



400G and 200G (50G-PAM4) and 100G (25G-NRZ) Cables and Transceivers Parts List using QSFP-DD, QSFP56, QSFP28, SFP28

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Part List Using 50G-PAM4 Modulation for 400GbE Ethernet Only QSFP-DD





- Click on the green bold underlined part numbers to open the Product Specifications for that specific product.
- See also the [user guide](#) for configuring these transceivers and cables.

400G DAC Cables: 50G-PAM4 Ethernet Only (QSFP-DD, QSFP-DD-to-QSFP56)

Name	Form Factor	Configuration	Length (m)	Part Number* (link to product spec)	NVIDIA SKU	AWG	Figure
400GbE DAC	QSFP-DD to QSFP-DD	8x 50G-PAM4 to 8x 50G-PAM4	0.5	MCP1660-W00AE30	980-9135R-00W00A	30	
			1	MCP1660-W001E30	980-9135O-00W001	30	
			1.5	MCP1660-W01AE30	980-9135S-00W01A	30	
			2	MCP1660-W002E26	980-9135P-00W002	26	
			2.5	MCP1660-W02AE26	980-9135T-00W02A	26	

400G DAC Splitter Cables: 50G-PAM4 Ethernet Only (QSFP-DD-to-QSFP56)


400GbE DAC 1:2 200Gb/s Splitter	QSFP-DD to	8x 50G-PAM4 to Dual 4x 50G-PAM4	1	<u>MCP7H60-W001R30</u>	980-91A3S-00W001	30			
	2x QSFP56		2			<u>MCP7H60-W002R26</u>		980-91A3W-00W02A	26
			2.5			<u>MCP7H60-W02AR26</u>		980-91A3W-00W02A	26
400GbE DAC 1:4 100Gb/s Splitter	QSFP-DD to	8x 50G-PAM4 to Quad 2x 50G-PAM4	1	<u>MCP7F60-W001R30</u>	980-9148Y-00W001	30			
	4x QSFP56		2			<u>MCP7F60-W002R26</u>		980-9148Z-00W002	26
			2.5			<u>MCP7F60-W02AR26</u>		980-91822-00W02A	26

Notes:

- * Green bold underlined part numbers link to the specific Product Specifications (aka hardware datasheet).
- QSFP-DD end for Spectrum-3 or Spectrum-4 Ethernet only switches.
- Split ends for ConnectX-7/QSFP112, ConnectX-6/QSFP56, BlueField-2/QSFP56, or BlueField-3/QSFP112.
- Power consumption <0.1-Watt.
- Cable jackets are LSZH (Low-Smoke-Zero-Halogen).

400G AOC Cables: 50G-PAM4 Ethernet Only (QSFP-DD-to-QSFP-DD)



Name	Form Factor	Configuration	Length (m)	Part Number*	NVIDIA SKU	Figure
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400GbE AOC	QSFP-DD to QSFP-DD	8x 50G-PAM4 to 8x 50G-PAM4	3	C-DQ8FNM003-H0-M C-DQ8FNM005-H0-M C-DQ8FNM010-H0-M C-DQ8FNM020-H0-M C-DQ8FNM050-H0-M	980-9I08K-00W003 980-9I08M-00W005 980-9I08O-00W010 980-9I08Q-00W020 980-9I08S-00W050	
			5			
			10			
			20			
			50			

Notes:



- * Green bold underlined part numbers link to the specific Product Specifications (aka hardware datasheet).
- Power consumption 4.4 Watts.
- Fiber jacket: OSFP.

400G Transceivers: 50G-PAM4-based for Spectrum SN4xxx & SN5400 Ethernet Switches (QSFP-DD)

Name	Form Factor	Configuration	Optical Connector	Reach	Part Number*	NVIDIA SKU	Figure
400Gb/s SR8 Multimode	QSFP-DD	8x50G-PAM4 electrical to 8x50G-PAM4 optical Parallel	MPO-16 APC	100m	T-DQ8FNS-N00-M	980-9I530-00W000	
400Gb/s DR4 Single mode	QSFP-DD	8x50G-PAM4 electrical to 4x100G-PAM4 optical Parallel	MPO-12 APC	500m	MMS1V00-WM	980-9I16Y-00W000	

