IEEE 802.3 September 2025 Interim
IEEE P802.3dj Task Force

Update – Optical MDI's Normative Connector Position(s)
Comments #220-223

John D'Ambrosia, Futurewei, U.S. Subsidiary of Huawei
Angela Lambert, Corning
Tiger Ninomiya, Accelink
Jose Castro, Panduit

Comments Summary

- **#220 (TR): This paragraph primarily addresses a single application where the connector is fully populated with fibers in the Tx1-4 and Rx1-4 positions. There is another application space where these positions are not fully populated with fibers - and may be populated to support a single PMD such as 200GBASE-DR1, 400GBASE-DR2, or 800GBASE-DR4. This section needs to address both application spaces**
- **#221 (TR): This paragraph primarily addresses a single application where the connector is fully populated with fibers in the Tx1-8 and Rx1-8 positions. There is another application space where these positions are not fully populated with fibers - and may be populated to support a single PMD such as 200GBASE-DR1, 400GBASE-DR2, 800GBASE-DR4, or 1.6TBASE DR8. This section needs to address both application spaces.**
- **#222 (TR): This text indicates that the Optical lane assignments for the connector can support different combinations of PMDs, but it does not make a normative reference to the assignment of grouping(s) of signals assigned to a given PMD**
- **#223 (TR): This text indicates that the Optical lane assignments for the connector can support different combinations of PMDs, but it does not make a normative reference to the assignment of grouping(s) of signals assigned to a given PMD**

Introduction

There are different types of cabling that will be used with the single-row 12 position connector –

- **Only those positions supporting a PMD are populated with fiber. Normative fiber positions necessary.**
- **More positions are populated with fiber than is necessary for a given PMD. (Common cabling used throughout a facility). Normative fiber positions for active PMD lanes necessary**
- **All eight positions are populated with fibers and are used to support a PMD or PMDs. Normative fiber positions are necessary for support of multi-lane PMDs**

The same situation exists with the single-row 16 position connector.

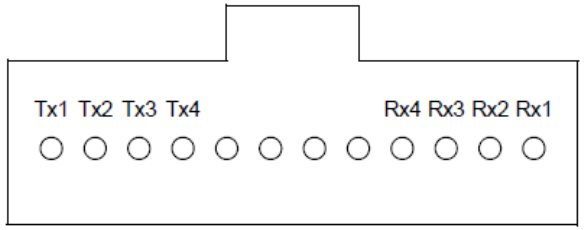

Figure 180A–2—Optical lane assignments for a single-row 12-position connector

Table 180A–2 shows the mapping of PMD signals to optical connector positions for single-row 12-position optical interfaces. Such interfaces support a single 4-lane optical PMD, such as 800GBASE-DR4 or 800GBASE-DR4-2, or alternatively four single lane optical PMDs, such as 200GBASE-DR1 or 200GBASE-DR1-2, or two 2-lane optical PMDs, such as 400GBASE-DR2 or 400GBASE-DR2-2. When an MDI connector is not fully utilized the lower PMD numbers in Table 180A–2 should be used.

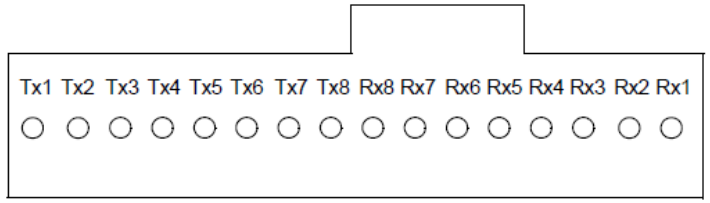

Figure 180A–3—Optical lane assignments for a single-row 16-position connector

Table 180A–4 shows the mapping of PMD signals to positions for a single-row, 16-position optical connector. Such connectors support a single 8-lane optical PMD, such as 1.6TBASE-DR8 or 1.6TBASE-DR8-2, or alternatively eight single lane optical PMDs, such as 200GBASE-DR1 or 200GBASE-DR1-2, four 2-lane optical PMDs, such as 400GBASE-DR2 or 400GBASE-DR2-2, or two 4-lane optical PMDs such as 800GBASE-DR4. When an MDI connector is not fully utilized the lower PMD numbers in Table 180A–4 should be used.

