Appendix: Optical Connector and Patch Cable

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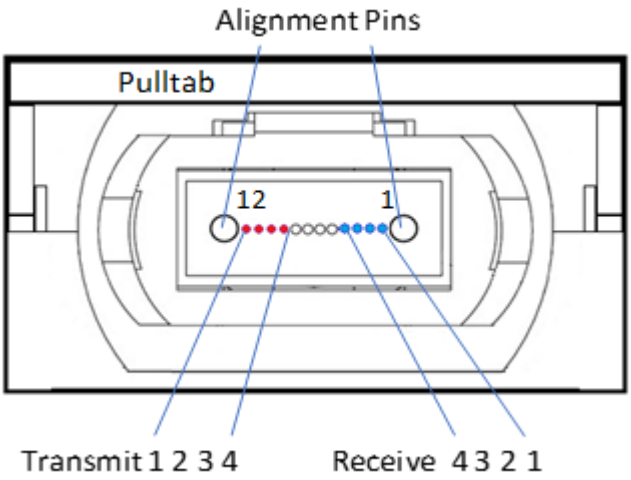
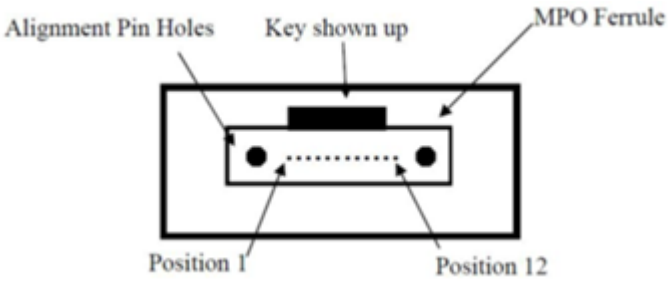
Optical Connector

The optical port in the parallel 2x 4-lane optical transceiver is a male MPO connector with alignment pins, mating with fiber-optic cables with female MPO connector. The connector contains a 12-channel MT ferrule.

QSFP28 Optical Male MPO Connector of the Transceiver (front view)



Female MPO Cable Connector



Reference: IEC specification IEC 61754-7.\

Patch Cable

The fiber which connects with Transceiver A's lane 1 must end at Transceiver B's lane 12 at the far end of the cable. For example, position 1 of MPO connector A at the near end of the cable connects to position 12 of the far end MPO connector B. This calls for a 'crossed'

MPO cable, which is often referred to as patch cable type B. See interconnect scheme below.

MPO to MPO Patch Cable Fiber Connections

Connector A	Connection	Connector B
1	<--	12
2	<--	11
3	<--	10
4	<--	9
5	Not Connected	8
6	Not Connected	7
7	Not Connected	6
8	Not Connected	5
9	-->	4
10	-->	3
11	-->	2
12	-->	1

As shown in the above table, the 4 middle positions are not in use, indicating that the cable may have 8 or 12 fibers. Only 8 fibers are used.

The fiber is a standard OM3 or OM4 multi-mode fiber. The maximum length is detailed in Optical Specifications.

MPO Fiber Patch Cables OM3 (left) and OM4 (right)

OM4 cables may have aqua or pink colored connectors, depending on the make and model.

NVIDIA does not provide MPO patch cables. Multiple cable vendors provide these patch cables.

Multiple MPO patch cables can be connected in a series, e.g. via Optical Distribution Frames (ODFs). Each added connector pair increases modal dispersion and reflections in the link which impairs performance. An odd number of ‘crosses’ must be used between transceivers at the two ends.