400Gb/s FR4 Single mode	QSFP-DD	8x50G-PAM4 electrical to 4x100G-PAM4 optical Multiplexed	2-fiber duplex LC	2km	<u>MMS1V50-WM</u>	980-91160-00W00 0	
400Gb/s LR4 Single mode	QSFP-DD	8x50G-PAM4 electrical to 4x100G-PAM4 optical Multiplexed	2-fiber duplex LC	10km	<u>MMS1V90-WR</u>	980-91363-00W00 0	

100Gb/s and 200Gb/s Transceivers Often Used with 400G DR4 or SR8 for 1:2 or 1:4 Split Ends

100Gb/s DR1 Single mode	QSFP28	1x100G-PAM4 optical to 4x25G-NRZ electrical	2-fiber duplex LC	500m	<u>MMS1V70-CM</u> (Used with 400G DR4)	980-91042-00C000	
200Gb/s SR4 Multimode	QSFP56	4x50G-PAM4 electrical to 4x50G-PAM4 optical Parallel	MPO-12 UPC	100m	<u>MMA1T00-HS</u> (Used with 400G SR8)	980-91175-00HS00	

Notes:

- * Green bold underlined part numbers link to the specific Product Specifications (aka hardware datasheet).
- Used as 2x split ends with 400G SR8. MPO-16/APC-to-2xMPO-12/UPC splitter fibers are not supplied by NVIDIA.
- Used as 4x split ends with 400G DR4. MPO-12/APC-to-4xLC splitter fibers are not supplied by NVIDIA.
- MFP7E30 fibers can be used with 400GbE DR4 8x50G-PAM4 to link 400G DR4s and twin-port OSFPs.
- QSFP-DD SR8 supports 2x200G split to 200G SR4 QSFP56 and 2x 4x25G-NRZ.
- QSFP-DD DR4 supports split to 4x100G DR1.

Part List Using 50G-PAM4 Modulation for 200Gb/s InfiniBand and/or Ethernet QSFP56


This section profiles 4-channel, 200Gb/s, QSFP56-based cables and transceivers using 50G-PAM4 modulation for Ethernet and/or InfiniBand from 0.5m-to-2km for use in 200GbE and HDR switches, ConnectX-6 adapters, and BlueField-2 DPUs -- all use QSFP56 connectors for DACs, AOCs, and transceivers.




- Some parts support both InfiniBand and Ethernet protocols, and some are protocol specific.
- InfiniBand HDR cables and transceivers can be used in NVIDIA-only Ethernet systems, but not the reverse.



- Click on the green bold underlined part numbers to open the Product Specifications for that specific product.
- See also the [user guide](#) for configuring these transceivers and cables.

200Gb/s Direct Attach Copper (DAC) 50G-PAM4 InfiniBand and/or Ethernet

Name	Form Factor	Configuration	Length (m)	AWG	Part Number*	NVIDIA SKU	Figure
200G HDR InfiniBand Only							
HDR	QSFP56	4x 50G-PAM4	0.5	30	MCP1650-H00AE30	980-9154A-00H00A	
			1	30	MCP1650-V001E30	980-9154C-00V001	
			1.5	30	MCP1650-V01AE30	980-9154I-00V01A	
			2	30	MCP1650-V002E26	980-9154D-00V002	
200GbE Ethernet Only							



200GbE	QSFP56	4x 50G-PAM4	0.5	30	<u>MCP1650-V00AE30</u>	980-9154H-00V00A	
			1	30	MCP1650-V001E30	980-9154C-00V001	
			1.5	30	MCP1650-V01AE30	980-9154I-00V01A	
			2	26	MCP1650-V002E26	980-9154D-00V002	
			2.5	26	MCP1650-V02AE26	980-9154L-00V02A	
200G HDR InfiniBand and 200GbE Ethernet							
HDR 1:2 HDR100 splitter	QSFP56 to 2x QSFP56	4x 50G-PAM4 to Dual 2x50G-PAM4	1	30	<u>MCP7H50-H001R30</u>	980-9139E-00H001	
			2	26	MCP7H50-H002R26	980-9199F-00H002	
			2.5	26	MCP7H50-H02AR26	--	
200GbE Ethernet Only							
200Gb/s DAC 1:4 Splitter	QSFP56 to 4x SFP56	4x 50G-PAM4 to Quad 1x 50G-PAM4	1	30	<u>MCP7H70-V001R30</u>	980-91A3X-00V001	
			2	26	MCP7H70-V002R26	980-91A3Y-00V002	
			2.5	26	MCP7H70-V02AR26	980-91431-00V02A	

Notes:

- * Green bold underlined part numbers link to the specific Product Specifications (aka hardware datasheet).

