

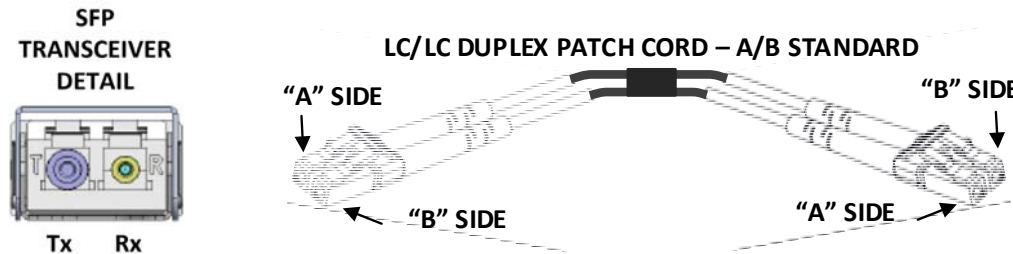
Application Note: Universal Polarity in 12 Fiber Duplex Applications

APPLICATION

Managing duplex polarity can be challenging when multifiber MPO/MTP assemblies and cassettes are the product solution of choice. 12 and 24 fiber cassette solutions are common in Enterprise and Data Center applications. Simplifying the duplex polarity management for the end user by allowing one configuration for both cassettes and patch cords is highly desirable. This is made easy by using a universal polarity wiring scheme within the cassettes

Understanding A/B duplex Polarity

Duplex Polarity is designed to provide a pathway from the transmitting port in a host transceiver to the receiving port in recipient transceiver and then back. This is commonly referred to as A/B polarity.



Application Note ID:
NSAN-20-0002-03062020

Date:
03-06-20

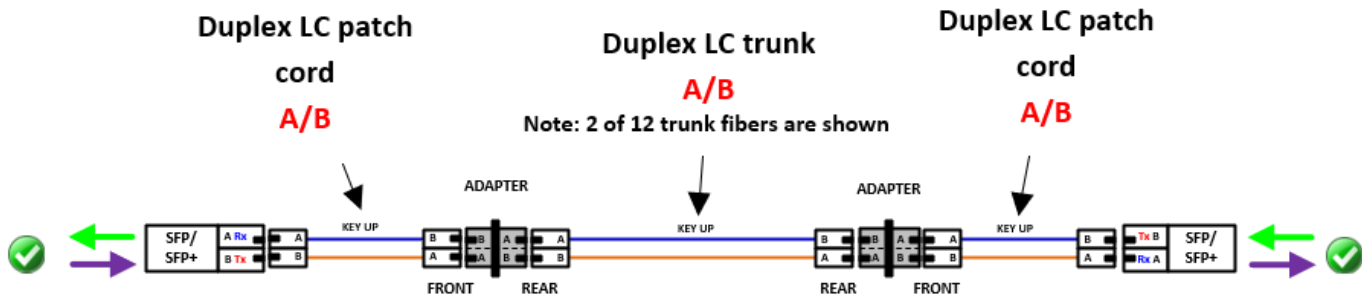
Product Line:
Fiber Optics

Products Affected:

- HDX Cassettes
- SDX Cassettes
- E2XHD Cassettes
- Pre-Terminated Fiber Trunks
- Pre-Terminated Fiber Harnesses

Duplex polarity is managed by mating connections from A to B throughout the overall channel as shown here where a patch cord is mated on each end of a discrete terminated trunk and connected to a duplex LC transceiver (example 10GBASE-SR SFP+) at each end. The signal is transmitted from one transceiver and received by the other using one type of patch cord and trunk legs that are also paired the same at each end of the trunk.

