

CS Bulletin

Sourcing High Quality CAT5/6 Interconnect Cables for Long Term Reliability

6-Oct-17

To: AIRSYS WPU Installation Contractors

Subject: Sourcing high quality CAT5/6 interconnect cables for long term reliability

Related Products (Models): Any AIRSYS equipment using CAT5/6 as an interconnect between a unit and a controller.

Background: Communication between WPUs and AIRSYS Lead/Lag Controllers is completed via CAT5/6 cables. It is important to make sure that the cables will be reliable over the >>10-year life expectancy of the system regardless of their source.

The last ~ 2 ft of cable that is connected to the WPU is outside and will be exposed to temperature extremes on a daily basis. Such temperature cycling can cause intermittent connections between the wires and the connector terminals in lesser quality cables, thereby causing diminished performance and false alarms.

Details:

There are several options for procuring the CAT5/6 cables described above including purchasing OEM-provided cables, purchasing from a 3rd party supplier, or fabricating cables in the field.

Whether choosing to procure assembled cables from a third part or building your own from a cable spool and connectors, the connection should be made for long-term outdoor performance. If you are unsure about any cable or connector, look for cables that have been certified to ANSI/TIA-568-A/B standard and RJ45 connectors certified to ANSI/TIA-1096-A standard. These standards specify thermal shock and temperature/humidity cycling requirements of the connection to ensure reliable application over a wide range of environments.

The Pros and Cons of Buying Fully Assembled Cables:

Purchasing OEM cables from AIRSYS North America (ASN) is convenient for many installation contractors as the cables ship with the rest of the equipment. ASN offers two cable kits: one kit with 20' cables and the other kit with 40' cables. Both kits have 4 uniquely colored cables to make it very difficult to crosswire the terminals. Lastly, OEM cables will carry the same manufacturer's warranty as the rest of the equipment.

Buying assembled cables has a limitation:

- Length is pre-determined.
 - You may find yourself in the middle of an installation and your **cable is too short**. You can add a connector and use a second cable or you would need to procure a longer cable.

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- You may have a cable with **excess length**. Although this will not impact system performance you still need to find a convenient place store excess cable. This can be wound up in the controller box or in the WPU.

NOTE: when storing excess cable in the WPU, ensure that there is no interference with the damper movement or with the evaporator and condenser fans.

The Pros and Cons of fabricating cables in the field:

The benefit of fabricating cables in the field is being able to fabricate to a specific length as needed.

Some of the drawbacks of fabricating your own cables in the field:

1. **Labor intensive:** Connecting the cable can be tricky and somewhat time consuming. Although the raw materials may cost less than factory manufactured cables, any savings may be negated by the labor required to fabricate, test, and in some cases, troubleshoot and repair field assembled cables.
2. **Uniform Color:** Fabricating in the field typically means that all cables will be the same color. Simple visual cues can no longer be used to make sure cables are plugged into the correct port. The best approach is to clearly label both ends of each cable BEFORE they are fished through the conduit. Different color cable stock can be used, although that increases the amount of material to keep track of.
3. **Not covered under warranty:** Field fabricated cables are not covered under AIRSYS warranty. However, this should not be a significant risk if good quality materials are selected and each cable is tested.

IMPORTANT: Cables fabricated in the field **MUST be tested** before integrating into the system. Components damaged due to cross wired or grounded cables are not covered under warranty. There are very good inexpensive cable testers available to ensure each wire is making a good connection AND that there is no cross wiring. We have spent hours on the phone troubleshooting system that turned out to be an intermittent or cross wired cable that was assembled on site. Good quality cable testers can help all involved avoid the headache of unnecessary delays associated with troubleshooting poorly fabricated cables.