Fire Protection Series

Assuring DACT Communication and Ground Rod Use

By Allan B. Colombo, trade journalist
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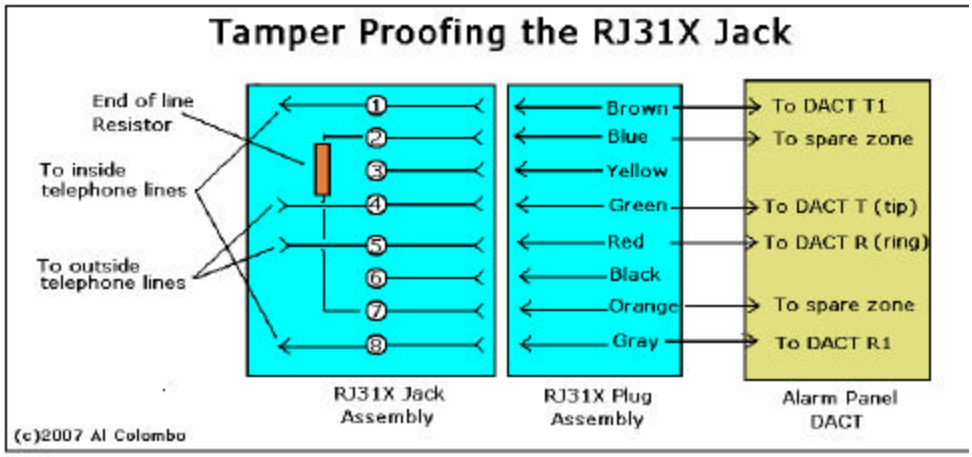
Sometimes the most basic of considerations on a job is enough to cause a major break down in communications. Whether it is one of the two RJ31X jacks that link a Digital Alarm Communicator Transmitter (DACT) within a fire alarm control panel to the Public Switched Telephone Network (PSTN), ground fault, or a short circuit, communications with the central station can be negated. This can delay or prevent altogether fire department response.

Assuring RJ31X Integrity

When fire technicians provide central station monitoring with the fire alarm systems they install, National Fire Alarm Code specifies a variety of protections associated with signal transport. One of these protections is the use of two telephone lines.

Although this works well so far as getting fire signals to the central station, it does not address the local issue of sabotage or inadvertent disconnection of one or both RJ31X jacks. One way that veteran fire technicians often assure RJ31X integrity on premises is to include the supervisory contacts within the jack in their fire panel detection scheme.

As can be seen in the following illustration, by placing an end-of-line resistor across terminals 2 and 7 inside the jack and connecting the other side to a spare zone, it's possible to monitor the jack/plug assembly. You can also place a short over these two terminals. Of course, this will be determined by the operating parameters of your fire alarm panel.



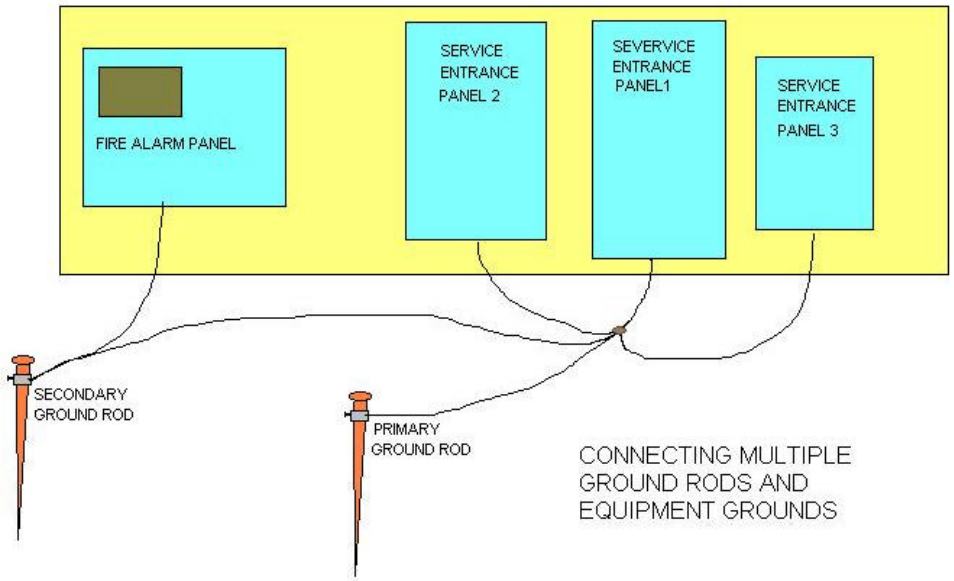
Insert an end-of-line resistor between terminals 2 and 7 inside a RJ31X jack assembly to better assure communication between the DACT and a remote central station or supervising station.

At the end of the RJ31X cord, inside the fire panel, you must then place the orange and blue conductors on an initiating zone and program that zone accordingly. Now, when the RJ31X jack is physically disconnected from the RJ31X jack, the fire alarm control panel will indicate a supervisory condition at the panel, remote annunciators, and at the central station so long as the second signal path is intact.

Installing A Second Ground Rod

Some low-voltage system installers believe that it is proper to install a dedicated ground rod when they install a new fire alarm as well as other low-voltage systems. Although this practice is valid, says Nick Markowitz, owner, Markowitz Electric Protection, Verona, Penn., there are specific rules that must be followed to assure electrical safety as set forth in NFPA 70, National Electric Code (NEC), published by National Fire Protection Association (NFPA), Quincy, Mass.

Most of the low-voltage installers who use this second-ground-rod method cite former problems that they have had when they have used cold water pipes or the main water line that enters the facility. Problems can occur in both instances. When someone has replaced any portion of the metal pipe with plastic.



Always bond multiple ground rods together per NFPA 70, National Electric Code, published by National Fire Protection Association (NFPA).

Plastic is often used to replace corroded and leaking metal pipe within a facility. It is also used to the metal water pipe that enters a structure with the water main out at the road. In either case, when plastic is used and the fire technician is not aware of it, earth ground may not be assured. This essentially constitutes not only a violation of NEC, but also represents a real and present life-safety threat to the occupants as well as other workmen.

When using a second ground road, Markowitz says to always bond it to the primary ground rod already in the building. Use a #6 bare copper wire. Install it between the new ground rod and the neutral bar in the main electrical breaker panel. Where more than one breaker panel is involved (see drawing), connect the multiple grounds to the #6 bare copper wire that fastens to the primary ground rod. Markowitz advises that fire technicians should always use approved connectors when doing this work and if you have any doubt in your mind as to how it is accomplished, call a qualified electrician to assist.

About The Author

Al Colombo is a technical writer in the electronic security and fire protection markets. For more than 20 years now he has provided technical direction for security dealers and fire alarm technicians. Al is especially known for his Fire Side Chat column in *Security Sales & Integration* (SSI) magazine and Kinks & Hints in *Security Distributing & Marketing* magazine, formerly published between 1987 and 2001. He's also director with FireNetOnline.com and webmaster with Tpromo.com