DUPLEX CHANNEL – A/B POLARITY



Multi-fiber Polarity

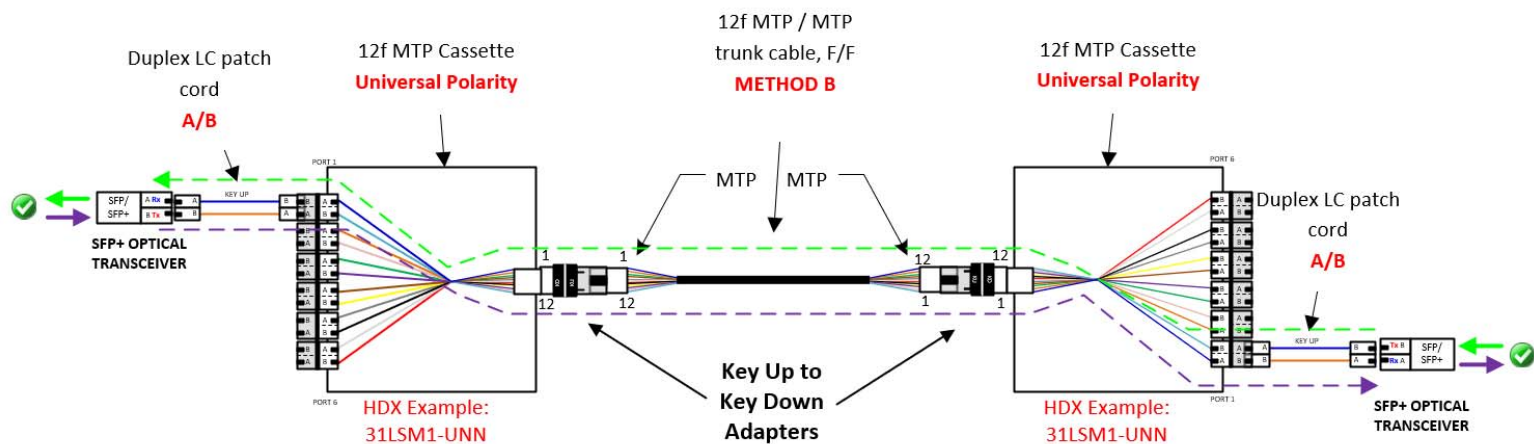
When MPO/MTP cabling systems are used, A/B duplex polarity must also still be managed. This can happen through several multi-fiber polarity methods. While many methods are available to establish polarity, the ANSI/TIA 568-D.3 standard outlines sample methods that may be employed for array cabling systems. ANSI/TIA 568-D.3 Methods A and B require different components, patch cords or cassettes respectively. Method C allows for the use of singular patch cords and cassettes but is not flexible for migration or direct transceiver connect applications. ANSI/TIA 568-D.3 also allows for "other" polarity methods such as Universal Polarity.

The following chart provides a simple explanation of the differences between the 4 general options:

	METHOD A	METHOD B	UNIVERSAL	METHOD C
CASSETTES	SAME	DIFFERENT	SAME	SAME
TRUNKS	STRAIGHT THROUGH	FERRULE FLIPPED*	FERRULE FLIPPED*	PAIR FLIPPED
PATCH CORDS	DIFFERENT	SAME	SAME	SAME

*The connector ferrule containing the row of fibers is rolled on one side of the cable where fiber from position 12 arrives in position 1.

With the goal to allow for the same patch cords and cassettes to be used at each end of the channel, the universal polarity method is the easiest deployment option for materials management, installation and end user connectivity.



Which polarity type should I use?

While each of the Industry Standard polarity types have their applications, Method B and Universal polarity provide the most simplified options for the end user as all patch cords are the same and a simple migration path to parallel optic transceivers is available. It should be noted that Method B polarity does require management by the installing contractor of cassettes in pre-determined pairs. Leviton uses Method B Core and Method B Edge cassettes that are installed together. Other common names for these paired cassettes are "Alpha and Beta", "B1 and B2" or "Pair Flipped" as defined by the manufacturer.

Can polarity types be mixed?

While unique channel design requirements can be achieved by mixing different polarity types, it requires detailed planning, evaluation and validation. This mixing also requires detailed inventory and ordering control when additions or changes are made. The mixing of polarity types is not recommended without channel requirements and review.

Which trunks do I use with Universal Cassettes?

Universal cassettes are designed to work with Method B trunks that utilize 12 Fiber MPO/MTP connectors.

Can Leviton Universal cassettes be used with other Manufacturers components?

In the majority of applications, 12 fiber Universal polarity components are interchangeable. Leviton can assist in evaluating existing customer channels and intermixed components to ensure the end product meets the required application.