200Gb/s Active Optical Cables (AOC) 50G-PAM4 InfiniBand and Ethernet

Name	Form Factor	Configuration	Watts	Length (m)	Part Number*	NVIDIA SKU	Figure
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Quantum HDR InfiniBand and Spectrum Ethernet							
HDR AOC	QSFP56	4x 50G-PAM4	5W	3	<u>MFS1S00-H003V</u>	980-91457-00H003	
				5	MFS1S00-H005V	980-9145D-00H005	
				10	MFS1S00-H010V	980-9145J-00H010	
				15	MFS1S00-H015V	980-9145O-00H015	
				20	MFS1S00-H020V	980-9145T-00H020	
				30	MFS1S00-H030V	980-9144O-00H030	
				50	MFS1S00-H050V	980-91447-00H050	
				100	MFS1S00-H100V	980-9144H-00H100	
				130	MFS1S00-H130V	980-9144K-00H130	
				150	MFS1S00-H150V	980-9144N-00H150	
HDR to 2x HDR100 Splitter	QSFP56 to 2x QSFP56	4x 50G-PAM4 to Dual 2x 50G-PAM4	5W 3.5W	3	<u>MFS1S50-H003V</u>	980-91445-00H003	
				5	MFS1S50-H005V	980-91969-00H005	
				10	MFS1S50-H010V	980-9196D-00H010	
				15	MFS1S50-H015V	980-9196H-00H015	
				20	MFS1S50-H020V	980-9196L-00H020	
				30	MFS1S50-H030V	980-9196P-00H030	

Notes:

- * Green bold underlined part numbers link to the specific Product Specifications (aka hardware datasheet).

200Gb/s Optical Transceivers 50G-PAM4 InfiniBand and/or Ethernet

Name	Form Factor	Configuration	Optical Connector	Reach, Watts	Wave length	Part Number*	NVIDIA SKU	Figure
HDR InfiniBand and 200GbE Ethernet								



HDR 200GbE FR4	QSFP56	4x 50G-PAM4 electrical 4x 50G-PAM4 optical Multiplexed	2-fiber duplex LC	2km 5.5W	1310nm single mode	<u>MMS1W50-HM</u>	980-91055-00H000	
HDR InfiniBand Only								
HDR SR4	QSFP56	4x 50G-PAM4 electrical 4x 50G-PAM4 optical Parallel	8-fiber, MPO-12/UPC	100m 4.5W	850nm multi-mode	<u>MMA1T00-HS</u>	980-9117S-00HS00	
200GbE Ethernet Only								
HDR SR4	QSFP56		8-fiber, MPO-12/UPC	100m 4.5W	850nm multi-mode	<u>MMA1T00-VS</u>	980-9120T-00V000	

Notes:

- * Green bold underlined part numbers link to the specific Product Specifications (aka hardware datasheet).

Part List Using 25G-NRZ Modulation for 100Gb/s InfiniBand and/or Ethernet QSFP28



LinkX 100Gb/s Active Optical Cables (AOC) InfiniBand or Ethernet QSFP28



Name	Form Factor	Configuration	Power Watts	Length (m)	Part Number*	NVIDIA SKU	Figure
InfiniBand Only							
100G AOC	QSFP28 to QSFP28	4x 25G-NRZ	2.8W	1	MFA1A00-E001	980-9I13D-00E001	
				3	MFA1A00-E003	980-9I13F-00E003	
				10	MFA1A00-E010	980-9I13O-00E010	
				15	MFA1A00-E015	980-9I13S-00E015	
				20	MFA1A00-E020	980-9I13V-00E020	
				30	MFA1A00-E030	980-9I13Y-00E030	
				50	MFA1A00-E050	980-9I133-00E050	
				100	MFA1A00-E100	980-9I135-00E100	
Ethernet Only							
100G AOC	QSFP28 to QSFP28	4x 25G-NRZ	2.8W	3	MFA1A00-C003	980-9I13S-00C003	
				10	MFA1A00-C010	980-9I134-00C010	
				15	MFA1A00-C015	980-9I13A-00C015	
				20	MFA1A00-C020	980-9I13F-00C020	
				30	MFA1A00-C030	980-9I13N-00C030	
				50	MFA1A00-C050	980-9I13O-00C050	
				100	MFA1A00-C100	980-9I13B-00C100	

Notes:

- * Green bold underlined part numbers link to the specific Product Specifications (aka hardware datasheet).
- AOCs have Low-Smoke-Zero-Halogen cable jackets (LSZH).

