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Simplifying Direct Connect Deployment Using Field Term Plugs in Connect Cabling Systems

What is Direct Connect Cabling and Why is it Used?

Direct connect cabling is an approach that installers increasingly use to attach deployed devices in enterprise networks. In direct connect cabling the horizontal link plugs directly into the network device rather than using a patch cord.

Typical structured cabling approach: Horizontal cable terminates to a modular jack and a patch cord connects the device to the network (Figure 1):

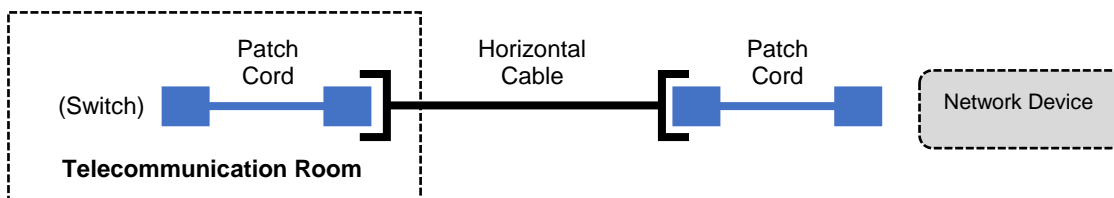


Figure 1. Typical structured cabling approach.

Direct connect cabling: Horizontal cable link terminates to a plug which is inserted directly into the device, connecting it to the network (Figure 2):

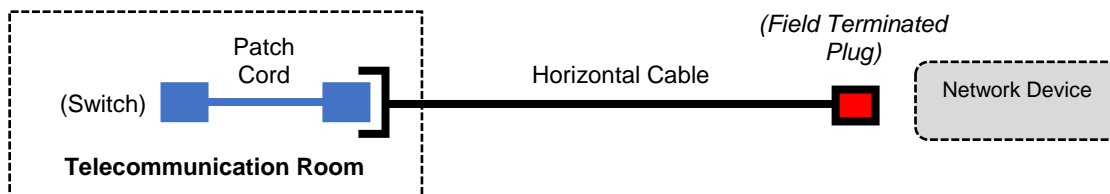


Figure 2. Direct connect cabling approach.

Direct connect cabling makes the most sense with devices that are in less accessible areas, require little or no contact, and are not moved very often. Table 1 lists devices that would benefit from direct connect cabling.

Table 1. Good Candidates for Direct Connect Cabling.

Device Examples	Wireless access points, security cameras, sensors, digital signage, PoE lighting, etc.
Typical location of device or termination	Ceiling level or high on wall
Need for access to device or termination	Limited
Need for future movement of device	No

For these types of applications, direct connect is a simple, cost-effective alternative to the traditional structured cabling approach. It allows for fewer connectors, easier running of the cable link, and higher reliability.

Direct Connect Made Easy–The Panduit TX6A™ Field Term Plug

While the Panduit TX6A Field Term Plug (Figure 3) works within any architecture, it is ideally suited for direct connect applications which depend upon a high-performance plug that can be terminated on site.

The plug is ideal for connecting network devices such as wireless access points, LED lighting, security cameras, sensors, building access units, display panels, and others.



Figure 3. Panduit TX6A field term plug.

What’s Different about the TX6A Field Term Plug?

Traditional modular plugs, while compact and cost effective, are comprised of several small parts and require multiple steps to terminate properly. Therefore, they are poorly suited to attaching to cable in field conditions. Also, while there are some plugs promoted as field-terminable they often are bulky and not very easy to assemble quickly or properly in typical field conditions.

The TX6A Field Term Plug (Figure 4) enables quick and easy termination to cabling and is compact enough to fit in similar spaces as traditional modular plugs.



Figure 4. Typical (left) vs. Panduit field term plug (right).

In contrast, the TX6A Field Term Plug uses Panduit’s pioneering “TG Style” wire cap (Figure 5) termination technology, the same easy “forward motion” technology used for more than 12 years with Panduit modular jacks. The method features:

- Simple two-part assembly
- Ability to handle a wide range of cable gauges
- An easy-to-learn yet reliable termination, even with Category 6A
- Fast termination times
- A compact and lightweight termination tool

Terminating the Panduit TX6A™ Field Term Plug



Figure 5. The TX6A Field Term Plug uses a TG Style wire cap like those used on Panduit TG Mini-Com® modular jacks.

Terminating the TX6A Field Term Plug is as simple as terminating a Panduit TG style jack. The wire cap of the Field Term Plug has the identical wire map pattern and conductor retention features as a TG style jack. The Field Term Plug uses the same forward-motion termination technology and the same termination tool (EGJT-1) as the TG style jack (Figure 6).



Figure 6. Easy termination with the EGJT-1 Termination Tool.

Plug Fit and Compatibility with Devices

The compact footprint of the TX6A Field Term Plug enables it to fit in smaller spaces than most other field terminable plugs.

- The “Space Required” shown in Figure 7 includes length clearance to insert & remove the plug.
- Always confirm the fit of the TX6A Field Term Plug with the intended device.

