How The AC Power Can Affect Networking

Sometimes we hear about trouble with networking Galaxy and Galaxy II machines, where networks do not work, IC's blow up, and/or main boards burn up. In these cases there does not appear to be a good cause. In a few cases it is because something is wrong with the AC power coming out of the wall outlets. But what could it be and how can you tell? A couple of situations that we have seen are:

★ Bad connections between one outlet and the main fuse panel.

★ Outlets come from different fuse panels.

★ Outlets are actually wired to, not only different fuse panels, but they actually go to separate electric meters, such is the possible case where two (or more) businesses were joined into one by cutting holes in the walls. We saw one case like this that completely destroyed the three main boards that were connected there.

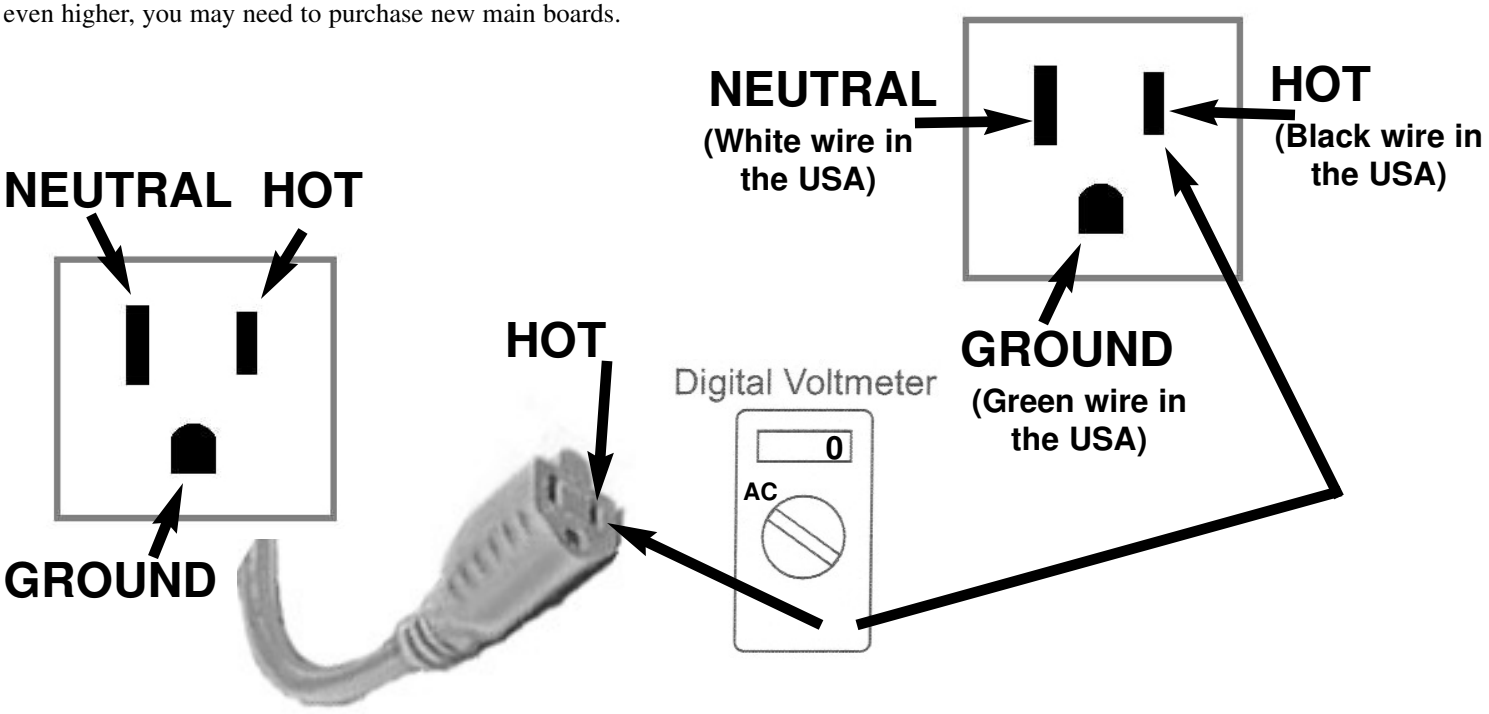
OK, why does it happen, how can you tell if it might be a problem, and how do you check to make sure it will not be a problem?

Why it can be a problem.

Of the four wires that go machine to machine, the inner two are your send/receive wires and these are not a problem. The outside two are ground, connecting one machine ground to the others machine ground in the network. The ground plug out of the wall is your (safety) ground, and we usually think that ground is ground and should be all the same. This is not always the case when the building is not wired properly or if the power comes from different fuse panels or even different electric meters. We found one circuit that measured over 200 volts different from one ground pin to the other! **If the voltage is not the same, current will flow from one machine (throught the network wires) to the other. If the voltage is great enough, damage will be done.**

How can you check?

Checking will usually require an extension cord that will reach from one outlet being used to another. Plug this cord into the outlet where one machine is to be plugged in and bring the other end to the outlet where the second (or third, fourth, etc.) machine is to be plugged in. Using a voltmeter (known to be good), measure from hot on the wall to hot on the extension cord. This, in theory, should measure zero volts. Because there is always some resistance in the wire and connections in the AC wiring, you will get a small voltage. If this is over 3 volts, there is a problem.If it is over 7 volts, the 75176 IC that controls the network may blow. If it
even higher, you may need to purchase new main boards.



After checking the HOT to HOT above, do the same with NEUTRAL to NEUTRAL and GROUND to GROUND. As above, the difference should be no more that 3 volts, and hopefully even less.

If you find that the voltage is more than 3 volts, do not hook up the network between those machines. If you can use an extension cord to connect one (or more) machine so that the AC measure OK, then you can connect your network.

As always, if you have any questions, call Arachnid tech support at 800-435-8319 (815-654-0212).

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