technical bulletin

Network Cable Installation Guide

The following guideline is to help you install your panther system. The panther network system connects multiple units in series on a single paired cable. A terminator is required at each end of the network to complete the system. Please review each item below before installing.

1. Network wires must remain in pairs
The most important item to remember when installing a panther network system is to keep the network wires as a pair; retaining a close proximity between the two conductors. A twisted pair is preferred but not required. When using a terminal block, connect to terminals directly next to each other. When passing through collector rings or other similar devices, use conductors that are next to each other.

2. Network spurs are not permitted
A network pair from one unit to the next, or to a terminator, should contain only the two wires running directly between units with no spur routes or additional wires spliced into the run. The units in a network are connected in series. When retrofitting a panther system into a previously installed wiring system, it is important to trace the wiring and confirm that no additional wires have been spliced into the intended network wires.

3. Identical wire treatment
Both wires of a network pair should be treated identically. The wires should be of equal length and terminated the same way. If one wire is connected at a block or in-line splice, the other wire of the pair should be connected at the same point and in the same manner, keeping the wires close together. When retrofitting a system into a previously installed wiring system, it is important to trace the wiring and confirm that both conductors of the wire pair are of equal length and treated identically.

4. Avoid non-essential splices
When possible, avoid splices on the network. When splices or termination is required, make sure both wires of the pair are treated identically.

5. Ground shields at one end only
Cable shielding is recommended but not required. When using shielded cable, ground the shield at one end of the cable only.

6. Avoid bundling excess wire
Excess network wire should be removed and not bundled. Sharp bends or kinks in network wire can be harmful. Typical minimum bend radius for network wiring is in the 2 to 3 inches range. See cable manufacturer for recommended minimum bend radius.

7. Avoid 3-phase power cables and fluorescent lights
Keep all network wires 1ft away from 3-phase power and fluorescent lights.

8. Impedance mismatches are harmful
The panther network system is designed to handle imperfections, but repeated poor network treatment can cause communication failure. Every change in impedance along the network path causes a little degradation to the network. Minor impedance changes can be managed but large jumps in impedance or repeated changes can cause system to not work correctly.

9. Poor network wiring is cumulative
The panther network system is designed to handle imperfections, but repeated poor network wiring treatment can cause communication failure. A network wiring problem that does not show up on a small system may cause a failure when additional units are added and the network is expanded. Whenever a system is modified, the entire network system should be reviewed per the above rules. Network runs can be several hundred feet when handled properly.

10. Use Firecom series 10 headsets only
When using headsets with the panther system, use Firecom UH-10, UH-10S, FH-10, or FH-10S headsets. Headsets are ideal for troubleshooting in a high noise environment or enclosed building that can cause feedback between units.

11. Continuity checks are not enough to verify network wiring
When troubleshooting a system or retrofitting using previously installed wiring, it is important to keep in mind that a continuity check is not a conclusive test of a network wire run. Each wire must have continuity, but that is not enough. Wiring must also follow the strict pairing rule outlined above.

12. One network issue can affect everyone on the network
A poor network wire or network treatment can affect all units on the network, not just the unit closest to the problem.

13. Bypassing a network wiring run is a quick way to isolate problems
When troubleshooting; an independent external network wire between units to bypass a suspect section of wiring can often provide the fastest test of a network run. If the problem goes away when a section of network wiring is disconnected and replaced with jumper wires then look for a wiring problem in that section.

Cable Recommendations
Belden 9463 or equivalent.