

HUM BAR ISSUES
Common Electrical Troubleshooting Techniques.

CAUTION
Working around AC Electrical circuits and outlets is potentially lethal.

As I am sure we are all aware of by now, the horizontal rolling hum bar in video systems is caused by a voltage imbalance in the electrical power system. There are other factors which impact the severity of the impairment, but the bottom line is, in order to totally eliminate the hum bar, the deficiencies in the electrical system must be corrected.

Excessive voltage drops:

Measure the AC voltage close to the breaker and then at the video wall. A typical voltage near the breaker should be around 118 to 122 VAC. If the voltage at the Video wall is lower than 105 VAC, there could be a high resistance connection in the line, excessive distance between the breaker box and the video wall, or overloading of the circuit. If the number of Televisions is nominal and the distance is not excessive, verify the proper wire gage for the breaker size.

Open grounds:

Measure the AC voltage between adjacent shelving racks. This should be zero.
Measure the AC voltage between neutral and ground at several locations along the wall. This should be zero.

Crossed wires:

It is possible to have the neutral and ground connections swapped at one or more locations in the power system. A simple LED tester will indicate open or crossed wires. Just remember, if the connections are crossed more than once, and it happens to be an even number, the tester may indicate nothing is wrong. The best thing to do is open the outlets to do a visual inspection just to make certain.

Elevated Ground Potentials:

Measure the AC voltage between neutral and ground at several locations along the wall. If there is more than 0.1 VAC difference in voltage, this could indicate a problem.

Ground Potential Differentials:

Measure the AC voltage between ground at one outlet and using an extension cord the voltage on the ground at a remote outlet. Try this at several locations along the wall. This should be zero (no more than 0.1 VAC).

Remedies

- Identify wiring that is not correct by using some of the preceding tests. Visually inspect the connections starting at the ceiling drop to verify proper polarities and quality connections.
- Try to maintain an electrical balance to the AC load. This will help to equalize the voltage between the circuits on the wall.
- Any of the Quick Connect interconnections should be unplugged for inspection to verify no damage, crossed wires, or corrosion. Replug Quick Connect carefully and ensure full engagement.
- Try to isolate electrical sections and minimize the number of Audio and Video signal connections across the electrical phases. Do not connect the power supply for the Distribution amplifiers on one phase and connect the signal out to a TV that is powered by another phase.
- If the electrical phases can be separated, the CE labs CAT5TX and CAT5RX may be used to transfer component video and audio signals across the phase sections while eliminating virtually all of the interfering AC ground loop signal.