



Network Connectivity Solutions

Optical Transceivers & Cables

Celestica offers a comprehensive selection of high-performance optical transceivers and cables engineered to meet the demands of modern data communication networks.

This qualified and compatible solution set delivers high bandwidth, reliable performance, and support for a wide range of connectivity requirements. Designed to enable faster, more energy-efficient next-generation infrastructure, these products are fully qualified for seamless interoperability with Celestica Networking Switch Solutions.

Suitable for a range of applications, such as:

- AI/ML Back-End and Front-End
- Data Center Leaf / Spine / Top-of-Rack
- Enterprise Aggregation / Core
- Enterprise Edge / Campus Access

Optics

Type	TLA#	Description	Data Rate	Form Factor	Connector	Max. Reach	Wave-length (nm)	Medium	Supported on Platforms
Optics	R4113-A9220-VR	800G OSFP112 2xVR4 (2xMPO12), Fin top (IHS)	800G	OSFP112	Dual MPO-12 (APC)	50 m	850	MMF OM4	DS5000 DS4101 DS4100
Optics	R4113-A9310-SR	800G OSFP112, SR8 (MPO-16), Fin top (IHS)	800G	OSFP112	MPO-16 (APC)	50m / 100m	850	MMF OM4 / OM5	DS5000 DS4101 DS4100
Optics	R4113-A9221-DR	800G OSFP112, 2xDR4 (2xMPO12), Fin top (IHS)	800G	OSFP112	Dual MPO-12 (APC)	500m	1310	SMF	DS5000 DS4101 DS4100
Optics	R4113-A9311-DR	800G OSFP112, DR8 (MPO-16), Fin top (IHS)	800G	OSFP112	MPO-16 (APC)	500m	1310	SMF	DS5000 DS4101 DS4100

Type	TLA#	Description	Data Rate	Form Factor	Connector	Max. Reach	Wave-length (nm)	Medium	Supported on Platforms
Optics	R4113-A9121-FR	800G OSFP112, 2xFR4 (2x duplex LC), Fin top (IHS)	800G	OSFP112	Dual Duplex LC	2km	CWDM4	SMF	DS5000 DS4101 DS4100
Optics	R4113-98210-BI	400G QS-FP-DD SR4.2 BiDi	400G	QSFP56-DD	Duplex LC	100m	850 & 908	MMF OM4	DS4000 DS4001
Optics	R4113-98210-SR	400G QS-FP-DD SR4	400G	QSFP56-DD	MPO-12 (APC)	100m	850	MMF OM4	DS4000 DS4001
Optics	R4113-98211-DR	400G QS-FP-DD DR4	400G	QSFP56-DD	MPO-12 (APC)	500m	1310	SMF	DS4000 DS4001
Optics	R4113-98111-ZB	400G QS-FP-DD ZR / ZR+ bright (high tx power)	400G / 300G / 200G / 100G	QSFP56-DD	Duplex LC	120km @400G (un-amp)	Tunable C-Band	SMF	DS4000 DS4001
Optics	R4113-98111-ZR	400G QS-FP-DD ZR / ZR+	400G / 200G / 100G	QSFP56-DD	Duplex LC	40km @400G (un-amp)	Tunable C-Band	SMF	DS4000 DS4001
Optics	R4113-75110-BI	100G QSFP28 SR1.2 BiDi	100G	QSFP28	Duplex LC	70m / 100m	850 & 908	MMF OM3 / OM4	DS2000 DS3000 DS3001
Optics	R4113-75210-SR	100G QSFP28 SR4	100G	QSFP28	MPO-12 (UPC)	70m / 100m	850	MMF OM3 / OM4	DS2000 DS3000 DS3001
Optics	R4113-75111-LD	100G QSFP28 LR4 (DML)	100G	QSFP28	Duplex LC	10km	LWDM4	SMF	DS2000 DS3000 DS3001
Optics	R4113-75111-LE	100G QSFP28 LR4 (EML)	100G	QSFP28	Duplex LC	10km	LWDM4	SMF	DS2000 DS3000 DS3001
Optics	R4113-75111-DR	100G QSFP28 DR1	100G	QSFP28	Duplex LC	500m	1310	SMF	DS2000 DS3000 DS3001
Optics	R4113-75111-ZR	100G QSFP28 ZR4	100G	QSFP28	Duplex LC	80km	LWDM4	SMF	DS2000 DS3000 DS3001
Optics	R4113-54210-SR	40G QSFP+ SR4	40G	QSFP+	MPO-12 (UPC)	300m	850	MMF OM3	DS2000 DS3000 DS3001
Optics	R4113-42110-SR	25G SFP28 SR	25G	SFP28	Duplex LC	70m	850	MMF OM3	DS5000* DS2000 DS3000** DS3001** ES1000 ES1010 ES1050 ES1500
Optics	R4113-42111-LR	25G SFP28 LR	25G	SFP28	Duplex LC	10km	1310	SMF	DS5000* DS2000 DS3000** DS3001** ES1000 ES1010 ES1050 ES1500

