



CS Application Guide

As network bandwidth doubles every 18 months (Edholm's law), provisions have to be made to distribute this additional workload. Whereas years ago, 10Gb or 40Gb backbones were sufficient, many networks are now hosted on an absolute minimum of 100Gb, with 400Gb quickly following. As the transition to 400Gb backbones occur, standards bodies created the new CS connector specification which increases the number of duplex optical links by approximately 40% per rack unit (RU) designation. Designed to allow two duplex connectors in both of the 400G transceiver form factors (QSFP-DD and OSFP), the CS interface was developed as a key part of the industry's effort to enable higher density high-speed solutions.

The QSDP-DD and OSFP MSA (multi-source agreement) specifications defines a new cage/connector system with an additional row of contacts providing an eight-lane electrical interface, while still maintaining backwards compatibility with today's four-channel QSFP28 modules (via an adapter for OSFP).

The applications for the CS interface include but are not limited to; usage in patch cables, as well as cassette/breakout scenarios for both single and multimode fiber types.

Density

Much of the need for a new form factor connector is due to the continued search for higher density in today's modern data center applications. The smaller width of a CS adapter allows an increased quantity of connectors in the same RU footprint, and the decreased height allows for additional vertical space between adapters. The decreased height enables increased physical access to the adapter release mechanism, which is normally an issue with highly dense LC duplex patch fields. For example, a 1 RU enclosure with duplex LC cassettes will max out at 144 Fibers, whereas the same enclosure can accept up to 216 fibers (using 36-fiber, 18 port double width CS cassettes). or 192 fibers (using 16-fiber, 8-port standard width CS cassettes).

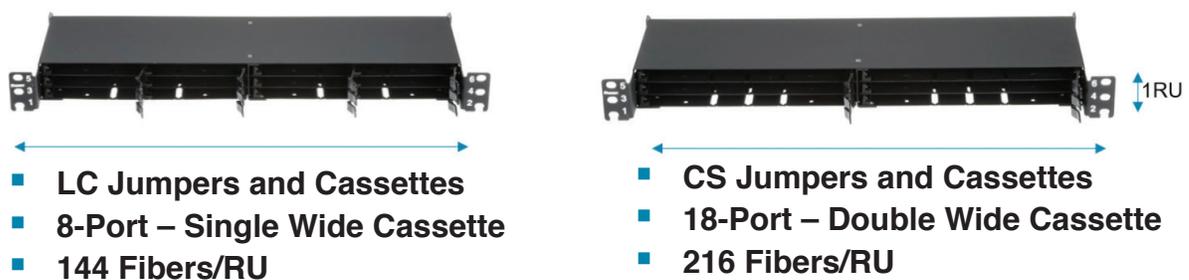


Figure 1: Port density of duplex LC vs CS Application for 1RU enclosure

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Supported Applications

In addition to 400Gb direct attach applications, CS also supports multiple structured cabling and breakout scenarios using MSA standards.

Structured Cabling

400G Structured Cabling

(using existing MPO12 Infrastructure and universal polarity cassettes, MMF)

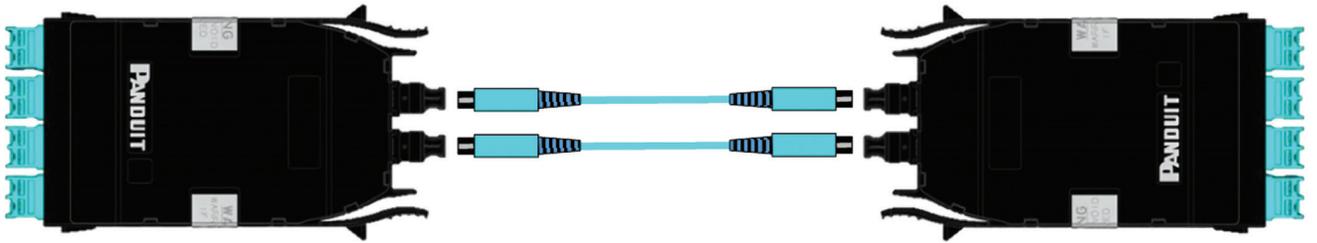


Figure 2: (2) x 8-Fiber MPO to (8) CS Connectors (16-Fibers)