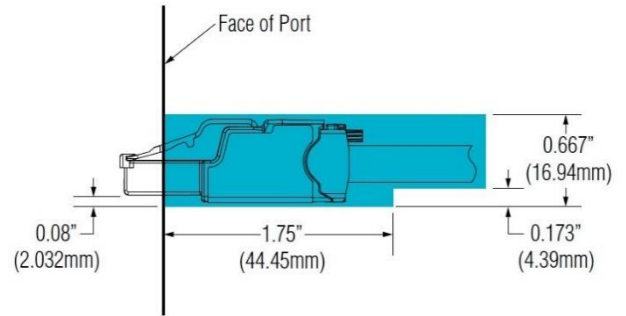


Figure 7. Space required to fit TX6A Field Term Plug.

How to Test Direct Connected Links

Panduit supports two ways to test direct connected links for performance and warranty purposes. In both cases, up to two TX6A Field Term Plugs may be present in the link.

Test Method 1 – Standards Method

System designers and users of data communications systems use the Modular Plug Terminated Link (MPTL) field terminable plug Standards Method to verify the performance of the permanent link used in a direct-connect designed infrastructure. The permanent link tested in this model includes up to 90m (295 ft.) of horizontal cable with a maximum of two (2) field terminable plugs. The connection to the equipment at either end of a permanent link is only included in the permanent link definition if measured via the Standards Model. Figure 8 shows schematic representations of the permanent link testing via the Standards Model.

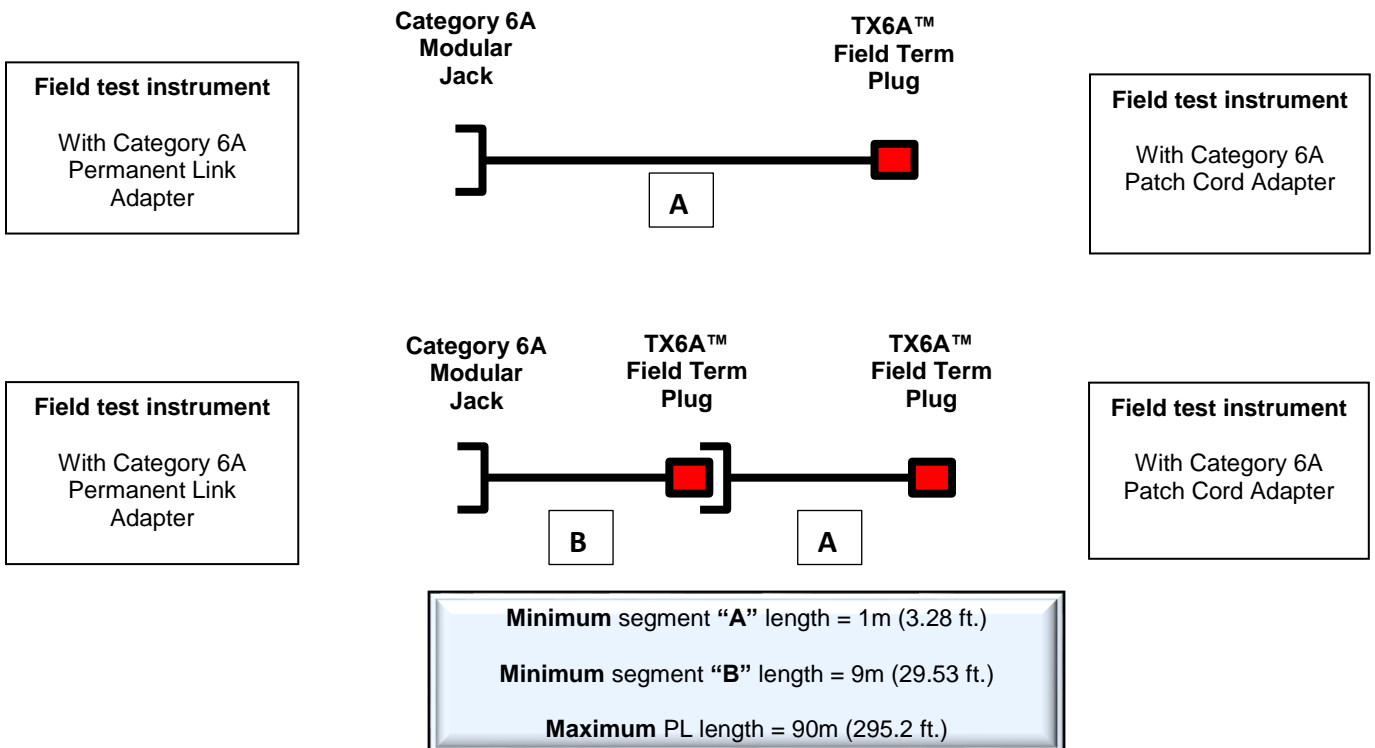


Figure 8. Schematic representations of permanent link testing via the Standards Model.