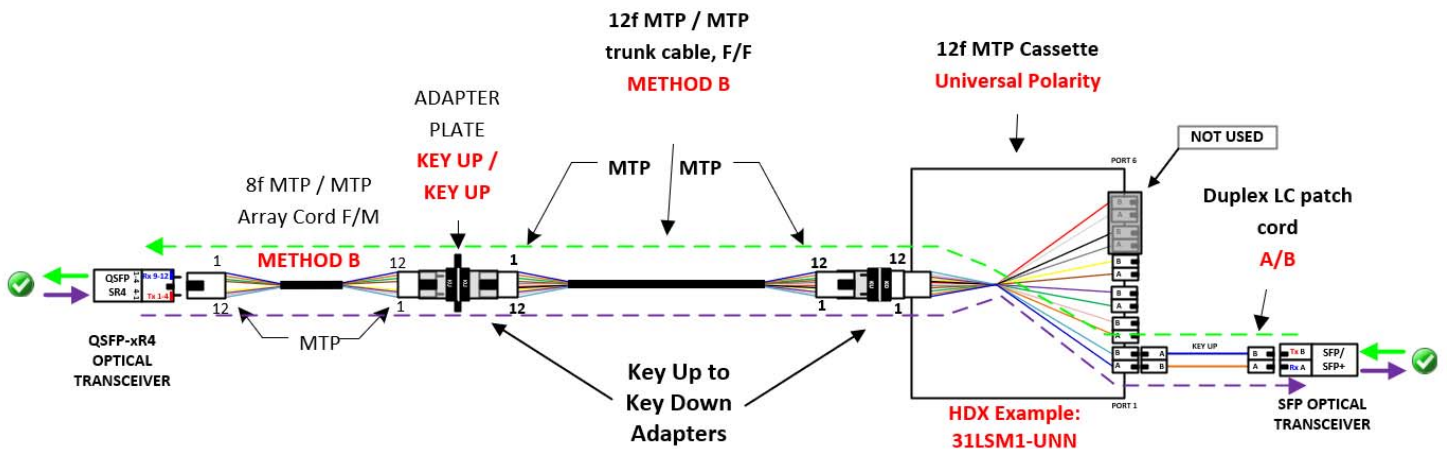
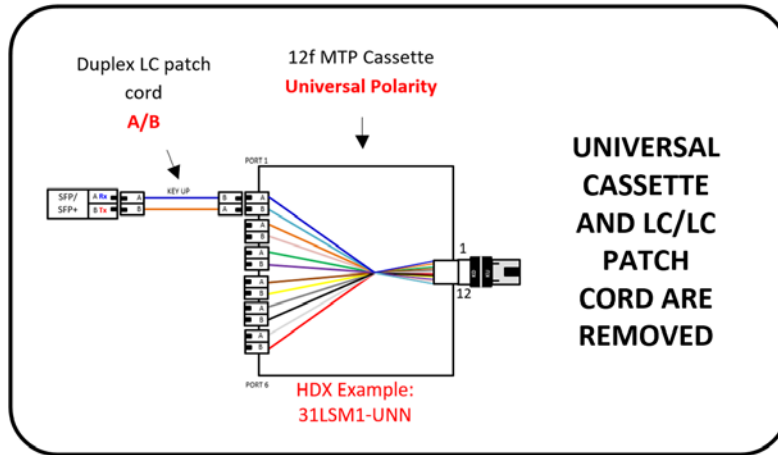
Leviton Manufacturing Co., Inc.
2222 222nd Street SE
Bothell, WA 98021

tech line 800 824-3005
fax 800 832-9538
www.leviton.com

How else can I use Universal cassettes?

Universal cassettes can also be used to:

- Provide port replication of active hardware transceiver ports
- Convert transceiver ports at 4:1 (utilizing 8 of 12 fibers)



How do I make sure it's correct?

Leviton has an international team of Data Center Designers, Specification Engineers, Applications Engineers and Technical Support Representatives that can assist in channel design, polarity validation, mixing of manufacturers components and more.

Summary

Leviton offers a wide variety of multi-fiber connectivity solutions to meet any and all connectivity requirements. Universal Polarity provides a simple, easy to install and easy to manage family of products.

For more information visit: www.leviton.com