Got Datacom Questions? ASK BO!

Bo Conrad knows the difference between theory and practice. He has been an integral contributor for TIA/EIA international datacom standards committees and a VDV design consultant for Intel and Hewlett-Packard. He will answer your questions here in future issues of POWER OUTLET– e-mail questions to poweroutlet@rexelusa.com.

By **D.A. "Bo" Conrad**

Question

How can do I both properly secure and professionally dress fiber optic cabling inside the fiber enclosure? A few times, they have been unintentionally yanked out of the box, thus ruining the exposed fiber strands and connectors.

Try this technique next time you pull indoor non-breakout style or outdoor loose-tube cable. Always provide at least three meters (10 feet) of a service loop in the equipment room (ER) or telecommunications room (TR), and secure it after it is routed inside the enclosure.

In either case, remove the appropriate amount of outer jacket (minimum one meter or three to four feet) and peel away the Mylar skip-wrap and/or dry-block tape. Cut away the filler (fake) tubes, if any, and central strength member – but do NOT cut away all the Kevlar™ or Aramid yarn.

Leave about 15 to 18 inches to work with. Braid it into a tightly bound "ponytail" as shown in Figure One and secure it into a knot at the end to keep it from unraveling.

To make the cable termination look more professional, use two two-to-three-inch sections of heat-shrink tubing. Heat-shrink one section of tubing directly onto the outer jacket cable end; this acts as a "base," and will keep the second section of tubing from absorbing the oils from the jacket's polymers and loosening up over time.

Install the second section of heat-shrink tubing over the first; extend it beyond the cable end by at least one inch. Be careful not to keep the heat gun directly over one spot for too long – keep it moving around and back and forth as shown in Figure Two.

For outdoor loose-tube cable, install the Furcation breakout kit and terminate your fiber connectors.

Figure Two

Once the cable is routed inside the enclosure, secure the braided ponytail onto the grounding lug. If a plastic enclosure is used, secure it

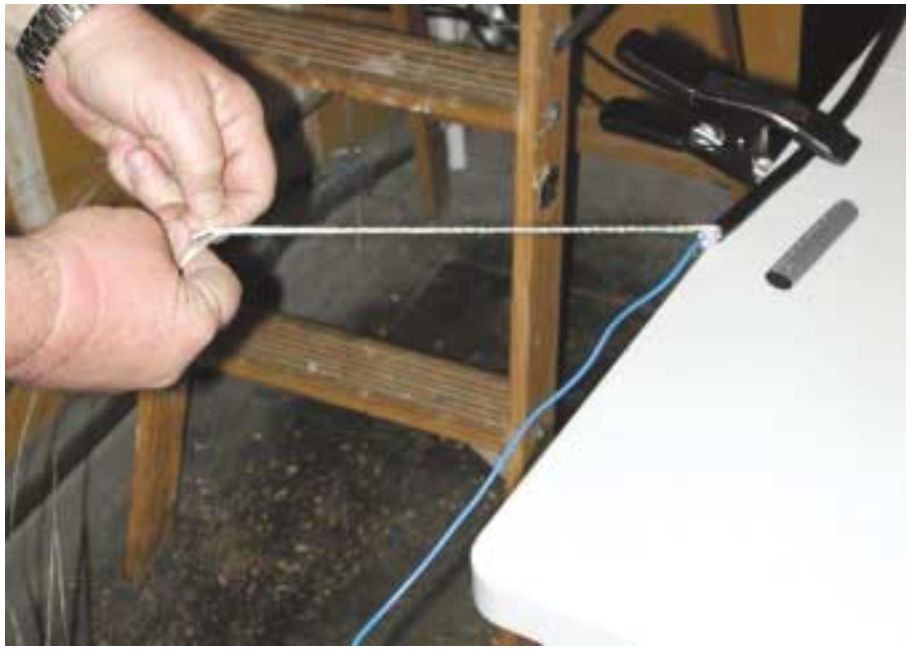

Figure One

around a mounting screw as shown in Figure Three.

It is the Kevlar™ that gives fiber cable its tensile strength for pulling and crush-resistance protection. Why not use it as a strain relief, too? Depending on the enclosure manufacturer, there also may be a standoff bracket to secure the cable with a small tie wrap.

Heat-shrink tubing gives it a more professional look, while help preventing the cable from easily slipping through the tie wrap. See completed installation in Figures Four and Five.

Question

Why do we not get consistent results when we use our power meter and light source?

This is a very common problem. Let's eliminate a few common errors.

Step 1: Before doing anything, ENSURE THE TESTER BATTERIES ARE GOOD! Make sure they are *both* set to the **same wavelength** (e.g., 850 nm)!

Connect a quality reference cable between the power meter and light source and leave them on for at least three to five minutes to stabilize. If the batteries aren't up to par, a "Low" or "Low Batt" light indicator will appear.

When was the last time your testers were recalibrated? Check the sticker (usually) affixed to the units.

Figure Four

Step 2: ANSI/TIA/EIA 526-14A specifies methods for testing a multimode fiber link using a power meter and light source.

Method A is to "zero out" two reference cables from the procedure. The problem with this method is you actually are zeroing out one of the connectors being tested. Method B is to "zero out" just one reference cable, but to test the second reference cable bi-directionally so that it is within the 0.75dB compliance for each mated connector end.

