical solution would be to place a jumper on the controller. The Pickering controller (41-921) grounds the M66EN line by way of the configuration jumper JP2 (JP2 2 to 3). Other controllers may have a similar method of doing this. Contact the vendor for available options.

Another method is to place a wire link on the peripheral card. Recent Pickering switch card designs (after September 2005) provide this but on older cards you would need to solder a wire. Only one card per chassis is necessary but if you reconfigure the system and remove that card the bus speed returns 66 MHz. Also, there have been situations where there are problems if the wired card is in a higher slot number (slot 6 up to slot 8). For this reason it is best to place the wire link on the card closest to the controller slot or better still, place a jumper on all peripheral cards. Pickering instrument cards as well as any other vendor's cards may or may not be wired for 33 MHz.

To check for the proper speed configuration, measure between pins D21 (M66EN) and D19 (GROUND) on connector J1. If shorted the bus speed is set to 33 MHz. See Figure. 1 for typical connector view.

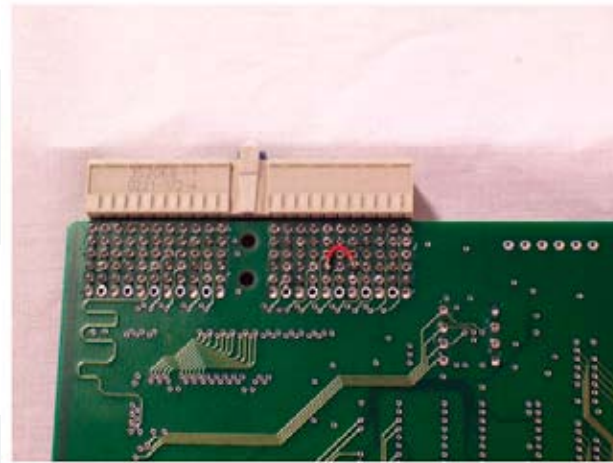


Figure 1 - J1 connector from bottom side of board with link from D21 (M66EN) to D19 (GND)

REFERENCES

- PXI Hardware Specifications Revision 2.2, 2003, PXI Systems Alliance
- PXImate, 4th Edition 2005, Pickering Interfaces

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