Proposed Change to Comment submitted against D1.3 –

Comment - This is a resubmission of Comment #188 against D1.2-

The annex is not written in an ethernet standards approach, where it addresses the breakout implementation, and doesn't address the MDI choices of the DRx / DRx-2. Additionally, Clauses 180 and 182 are making normative statements regarding the MDIs, despite the annex then providing additinoal MDI Connector choices.

WHile the comment was rejected, the CRG noted that "a more detailed proposal is encouraged."

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In 180.1 Overview – 2nd paragraph

When forming a complete Physical Layer, a PMD shall be connected to the appropriate PMA as shown in Table 180–1 through Table 180–4, to the medium through the Medium Dependent Interface (MDI).

Replace all of 180.8.3 and subclauses with the following –

180.8.3 MDI specifications

The PMD is coupled to the fiber optic cabling at the MDI. The MDI is the interface between the PMD and the "fiber optic cabling" (as shown in Figure 180–6). The PMD is coupled to the fiber optic cabling through one connector plug into the MDI optical receptacle as shown in Figure 180–10. Example constructions of the MDI include the following:

— PMD with a connectorized fiber pigtail plugged into an adapter
— PMD receptacle

Annex 180A specifies the MDIs for 200GBASE-DR1, 400GBASE-DR2, 800GBASE-DR4, and 1.6TBASE-DR8.

- 200GBASE-DR1 has two specified MDI optical receptacles: a single-row 12-fiber interface and a single-row 16 fiber interface.
- 400GBASE-DR2 has two specified MDI optical receptacles: a single-row 12-fiber interface and a single-row 16 fiber interface.
- 800GBASE-DR4 has two specified MDI optical receptacles: a single-row 12-fiber interface and a single-row 16 fiber interface.
- 1.6TBASE-DR8 has one specified MDI optical receptacle: a single-row 16 fiber interface.

In 182.1 Overview – 2nd paragraph

When forming a complete Physical Layer, a PMD shall be connected to the appropriate PMA as shown in Table 182–1 through Table 182–4, to the medium through the Medium Dependent Interface (MDI).

Replace all of 182.8.3 and subclauses with the following –

182.8.3 MDI specifications

The PMD is coupled to the fiber optic cabling at the MDI. The MDI is the interface between the PMD and the "fiber optic cabling" (as shown in Figure 182–6). The PMD is coupled to the fiber optic cabling through one connector plug into the MDI optical receptacle as shown in Figure 182–10. Example constructions of the MDI include the following:

— PMD with a connectorized fiber pigtail plugged into an adapter
— PMD receptacle

Annex 180A specifies the MDIs for 200GBASE-DR1-2, 400GBASE-DR2-2, 800GBASE-DR4-2, and 1.6TBASE-DR8-2.

- 200GBASE-DR1-2 has two specified MDI optical receptacles: a single-row 12-fiber interface and a single-row 16 fiber interface.
- 400GBASE-DR2-2 has two specified MDI optical receptacles: a single-row 12-fiber interface and a single-row 16 fiber interface.
- 800GBASE-DR4-2 has two specified MDI optical receptacles: a single-row 12-fiber interface and a single-row 16 fiber interface.
- 1.6TBASE-DR8-2 has one specified MDI optical receptacle: a single-row 16 fiber interface.

Annex 180A

(normative)

MDIs for 200GBASE-DR1, 200GBASE-DR1-2, 400GBASE-DR2, 400GBASE-DR2-2, 800GBASE-DR4, 800GBASE-DR4-2, 1.6TBASE-DR8, and 1.6TBASE-DR8-2

180A.1 Overview

This annex defines the Media Dependent Interface (MDI) for 200GBASE-DR1, 200GBASE-DR1-2, 400GBASE-DR2, 400GBASE-DR2-2, 800GBASE-DR4, 800GBASE-DR4-2, 1.6TBASE-DR8, and 1.6TBASE-DR8-2. The MDI couples the PMD

- specified in 180.5 and 180.7 for 200GBASE-DR1, 400GBASE-DR2, 800GBASE-DR4, and 1.6TBASE-DR8,
- specified in 182.5 and 182.7 for 200GBASE-DR1-2, 400GBASE-DR2-2, 800GBASE-DR4-2, and 1.6TBASE-DR8-2.

to the cable assembly

- specified in 180.8 for 200GBASE-DR1, 400GBASE-DR2, 800GBASE-DR4, and 1.6TBASE-DR8,
- specified in 182.8 for 200GBASE-DR1-2, 400GBASE-DR2-2, 800GBASE-DR4-2, and 1.6TBASE-DR8-2.