Type	TLA#	Description	Data Rate	Form Factor	Connector	Max. Reach	Wave-length (nm)	Medium	Supported on Platforms
Optics	R4113-31111-SR	10G SFP+ SR	10G	SFP+	Duplex LC	300m	850	MMF OM3	DS1000 DS2000 DS3000 DS3001 DS4000* DS4001* ES1000 ES1010 ES1050 ES1500
Optics	R4113-31111-LR	10G SFP+ LR	10G	SFP+	Duplex LC	10km	1310	SMF	DS1000 DS2000 DS3000 DS3001 DS4000* DS4001* ES1000 ES1010 ES1050 ES1500
Optics	R4113-10111-LR	1G SFP LR / LX	1G	SFP	Duplex LC	10km	1310	SMF	DS1000 ES1000 ES1010 ES1050 ES1500 DS2000 DS3000* DS3001* DS4000* DS4001*
Adapter	R4113-0250P-AP	QSFP to QS-FP-DD adapter	800G / 400G / 100G	QSFP112	NA	NA	NA	NA	DS5000
Adapter	R4113-1470C-AP	QSFP to SFP adapter	25G / 10G	QSFP28 / QSFP+	NA	NA	NA	NA	DS2000 DS3000 DS3001

* On management port

** With Adapter

Cables

Type	TLA#	Description	Data Rate	Form Factor	Gauge	Length	Mode	Medium	Supported Platforms
AOC	R4113-98X12-10	400G QS-FP-DD, 10m	400G	QSFP56-DD	NA	10 m	1:1	Optical	DS4000 DS4001
AOC	R4113-A9X12-10	800G OSFP 10m	800G	OSFP112	NA	10 m	1:1	Optical	DS5000 DS4101 DS4100
DAC	R4113-A9A11-04	800G OSFP 4m, 26 AWG	800G	OSFP112	26 AWG	4 m	1:1	Copper	DS5000
DAC	R4113-A9A11-02	800G OSFP 2m, 26 AWG	800G	OSFP112	26 AWG	2m	1:1	Copper	DS5000 DS4101 DS4100

Type	TLA#	Description	Data Rate	Form Factor	Gauge	Length	Mode	Medium	Supported Platforms
DAC	R4113-98B11-02	400G QS-FP-DD, 2m, 28 AWG	400G	QSFP56-DD	28 AWG	2m	1:1	Copper	DS4000 DS4001
DAC	R4113-75C11-03	100G QSFP28 to 100G QSFP28, 3m, 30AWG	100G	QSFP28	30 AWG	3m	1:1	Copper	DS2000 DS3000 DS3001
DAC	R4113-75C21-03	100G QSFP28 to 2x50G QSFP28, 3m, 30AWG	100G	QSFP28	30 AWG	3m	1:2	Copper	DS2000 DS3000 DS3001
DAC	R4113-75C41-03	100G QSFP28 to 4x25G SFP28, 3m, 30AWG	100G	QSFP28 - SFP28	30 AWG	3m	1:4	Copper	DS2000 DS3000 DS3001
DAC	R4113-42C11-03	25G SFP28 to 25G SFP28, 3m, 30 AWG	25G	SFP28	30 AWG	3m	1:1	Copper	DS2000 ES1000 ES1010 ES1050 ES1500
DAC	R4113-31C11-03	10G SFP+ to 10G SFP+ 3m, 30AWG	10G	SFP+	30 AWG	3m	1:1	Copper	DS1000 DS2000 ES1000 ES1010 ES1050 ES1500

NOS Compatibility & Support

	Celestica SONiC	Broadcom SONiC	Community SONiC	
Celestica Optics	Supported	Yes	Yes	Maybe*
	Support by Celestica	Yes	Yes	No
	Celestica Warranty	Yes	Yes	Yes
3rd Party Optics	Supported	Maybe*	Maybe*	Maybe*
	Support by Celestica	No	No	No
	Celestica Warranty	No	No	No

* All switch ports are MSA compliant and are not locked-in by software

Reference Section:

Typical Optical Cable / Jumper Configurations

Optics Type on End A	Optics Type on End B	Required optical fiber jumpers				Application
		Connector type End A	Connector type End B	Fiber type	Required quantities	
800G OSFP 2xDR4	800G OSFP 2xDR4	MPO12, APC, Female	MPO12, APC, Female	OS2	2	Full 800G Bandwidth
800G OSFP 2xVR4	800G OSFP 2xVR4	MPO12, APC, Female	MPO12, APC, Female	OM4	2	Full 800G Bandwidth
800G OSFP 2xFR4	800G OSFP 2xFR4	Duplex LC UPC	Duplex LC UPC	OS2	2	Full 800G Bandwidth
800G OSFP DR8	800G OSFP DR8	MPO16, APC, Female	MPO16, APC, Female	OS2	1	Full 800G Bandwidth
800G OSFP VR8 (or SR8)	800G OSFP VR8 (or SR8)	MPO16, APC, Female	MPO16, APC, Female	OM4	1	Full 800G Bandwidth
800G OSFP 2xDR4	400G QSFP-DD / OSFP / QSFP112 DR4	MPO12, APC, Female	MPO12, APC, Female	OS2	2	Breakout to 2x 400G
800G OSFP 2xVR4	400G QSFP-DD / OSFP / QSFP112 SR4	MPO12, APC, Female	MPO12, APC, Female	OM4	2	Breakout to 2x 400G
800G OSFP 2xFR4	400G QSFP-DD / OSFP / QSFP112 FR4	Duplex LC UPC	Duplex LC UPC	OS2	2	Breakout to 2x 400G
800G OSFP DR8	400G QSFP-DD / OSFP / QSFP112 DR4	MPO16, APC, Female	2x MPO12, APC, Female	OS2	1	Breakout to 2x 400G
800G OSFP VR8 (or SR8)	400G QSFP-DD / OSFP / QSFP112 SR4	MPO16, APC, Female	2x MPO12, APC, Female	OM4	1	Breakout to 2x 400G
800G OSFP 2xDR4	200G QSFP112 DR2	MPO12, APC, Female	2x MPO12, APC, Female	OS2	2	Breakout 800G to 4x 200G
800G OSFP DR8	200G QSFP112 DR2	MPO12, APC, Female	4x MPO12, APC, Female	OS2	1	Breakout 800G to 4x 200G
800G OSFP 2xDR4	100G QSFP28 DR1	MPO12, APC, Female	4x Duplex LC UPC	OS2	2	Breakout 800G to 8x 100G
800G OSFP DR8	100G QSFP28 DR1	MPO12, APC, Female	8x Duplex LC UPC	OS2	1	Breakout 800G to 8x 100G
400G QSFP-DD DR4	400G QSFP-DD / OSFP / QSFP112 DR4	MPO12, APC, Female	MPO12, APC, Female	OS2	1	Full 800G Bandwidth
400G QSFP-DD DR4	100G QSFP28 DR1	MPO12, APC, Female	4x Duplex LC UPC	OS2	1	Breakout 400G to 4x 100G
100G QSFP28 SR4	25G SFP28 SR	MPO12, APC, Female	Duplex LC UPC	OM4	1	Breakout 100G to 4x 25G
40G QSFP+ SR4	10G SFP+ SR	MPO12, APC, Female	Duplex LC UPC	OM4	1	Breakout 40G to 4x 10G

Naming convention for optics:

The industry follows the following naming conventions

[Speed/Data Rate] + [Form Factor] [Data Rate/ Electrical lane] +
[Distance/Fiber Type] [Number of optical lanes] + [Additional Features]

For example:

400G QSFP-DD56 DR4 MPO12

Here:

Speed/Data Rate = 400G

Form Factor = QSFP-DD

Data Rate/ Electrical lane = 56G; hence will need 8 electrical lane each of 56G to deliver a total data rate of 400G

Distance, Fiber Type & Number of optical lanes = DR4; here DR indicates the PMD type and a distance of 500m. The number "4" indicates there are 4 optical lanes (channels) each of 112G to deliver a total data rate of 400G.

Additional features = MPO12; indicates the type of optical connector

Physical Medium Dependent (PMD) Type:

Following table list the typical PMD types which helps classifying distance, fiber type, wavelengths etc. of the optics.

PMD Type	Decoder	Distance	Medium	Comment
SR	Short Reach	Up to 100 m, depends on data rate	MMF	Typically parallel for higher data rates
DR	Datacenter or Distance Reach	500 m	SMF	Typically parallel for higher data rates
FR	Far Reach	2 km	SMF	uses WDM
LR	Long Reach	10 km	SMF	uses WDM
ER	Extended Reach	40km	SMF	uses WDM
ZR	Zero Dispersion	80 km or more depends detection technology	SMF	uses WDM or DWDM

Pull tab or latch ring colors convention:

Standardized pull tab / latch ring color convention is used for physically identifying the different types of optics.

Pull tab or latch ring color	Form factor	PMD Type	Fiber type
Black	SFP / SFP+ / SFP28	SR	MMF
Beige	QSFP+ / QSFP28 / QSFP-DD / OSFP	SR	MMF
Yellow	QSFP28 / QSFP-DD / OSFP	DR	SMF
Green	QSFP28 / QSFP-DD / OSFP	FR	SMF
Blue	SFP / SFP+ / SFP28 / QSFP+ / QSFP28 / QSFP-DD / OSFP	LR	SMF
Red	QSFP+ / QSFP28 / QSFP-DD / OSFP	ER	SMF
White	QSFP+ / QSFP28 / QSFP-DD / OSFP	ZR	SMF

Optical Cable / Jumper color convention:

Standardized fiber jacket color convention is used for physically identifying the different types of optical fiber cables / jumpers / patch cords.

Fiber Type	Color code
OM2 50 / 125um Multimode	Orange
OM3 50 / 125um Multimode	Aqua
OM4 50 / 125um Multimode	Aqua / Magenta
OM5 50 / 125um Multimode	Lime Green
OS1 / OS2 ~9 / 1125um Single Mode	Yellow
Polarization Maintaining Single Mode	Blue