400GBASE-SR16 MDI for Baseline

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Attribution

- This material is extracted from contribution kolesar_3bs_01a_0914.pfd
with updates on standardization progress,
new editor's notes and a new figure in the
proposed baseline content.

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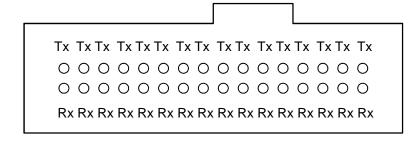
Structured Cabling Standardization
(updates underlined)

- ## ANSI/TIA-568.3

  - Defines array cabling polarity methods and components for duplex and parallel links in structured cabling

  - In second ballot for D revision
    (to become ANSI/TIA-568.3-D)
    - Comments to be resolved at October TR-42 meeting

  - Comments <u>accepted</u> to allow other than 12-wide array cabling
    - 16-wide infrastructure <u>will be permitted by TIA 568.3-D</u>

MDI Lane Assignment

- Definition required to ensure interoperability
  - Parallel optics introduce more degrees of freedom that must be constrained for interoperable connectivity

- Optimal lane assignment will be compatible with structured cabling and conventional optics
  - The same array polarity in cabling systems should support all array applications
    - without replacement of permanent link cabling
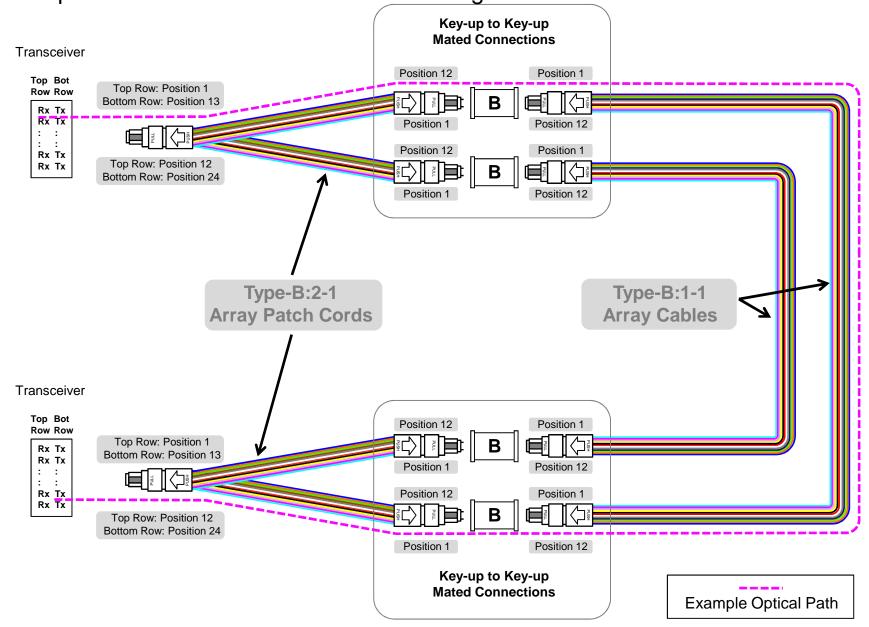   - while adhering to standard signal routing conventions

400GBASE-SR16 Proposal
for Lane Assignments

400G-SR16 optical lane assignments for MDI receptacle
when viewed looking into the receptacle with keyway feature on top.
Transmitters occupy the top row and receivers occupy the bottom row.

This is essentially a 16-wide version of 100G-SR10 MDI
but with transmitters on top for better heat dissipation
and no unused positions.

Connectivity Method B Supporting Parallel Signals for 1-plug x 2-row Applications
Proposed -SR16 MDI on modulo-16 cabling would follow this same construct.

Key-up to Key-up Mated Connections

Transceiver

Top Row	Bot Row
Rx	Tx
Rx	Tx
:	:
:	:
Rx	Tx
Rx	Tx

Top Row: Position 1
Bottom Row: Position 13

Top Row: Position 12
Bottom Row: Position 24

Position 12   Position 1
B
Position 1   Position 12

Position 12   Position 1
B
Position 1   Position 12

Type-B:2-1 Array Patch Cords

Type-B:1-1 Array Cables

Transceiver

Top Row	Bot Row
Rx	Tx
Rx	Tx
:	:
:	:
Rx	Tx
Rx	Tx

Top Row: Position 1
Bottom Row: Position 13

Top Row: Position 12
Bottom Row: Position 24

Position 12   Position 1
B
Position 1   Position 12

Position 12   Position 1
B
Position 1   Position 12

Key-up to Key-up Mated Connections

- - - - Example Optical Path

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Why choose an array connector at the MDI?