LinkX 100Gb/s Direct Attached Cables (DAC) InfiniBand or Ethernet QSFP28



Name	Form Factor	Configuration		Length (m)	AWG	Part Number*	NVIDIA SKU	Figure
Straight InfiniBand Only								
EDR DAC	QSFP28	4x 25G-NRZ		1	30	<u>MCP1600-E001E30</u>	980-9162Q-00E001	
				1.5	30	MCP1600-E01AE30	980-91624-00E01A	
				2	30	MCP1600-E002E30	980-9162U-00E002	
				2.5	26	MCP1600-E02AE26	980-91627-00E02A	
				3	26	MCP1600-E003E26	980-9162W-00E003	
				5	26	MCP1600-E005E26	980-9162Z-00E005	
Straight Ethernet Only								
100G DAC	QSFP28	4x 25G-NRZ	CA-N	1	30	<u>MCP1600-C001E30N</u>	980-91620-00C001	
			CA-N	1.5	30	MCP1600-C01AE30N	980-9162C-00C01A	
			CA-N	2	30	MCP1600-C002E30N	980-9162V-00C002	
			CA-L	2.5	30	MCP1600-C02AE30L	980-9162I-00C02A	
			CA-L	3	30	MCP1600-C003E30L	980-91620-00C003	
			CA-L	5	26	MCP1600-C005E26L	980-91625-00C005	
Splitters Ethernet Only								





100GbE to 2x50GbE DAC Splitter	QSFP28 to 2x QSFP28	4x25G-NRZ 2x25G-NRZ	CA-N	1	30	<u>MCP7H00-G001R30N</u>	980-9199G-00C001	
			CA-N	1.5	30	MCP7H00-G01AR30N	980-9199X-00C01A	
			CA-N	2	30	MCP7H00-G002R30N	980-9199L-00C002	
			CA-L	2.5	30	MCP7H00-G02AR30L	980-91395-00C02A	
			CA-L	3	30	MCP7H00-G003R30L	980-9139R-00C003	
100GbE to 4x25GbE DAC Splitter	QSFP28 to 4x QSFP28	4x25G-NRZ 1x25G-NRZ	CA-N	1	30	<u>MCP7F00-A001R30N</u>	980-91486-00C001	
			CA-N	1.5	30	MCP7F00-A01AR30N	980-9148N-00C01A	
			CA-N	2	30	MCP7F00-A002R30N	980-9148B-00C002	
			CA-L	2.5	30	MCP7F00-A02AR30L	980-9148T-00C02A	
			CA-L	3	30	MCP7F00-A003R30L	980-9148H-00C003	
			CA-L	5	26	MCP7F00-A005R26L	980-9148J-00C005	

Notes:

- * Green bold underlined part numbers link to the specific Product Specifications (aka hardware datasheet).
- CA-N Ethernet enables no-FEC up to 2m. CA-L used for longer lengths with FEC 2.5 to 5m.
- AWG is the wire gauge 30AWG thin and 26AWG thicker.

LinkX 100Gb/s Optical Transceivers QSFP28

Name	Form Factor	Configuration	Optical Connector	Max Reach, Watts	Wave length	Part Number*	NVIDIA SKU	Figure
Ethernet and InfiniBand								
100G LR4	QSFP28	4x 25G-NRZ Multiplexed	2-fiber duplex LC	10km 3.5W	1310nm Single mode	<u>MMA1L10-CR</u>	980-9117P-00CR00	
100G CWDMA4	QSFP28	4x 25G-NRZ Multiplexed	2-fiber duplex LC	2km 3.5W	1310nm Single mode	<u>MMA1L30-CR</u>	980-9117Q-00CM00	


100G SR4	QSFP28	4x 25G-NRZ Parallel	8-fiber, MPO-12/UPC	100m 3.5W	850nm Multimode	<u>MMA1B00-C100D</u>	980-9I149-00CS00	
InfiniBand Only								
100G ER	QSFP28	4x 25G-NRZ Multiplexed	2-fiber duplex LC	40km	1310nm Single mode	SPQ-CE-ER-CDFL-M	980-9I53X-00C000	
100G SR4	QSFP28	4x 25G-NRZ Parallel	8-fiber, MPO-12/UPC	100m 3.5W	850nm Multimode	<u>MMA1B00-E100</u>	980-9I17L-00E000	
Ethernet Only								
100G DR1	QSFP28	4x 25G-NRZ electrical Gear boxed to 1x 100G-PAM4 optical	2-fiber duplex LC	500m 4.5W	1310nm Single mode	<u>MMS1V70-CM</u>	980-9I042-00C000	

Notes:

- * Green bold underlined part numbers link to the specific Product Specifications (aka hardware datasheet).