400G Structured Cabling

(using existing MPO12 Infrastructure and universal polarity cassettes, double-wide SMF)

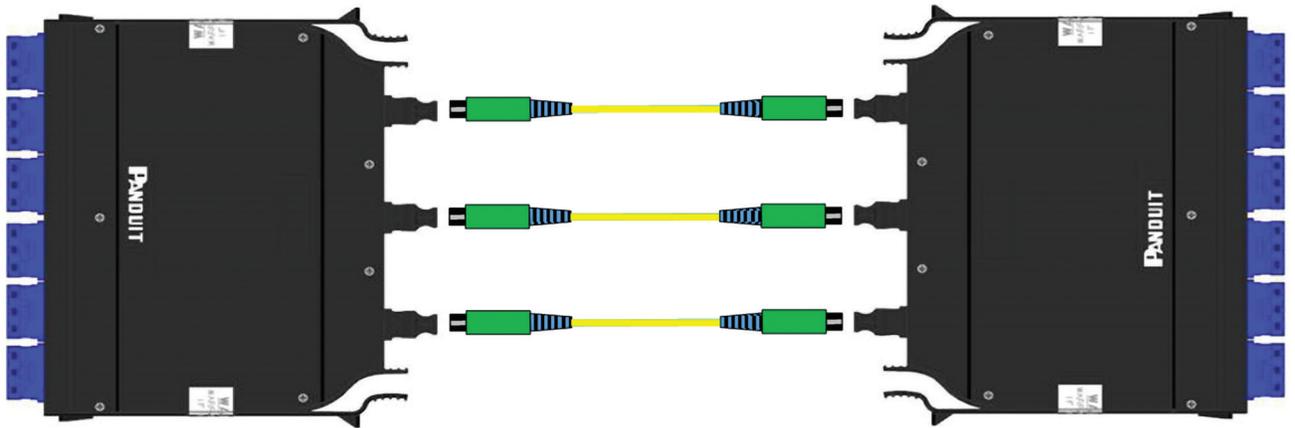


Figure 3: (3) x 12-Fiber MPO to (18) CS Connectors (36-Fibers)

Supported Applications (continued)

Break Out

400G SR8 Break Out

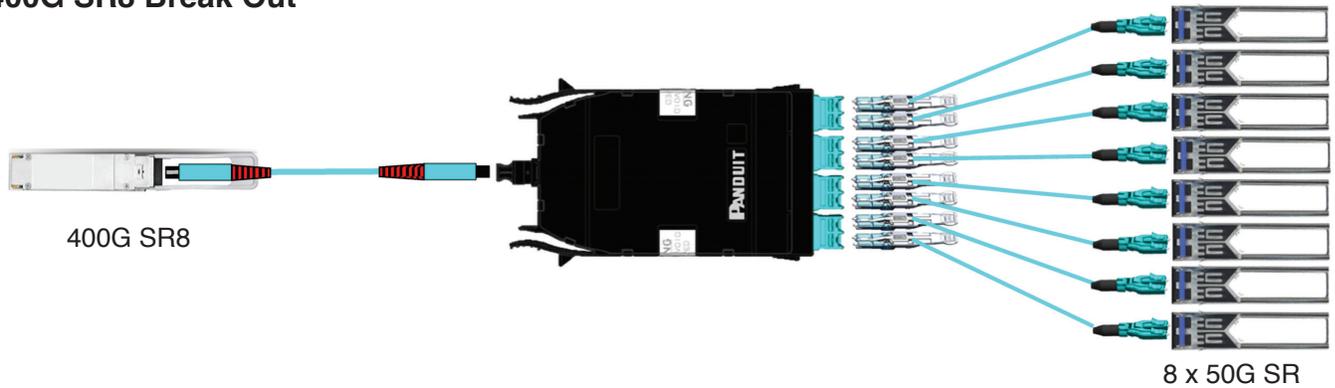


Figure 4: Review of 400Gb SR8: (1) x 400G SR8 to (4) of 2 x 50G SR Breakout Application (MPO24)