Test Method 2 – The Alternate Method

System designers and users of data communications systems use the Alternate Method field terminable plug test configuration to verify the performance of the permanent link in a direct-connect designed infrastructure where the Standards Method is not possible. In the Alternate Method, the permanent link continues to have a maximum total horizontal cable length of 90m (295 ft.) and a maximum of two (2) field terminable plugs. The connection to the equipment at either end of a permanent link is not included in the Alternate Method test and therefore requires a $\geq 1\text{m}$ plug-to-jack cord to properly test the TX6A™ UTP Field Term Plug as part of the permanent link performance. Figure 9 shows schematic representations of this permanent link test configuration.

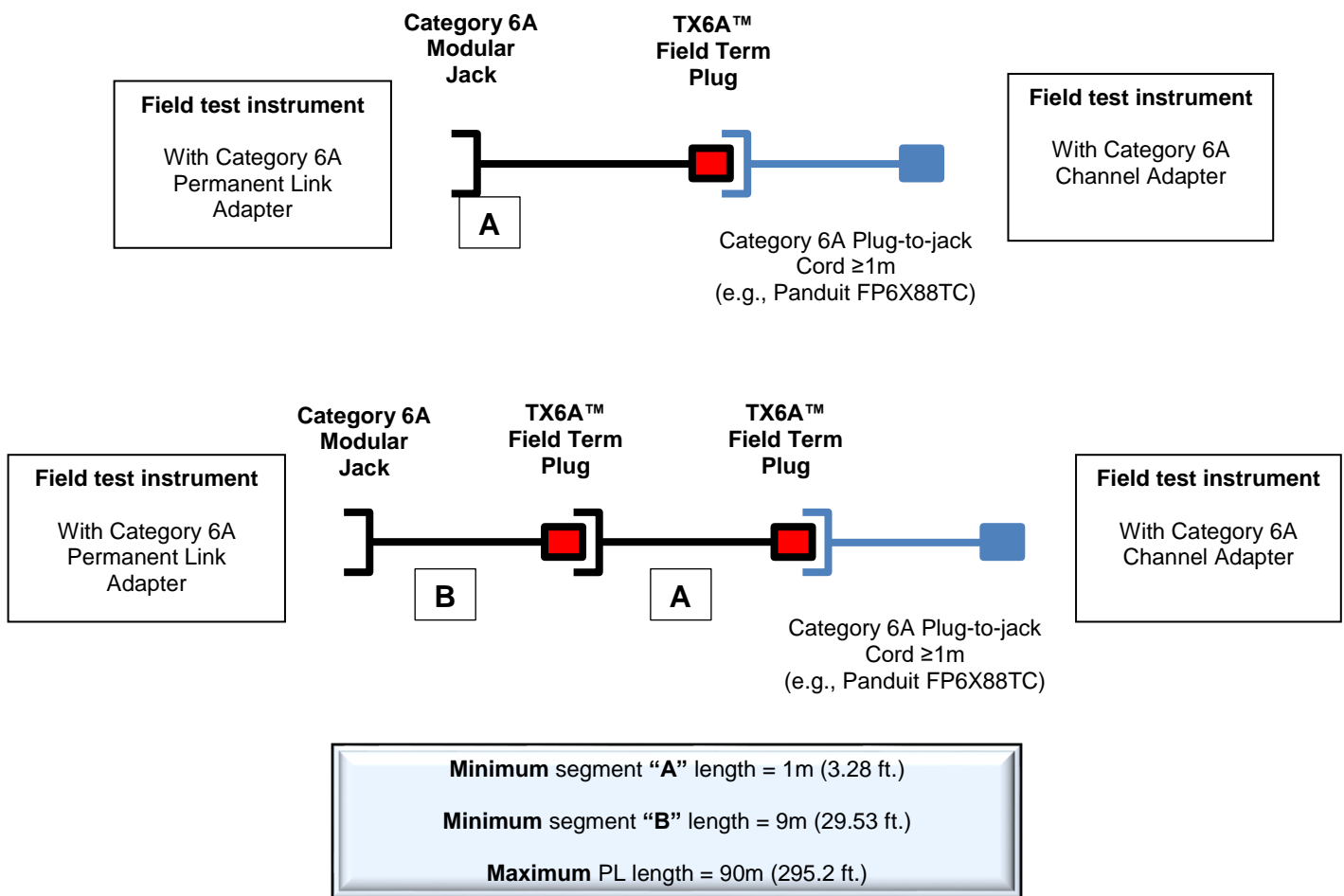


Figure 9. Schematic representations of permanent link testing via the Alternate Model.

Conclusion

Direct connect cabling is gaining in popularity as a cost-effective and reliable way to connect stationary network devices such as wireless access points, cameras, sensors, PoE lighting, digital signage and others. The easiest way to deploy direct connect cabling is to attach a field-installable plug at the end of the horizontal cable link where it inserts into the network device. The Panduit TX6A Field Term Plug is a simple, easy to install two-piece plug that can be used in all direct connect cabling applications in the field today for fast and reliable terminations.

DISCLAIMER: This Technology Brief is for informational purposes only. Each customer should evaluate its own requirements prior to determining the direct connect cabling strategy that best fits its needs.

All Panduit products are subject to the terms, conditions, and limitation of its then current Limited Product Warranty, which can be found at www.panduit.com/warranty.