"Preferred Method B" provides a benefit – you will be testing both mated pair connectors in a fiber link. The problem is the second reference cable is included in your test results; the standard does not allow you to deduct this dB loss reading from your tested fiber link results.

So, the first move is to make sure you are testing to the same procedure each time and that you are using super clean and polished reference cables – 0.4dB or less on both ends of both reference cables.

Step 3: Next up you must deal with cleanliness – and dryness! Before testing, wipe each connector end of both the cables under test. Clean the reference cable again with a KimWipe™ dampened (not soaked)

Figure Three

To ask a question of Power Outlet's datacom expert Bo Conrad, send your information in an e-mail to poweroutlet@rexelusa.com. Your questions will be answered in future issues.

with 99% Isopropyl alcohol. Note: Do not use a drug store version, which is only 66% immersed.

Thoroughly dry the connector with the dry side of the KimWipe. I suggest doing a visual inspection with a ***200X*** power scope. Is there still residual alcohol polishing pad debris on the connector end face? Both can become "trapped" in the minute gap between the cladding O.D. and the ferrule's I.D and can skew the test results.

Of course, the visual inspection also will determine if the end face polish is bad and needs repolishing or replacement.

Step 4: Use only **singlemode** adapter or coupling, which has tighter tolerances, to get a more consistent and accurate test. *Do not use* the coupling in the fiber enclosures and/or faceplate when getting inconsistent test results, because it is most likely a multimode adapter/coupling.

Almost certainly, there will be an argument here – as this enclosure coupling is part of the installed link and should be included in the test. Again, I only recommend this when you are getting inconsistent results.

With a bachelor's degree in engineering and an MBA, Bo Conrad has held corporate executive positions from international marketing and manufacturing to corporate distributor sales and training. He holds a certificate with BICSI as a certified trainer. His company, CrossBow Communication (www.crossbowcom.com), of Fremont, Calif., is licensed by BICSI to conduct the Professional Cable Installer Program. Customers and students include the VDV divisions of electrical contractors, datacom installers and the Who's Who companies of Silicon Valley.

Do you have questions?

Please e-mail them to my attention, care of poweroutlet@rexelusa.com.

If it does stabilize, remove the six-pack from the enclosure or the coupling from the wall plate and use an air canister – **held vertically** – to blow out any possible residue or contaminants and do a visual inspection with a small magnifying glass.

Retest with the installed adapter/coupling.

Step 5: The most common assumption when testing fiber is to test it like UTP. **Wrong!** You really must be careful of bend radius of both the fiber under test and the reference cables.

Often, a technician will let the reference cable "hang" from the coupling or faceplate exceeding the 10X requirements; the assumption is that the boot on the connectors is maintaining the bend radius. Tape the reference cable somewhere to provide a straighter connection to the tested fiber; or just hold it up with your hand until the test is complete.

These five steps should help eliminate inconsistent test results. It is strongly recommended that you perform the test bi-directionally to ensure that both directions of the cable link are below budget loss. Take the average of the two results and document for your customer as well as your own records.■

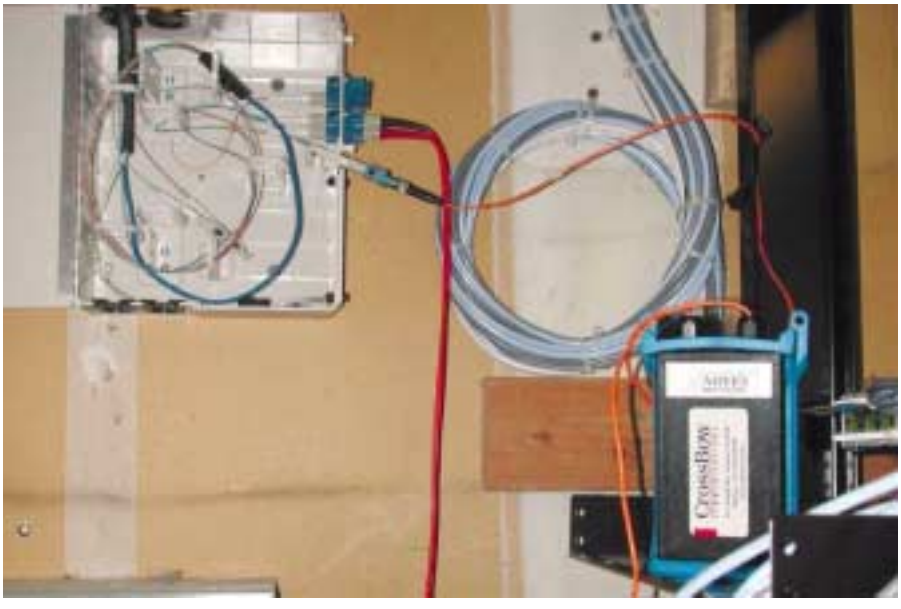

Figure Five

More 'Ask Bo' Datacom – Weekly, On The Web

A new datacom question, with Bo Conrad's expert answer, will appear weekly on the Web. The Q&A presented here in print will not duplicate what's on the Web (and vice-versa).

To find the weekly "Ask Bo" datacom feature, go to www.rexelusa.com.