Table 180A -1 Number of PMDs supportable for each connector type

MDI	200GBASE-DR1 200GBASE-DR1-2	400GBASE-DR2 400GBASE-DR2-2	800GBASE-DR4 800GBASE-DR8-2	1.6TBASE-DR8 1.6TBASE-DR8-2
12 row	1,2,4	1,2	1	
16 row	1,2,4,8	1,2,4	1,2	1

180A.2 MDI Requirements

180A.2.1 Single-row 12-fiber interface

The MDI shall meet the dimensional specifications of IEC 61754-7-1 interface 7-1-9: *MPO device receptacle, angled interface*. The plug terminating the optical fiber cabling shall meet the dimensional specifications of IEC 61754-7-1 interface 7-1-1: *MPO female plug connector, down-angled interface for 2 to 12 fibers*. The MDI shall optically mate with the plug on the optical fiber cabling. Figure 180–10 shows an MPO female plug connector with down-angled interface, and an MDI as an active device receptacle with angled interface.

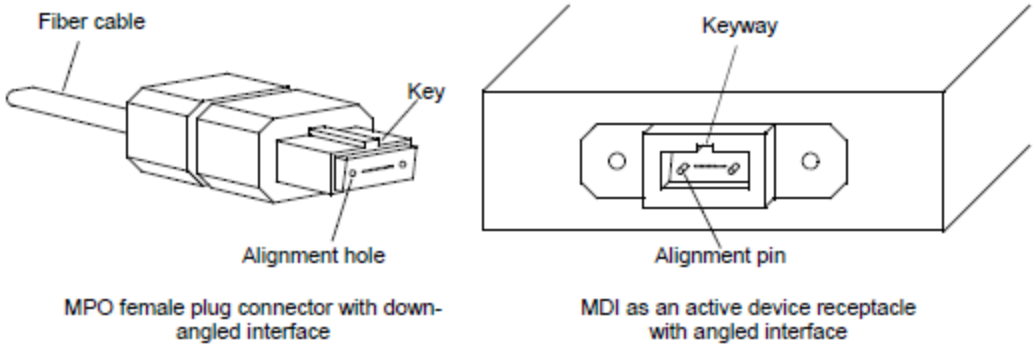

Figure 1 - MPO female plug with down-angled interface and MDI active device receptacle with angled interface

The MDI shall meet the interface performance specifications of IEC 61753-021-02 for performance level D/2.

NOTE—Transmitter compliance testing is performed at TP2 as defined in 180.5.1, not at the MDI.

180A.2.2 Single-row 16-fiber interface

The MDI shall optically mate with the compatible plug on the optical fiber cabling. The MDI shall meet the interface performance specifications of IEC 61753-021-02 for performance level D/2.

If the MDI is constructed with a connectorized fiber pigtail into an adapter, the connectorized pigtail shall meet the dimensional specifications of designation FOCIS 18 P-1x16-1-8-1-1-1 and the adapter shall meet the dimensional specifications of designation FOCIS 18 A-1-0 as defined in ANSI/TIA-604-18-A. If the MDI is constructed with a receptacle, it shall meet the dimensional specifications of designation FOCIS 18 R-1x16-1-8-1-1-2, as defined in ANSI/TIA-604-18-A. The plug terminating the optical fiber cabling that interconnects to either MDI configuration shall meet the dimensional specifications of designation FOCIS 18 P-1x16-1-8-2-1-1, as defined in ANSI/TIA-604-18-A. The MPO-16 female plug connector and MDI are structurally similar to those depicted in Figure 180 –10, but with an angled end facet, 16 fibers, an offset keyway, and different pin diameters and locations.

180A.3.1 Optical-lane assignments for single-row 12-fiber interface

Figure 2 shows the generic layout of a single-row 12-position optical connector specified for single-lane, 2-lane and 4-lane optical PMDs when looking into the MDI receptacle with the connector keyway feature on top. Only the outer 8 positions are allocated to transmitter and receivers while the center 4 positions are unallocated.

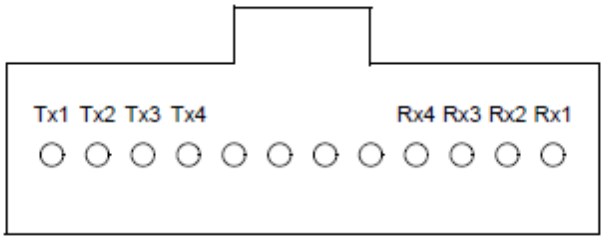

Figure 2 - generic layout of a single-row 12-position optical connector

Table 2 shows the mapping of PMD signals to optical connector positions for single-row 12-position optical connectors. Such connectors 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 Table2 should be used.