Replace all text in 180A.4.1 with text below

Figure 180A–2 shows the generic layout of a single-row 12-position optical connector specified for single-lane, 2-lane and 4-lane optical PMDs. The four transmit and four receive optical lanes shall occupy the positions depicted in Figure 180A–2 when looking into the MDI receptacle with the connector keyway feature on top. The four center positions are unused. Figure 180A–2 also provides details on the ordering of the optical connector positions.

When the optical MDI is only supporting a single one-lane PMD (200GBASE-DR1 or 200GBASE-DR1-2), the optical lanes SHALL be assigned to the optical connector positions Tx1 and Rx1, as shown in Table 180A-2, regardless of whether fibers are populated in the remaining optical connector positions.

When the optical MDI is only supporting a single two-lane PMD (400GBASE-DR2 or 400GBASE-DR2-2), the optical lanes SHALL be assigned to the optical connector positions Tx1 / Tx2 and Rx1 / Rx2, as shown in Table 180A-2, regardless of whether fibers are populated in the remaining optical connector positions.

When the optical MDI is supporting a single four-lane PMD (800GBASE-DR4 or 800GBASE-DR4-2), the optical lanes SHALL be assigned to the optical connector positions Tx1 through Tx4 and Rx1 through Rx4, as shown in Table 180A-2.

Alternatively, combinations of one-lane optical PMDs, i.e. 200GBASE-DR1 or 200GBASE-DR1-2, and / or two-lane optical PMDs, i.e. 400GBASE-DR2 or 400GBASE-DR2-2, are permissible when fibers are populated in all of the optical connector positions. For two-lane PMDs, the optical lanes SHALL be assigned to the optical connector positions for a given 400GBASE-DR2 or 400GBASE-DR2-2 PMD # in Table 180A-2. Table 180A–3 shows an example of a combination of the mapping of several optical PMDs to a single row, 12-position optical connector with fibers populated in optical connector positions Tx1 through Tx4 and Rx1 through Rx4.

Replace all text in 180A.4.2 with text below

Figure 180A–3 shows the generic layout of a single-row 16-position optical connector specified for single-lane, 2-lane, 4-lane and 8-lane optical PMDs. The eight transmit and eight receive optical lanes shall occupy the positions depicted in Figure 180A–3 when looking into the MDI receptacle with the connector keyway feature on top. Figure 180A–3 also provides details on the ordering of the optical connector positions.

When the optical MDI is only supporting a single one-lane PMD (200GBASE-DR1 or 200GBASE-DR1-2), the optical lanes SHALL be assigned to the optical connector positions Tx1 and Rx1, as shown in Table 180A-4, regardless of whether fibers are populated in the remaining optical connector positions.

When the optical MDI is only supporting a single two-lane PMD (400GBASE-DR2 or 400GBASE-DR2-2), the optical lanes SHALL be assigned to the optical connector positions Tx1 / Tx2 and Rx1 / Rx2, as shown in Table 180A-4, regardless of whether fibers are populated in the remaining optical connector positions.

When the optical MDI is only supporting a single four-lane PMD (800GBASE-DR4 or 800GBASE-DR4-2), the optical lanes SHALL be assigned to the optical connector positions Tx1 / Tx2 / Tx3 / Tx4 and Rx1 / Rx2 / Rx3 / Rx4, as shown in Table 180A-4, regardless of whether fibers are populated in the remaining optical connector positions.

When the optical MDI is supporting a single eight-lane PMD (1.6TBASE-DR8 or 1.6TBASE-DR8-2), the optical lanes SHALL be assigned to the optical connector positions Tx1 through Tx8 and Rx1 through Rx8, as shown in Table 180A-4.

Alternatively, combinations of one-lane optical PMDs, i.e. 200GBASE-DR1 or 200GBASE-DR1-2, and / or two-lane optical PMDs, i.e. 400GBASE-DR2 or 400GBASE-DR2-2, and / or four-lane optical PMDs, i.e. 800GBASE-DR4 or 800GBASE-DR4-2 are permissible when fibers are populated in all of the optical connector positions. For two-lane PMDs, the optical lanes SHALL be assigned to the optical connector positions for a given 400GBASE-DR2 or 400GBASE-DR2-2 PMD # in Table 180A-4. For four-lane PMDs, the optical lanes SHALL be assigned to the optical connector positions for a given 800GBASE-DR4 or 800GBASE-DR4-2 PMD # in Table 180A-4. Table 180A–5 shows an example of a combination of the mapping of several optical PMDs to a single row, 16-position optical connector with fibers populated in optical connector positions Tx1 through Tx8 and Rx1 through Rx8.