2 x 100G or 200G SR4 Break Out

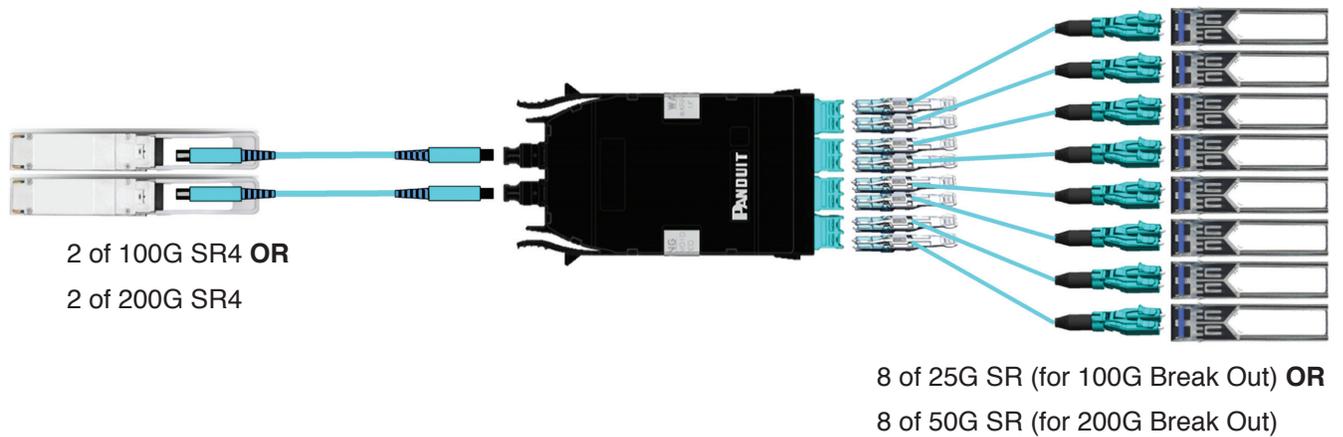


Figure 5: Review of 400Gb SR4: (2) x 100Gb SR4 to (8) x 25G SR OR (2) x 200Gb to (8) x 50G SR)

CS Offering

CS Patch Cables

part number

Example: F92RPZLNZNONF003 = Fiber OS2, 2-fiber, 2mm cable, plenum rated, CS to CS, optimized IL, 3 feet

Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Example	F	9	2	R	P	Z	N	Z	N	O	N	F	0	0	3

1 – Fiber Product

F = Fiber

2 – Fiber Type

Z = OM4 50/125µm

9 = OS2 9/125µm

3 – Fiber Count

2 = 2 fibers

4 – Cable Type

R = Round 2.0mm

5 – Jacket Type

L = LSZH (Low Smoke Zero Halogen)

R = OFNP (Plenum)

6 – Connector Type – End A

U = LC Duplex Uniboot

Z = CS Duplex Connector

7 – Connector Variant

N = No variant

8 – Connector Type – End B

Z = CS Duplex Connector

9 – Connector Variant

N = No variant

10 – Performance/Construction

O = Optimized IL (A-B)

N = Ultra (A-B)

11 – Other

N = No variant

12 – Unit of Length

M = Meters

F = Feet

13, 14, 15 – Length

001-050

Note: For hybrid cords, the CS connector is always on End B.

Figure 6: CS Patch Cable Ordering Selector

CS HD Flex™ Cassettes

Part Number	Fiber Type	Rear Connectivity	Front Connectivity	Number of Fibers	Fibers Per RU	Polarity	Enclosure/Panel Required
FHCZO-16-C2U	OM4	(2) x MPO-12 male	(8) x CS	16	192	Universal	FLEX**06
FHC9N-16-C2U	OS2	(2) x MPO-12 male	(8) x CS	16	192	Universal	FLEX**06
FHCZO-16F-C2U	OM4	(1) x MPO-24 male	(8) x CS	16	192	Universal	FLEX**06
FHC9N-16F-C2U	OS2	(1) x MPO-24 male	(8) x CS	16	192	Universal	FLEX**06
FHCZO-36-C3U	OM4	(3) x MPO-12 male	(18) x CS	36	216	Universal	FLEX**12
FHC9N-36-C3U	OS2	(3) x MPO-12 male	(18) x CS	36	216	Universal	FLEX**12

Figure 7: CS HD Flex™ Cassettes Options

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