Table 2 - Mapping PMD signals to positions for 12-position optical connectors

<PMD #> : <PMD signal>			
200GBASE-DR1 200GBASE-DR1-2	**400GBASE-DR2 400GBASE-DR2-2**	**800GBASE-DR4 800GBASE-DR8-2**	**Connector Position**
0:SL0	0:SL0	0:SL0	Tx1
1:SL0	0:SL1	0:SL1	Tx2
2:SL0	1:SL0	0:SL2	Tx3
3:SL0	1:SL1	0:SL3	Tx4
0:DL0	0:DL0	0:DL0	Rx1
1:DL0	0:DL1	0:DL1	Rx2
2:DL0	1:DL0	0:DL2	Rx3
3:DL0	1:DL1	0:DL3	Rx4

A combination of two single lane optical PMDs, such as 200GBASE-DR2, and one 2-lane optical PMD, such as 400GBASE-DR2, is also supported. Table 3 shows an example of a combination of the mapping of several optical PMDs to a single row, 12-position optical connector.

Table 3 – Example mapping on a 12-position optical connector

<PMD #> : <PMD signal>		
200GBASE-DR1 200GBASE-DR1-2	**400GBASE-DR2 400GBASE-DR2-2**	**Connector Position**
	0:SL0	Tx1
	0:SL1	Tx2
2:SL0		Tx3
3:SL0		Tx4
	0:DL0	Rx1
	0:DL1	Rx2
2:DL0		Rx3
3:DL0		Rx4

180A.3.2 Optical-lane assignments for single-row 16-fiber interface

Figure 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 when looking into the MDI receptacle with the connector keyway feature on top.

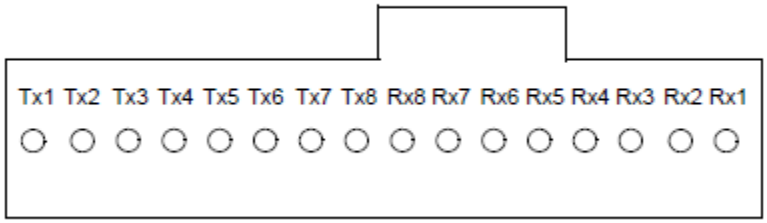

Figure 3 - generic layout of a single-row 16-position optical connector

Table 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.

Table 4—Mapping PMD signals to positions for single-row 16-position optical connectors

<PMD #> : <PMD signal>				
200GBASE-DR1 200GBASE-DR1-2	**400GBASE-DR2 400GBASE-DR2-2**	**800GBASE-DR4 800GBASE-DR8-2**	**1.6TBASE-DR4 1.6TBASE-DR8-2**	**Connector Position**
0:SL0	0:SL0	0:SL0	0:SL0	Tx1
1:SL0	0:SL1	0:SL1	0:SL1	Tx2
2:SL0	1:SL0	0:SL2	0:SL2	Tx3
3:SL0	1:SL1	0:SL3	0:SL3	Tx4
4:SL0	2:SL0	1:SL0	0:SL4	Tx5
5:SL0	2:SL1	1:SL1	0:SL5	Tx6
6:SL0	3:SL0	1:SL2	0:SL6	Tx7
7:SL0	3:SL1	1:SL3	0:SL7	Tx8
0:DL0	0:DL0	0:DL0	0:DL0	Rx1
1:DL0	0:DL1	0:DL1	0:DL1	Rx2
2:DL0	1:DL0	0:DL2	0:DL2	Rx3
3:DL0	1:DL1	0:DL3	0:DL3	Rx4
4:DL0	2:DL0	1:DL0	0:DL4	Rx5
5:DL0	2:DL1	1:DL1	0:DL5	Rx6
6:DL0	3:DL0	1:DL2	0:DL6	Rx7
7:DL0	3:DL1	1:DL3	0:DL7	Rx8

Furthermore, combinations of single lane optical PMDs, such as 200GBASE-DR2, 2-lane optical PMD, such as 400GBASE-DR2, or 800GBASE-DR4, are also supported. Table 5 shows an example of a combination of the mapping of several optical PMDs to a single row, 16-position optical connector.

Table 5 – Example mapping on a single row 16-position optical connector

<PMD #> : <PMD signal>			
200GBASE-DR1 200GBASE-DR1-2	**400GBASE-DR2 400GBASE-DR2-2**	**800GBASE-DR4 800GBASE-DR8-2**	**Connector Position**
		0:SL0	Tx1
		0:SL1	Tx2
		0:SL2	Tx3
		0:SL3	Tx4
	2:SL0		Tx5
	2:SL1		Tx6
6:SL0			Tx7
7:SL0			Tx8
		0:DL0	Rx1
		0:DL1	Rx2
		0:DL2	Rx3
		0:DL3	Rx4
	2:DL0	1:DL0	Rx5
	2:DL1	1:DL1	Rx6
6:DL0		1:DL2	Rx7
7:DL0		1:DL3	Rx8