Part List Using 25G-NRZ Modulation for 25Gb/s Ethernet Only SFP28

LinkX 25Gb/s DAC SFP28

Name	Form Factor	Configuration		Length (m)	AWG	Part Number*	NVIDIA SKU	Figure
Ethernet Only								
25G DAC	SFP28	1x 25G-NRZ	CA-N	1	30	<u>MCP2M00-A001E30N</u>	980-9163L-00A001	
			CA-N	1.5	30	MCP2M00-A01AE30N	980-9163Z-00A01A	
			CA-N	2	30	MCP2M00-A002E30N	980-9163O-00A002	
			CA-L	2.5	30	MCP2M00-A02AE30L	980-91632-00A02A	
			CA-L	3	30	MCP2M00-A003E30L	980-9163S-00A003	
			CA-L	5	26	MCP2M00-A005E26L	980-9163V-00A005	



Notes:

- * Green bold underlined part numbers link to the specific Product Specifications (aka hardware datasheet).
- CA-N Ethernet enables no-FEC up to 2m. CA-L used for longer lengths with FEC 2.5m to 5m.
- AWG is the wire gauge 30AWG thin and 26AWG thicker.
- 25G AOCs are not offered.

LinkX 25Gb/s Optical Transceivers SFP28

Name	Form Factor	Configuration	Optical Connector	Max Reach	Wave length	Part Number*	NVIDIA SKU	Figure
25G LR	SFP28	1x 25G-NRZ	2-fiber duplex LC	10km	1310nm Single mode	MMA2L20-AR	980-91094-00AR00	
25G SR	SFP28	1x 25G-NRZ	2-fiber duplex LC	100m	850nm Multimode	MMA2P00-AS	980-91595-00AM00	

LinkX QSFP-to-SFP Port Adaptors

Name	Form Factor	Configuration	Part Number*	NVIDIA SKU	Figure
QSA28 Port Adaptor	QSFP28	Adapts SFP28 devices into QSFP28 cages	MAM1Q00A-QSA28	980-91781-00A000	
QSA+ Port Adaptor	QSFP+	Adapts SFP+ devices into QSFP+ cages	MAM1Q00A-QSA	980-9171G-00J000	

Notes:

- * Green bold underlined part numbers link to the specific Product Specifications (aka hardware datasheet).

Where to Find More LinkX Documentation

This parts list is to be used in conjunction with other documents located in folders in docs.nvidia.com/networking/ > Interconnect. This site is where the following LinkX cables and transceivers documents are provided.

LinkX Overview Documents:	Review of parts, important notes, and configuration details for linking to NVIDIA switches and adapters <ul style="list-style-type: none">• LinkX Cables and Transceivers Guide to Key Technologies• LinkX User Guide for 400Gb/s 100G-PAM4 OSFP & QSFP112-based Cables and Transceivers• LinkX User Guide for 400Gb/s and 200Gb/s using 50G-PAM4 and 100Gb/s using 25G-NRZ Modulation Cables and Transceivers
Configuration Maps:	Picture and part number-based PowerPoint® slides for every configuration with NVIDIA switches, network adapters, and DGX GPU systems for 100G-PAM4, 50G-PAM4, 25G-NRZ cables and transceivers <ul style="list-style-type: none">• Configuration Maps
Parts Lists:	Tables summarize by speed, form factor, connector, power, reach, etc. and hyperlinks to individual products specs <ul style="list-style-type: none">• 400Gb/s (100G-PAM4) Transceivers and Fiber Parts List• 400Gb/s and 200Gb/s (50G-PAM4) and 100Gb/s (25G-NRZ) Cables and Transceivers Parts List using QSFP-DD, QSFP56, QSFP28, SFP28 (this document)
Product Specifications:	10-to-16-page detailed hardware datasheets with physical, thermal, electrical, and optical specifications for each product <ul style="list-style-type: none">• docs.nvidia.com/networking/ > Interconnect > <i>select speed and type</i>
Additional Docs:	<ul style="list-style-type: none">• NVIDIA Cable Management Guidelines and FAQ

Document Revision History

Version	Date	Changes
1.0	August 2023	Initial release

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