- Precedent established in clauses 86 and 95
- Per proposed clause xx.m.n (see later),
  behind the MDI may be a
  - receptacled PMD
  - pigtailed PMD
- Selecting MDI connector
  does not restrict
  pigtail attachment to PMD
  - Open to innovation
- Choosing an MDI connector removes ambiguity
  - Assists in defining signal locations
  - Provides end-users with guidance for
    - cabling installation
    - patch cord selection

PMD

PMD

MDI

Undefined

Content for Baseline Draft

The following 4 slides use clause 86 and 95 content as basis
with modifications for 400GBASE-SR16 and MPO-16

Content for Clause xx.m.n (1 of 4)

xx.m.n Medium Dependent Interface (MDI)

The 400GBASE-SR16 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 xx-a). The 400GBASE-SR16 PMD is coupled to the fiber optic cabling through one connector plug into the MDI optical receptacle as shown in Figure xx-b. Example constructions of the MDI include the following:

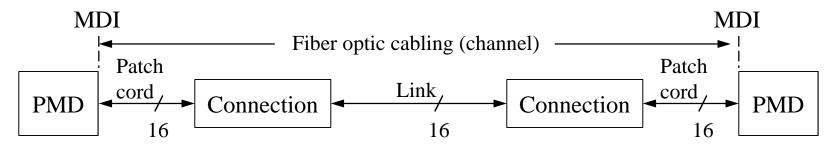a) PMD with a connectorized fiber pigtail plugged into an adapter;
b) PMD with receptacle.

Figure xx-a – Fiber optic cabling model

Editor's note: Figure xx-a may be placed in a preceding clause

xx.m.n.1 Optical lane assignments

The sixteen transmit and sixteen receive optical lanes of 400GBASE-SR16 shall occupy the positions depicted in Figure xx-b viewed looking into the MDI receptacle with the connector keyway feature on top. The interface contains 32 active lanes within 32 total positions. The transmit optical lanes occupy the top row. The receive optical lanes occupy the bottom row. See clause xx.m.n.2 for MDI optical connector requirements.
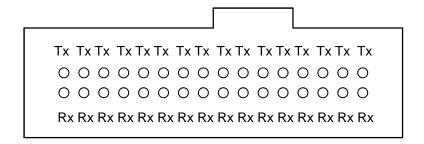
Figure xx-b -- 400GBASE-SR16 optical lane assignments
viewed looking into the MDI receptacle with keyway feature on top.

Content for Clause xx.m.n (3 of 4)

xx.m.n.2 Medium Dependent Interface (MDI) requirements

The MDI adapter or receptacle shall meet the dimensional specifications of ANSI/TIA-604-18 adapter designation FOCIS 18A-k-0.   The plug terminating the optical fiber cabling shall meet the dimensional specifications of ANSI/TIA-604-18 female plug connector flat interface designation FOCIS 18P-2x16-1-0-2-2. The MDI shall optically mate with the plug on the optical fiber cabling. Figure xx-c shows an MPO-16 female plug connector with flat interface, and an MDI.

The MDI connection shall meet the interface performance specifications of IEC 61753-1 and IEC 61753-022-2.

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

Editor's note: ANSI/TIA-604-18 presently entering third ballot

FIBER CABLE

KEY

ALIGNMENT HOLES

KEYWAY

ALIGNMENT PINS

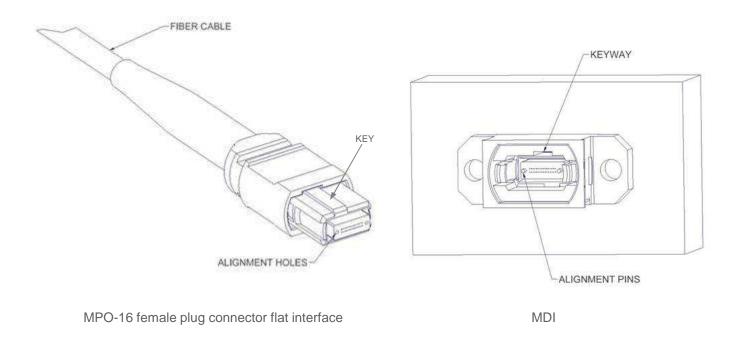MPO-16 female plug connector flat interface

MDI

Figure xx-c – MPO-16 female plug connector flat interface and MDI

Editor's note: Figure is in public domain so may be used "as is".
It is also acceptable redrawn in a form like Figure 86-8 with keying adjustment.

Thank You.

Questions?