



NVIDIA MFP7E40-Nxxx Single mode 1:2 Fiber Splitter Cable Product Specifications

Table of Contents

1	Introduction	3
1.1	Key Features	3
1.2	Applications	4
2	Application	5
2.1	Connector Details	5
2.2	Handling Precautions	7
3	Specifications	9
3.1	Absolute Maximum Specifications	9
3.1.1	Environmental Specifications	9
3.2	Mechanical and Optical Specifications	9
3.3	Interconnection Scheme	10
3.4	Labels	10
3.4.1	Label Legend	11
3.4.2	Regulatory Compliance and Classification	12
3.4.3	FCC Class A Notice	12
4	Ordering Information	13
5	References	14
6	Document Revision History	15

1 Introduction

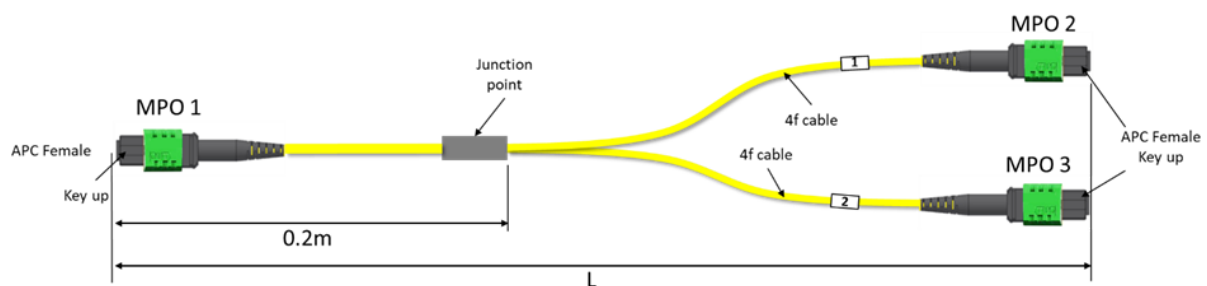
The NVIDIA MFP7E40-Nxxx, is a single mode, 4-channel-to-two 2-channel splitter fiber cable. It uses 8 active fibers to transmit light and 4 inactive fibers used as strength members enabled by the Multiple-Push-On, 12 fiber, Angled-Polished-Connectors (MPO-12/APC) optical connectors. The Angled Polished Connector has a 7-degree polish angle to deflect internal optical back reflections from entering the transceiver and distorting the signal quality.

The 4-channel end is inserted into a Twin port OSFP, 800Gb/s transceiver. The 2-channel ends are inserted into two, single port 400Gb/s OSFP and/or QSFP112 transceivers which with only 2 fibers results in 200G rates. Two splitter fiber cables are used in the Twin port OSFP transceiver enabling four, 2-channel ends to four transceivers.

The fibers are “crossover”, Type-B cables enabling directly attaching two transceivers together and aligning the transmit laser fiber on pin 1 to “crosses over” to align with pin 12 of the opposite fiber end transceiver photodetector.

Typically use is linking OSFP switches to in ConnectX-7® network adapters and/or BlueField-3® Data Processing Units (DPUs) in compute and storage servers.

Rigorous cable production testing ensures best out-of-the-box installation experience, performance, and durability. Mellanox optical solutions provide short, medium, and long reach scalability for all topologies, utilizing innovative optical technologies to enable high signal integrity and reliability.



Images are for illustration purposes only. Product labels, colors, and lengths may vary.

1.1 Key Features

- Flexible round outer jacket for easier installation/routing
- Push-pull latching for quick release
- NVIDIA Green connector shell denoting MPO/APC
- Female-to-Female connectors
- 9/125 μm Single Mode fibers
- Yellow color cable jacket
- Up to 50 m reach
- Telcordia GR-1435 compliant
- IEC Standard Connectors:
- MPO: IEC 61754-7 and ANSI/TIA/EIA 604-5-199

- OFNR/LSZH (low smoke zero halogen) jacket
- Supports InfiniBand, Ethernet and NVLink protocols
- Use with 400G OSFP or QSFP112 transceivers to achieve 200Gb/s using 2 fibers

1.2 Applications

- Optical short-reach high speed links in data centers
- Server/storage links to switches

2 Application

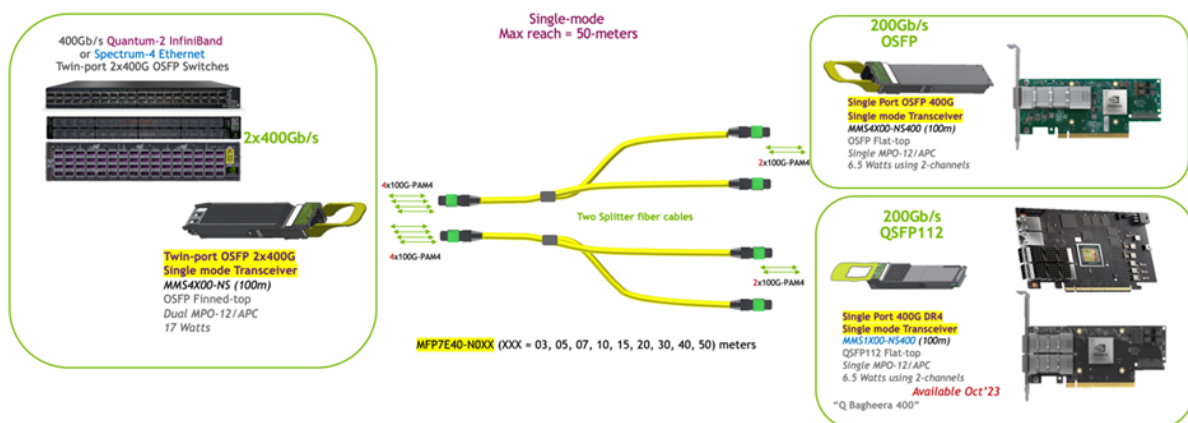
The MFP7E40 Fiber Cable is intended for interconnection of 2 compute or storage servers sharing a port in a high-speed switch in the data center. The cable mates with pluggable optical 400GbE/NDR transceivers such as NVIDIA's MMX4S00-NS twin-port OSFP DR8 transceiver for InfiniBand and Ethernet systems in the switch end, and MMS4X00-NS400 (OSFP) or MMS1X00-NS400 (QSFP112) in ConnectX-7 network adapters and BlueField-3 DPUs.

- Twin port OSFP transceivers must use the same fiber type in both MPO-12/APC ports (straight or 1:2 splitter) and cannot be mixed.
- 50-meter specification assumes two optical patch panels in the link with total of 4 optical connector junctions
- Single-mode fibers use an industry standard yellow fiber jacket color
- Jacket is Low-Smoke, Zero-Halogen (LSZH) type to reduce toxic smoke in event of a fire.
- The connector has an NVIDIA green connector shell denoting MPO-12/APC. The MPO-12/UPC typically a blue shell for Ultra-flat Polish Connectors.
- MPO-12/APC connectors cannot be used with MPO-12/UPC Ultra-flat Polished Connectors which are typically used in 4x25G-NRZ (100G) and 4x50G-PAM4 (200G) transceivers as the fiber polishes are different and will not mate.
- The split ends can support either OSFP and/or QSFP112 transceivers at the same time depending on the adapter type.

The MFP7E40-Nxxx Fiber Splitter Cable Application:

400G IB/EN SWITCH-TO- 4 CONNECTX-7 AND BLUEFIELD-3

2x400G to Four 200G Links



2.1 Connector Details

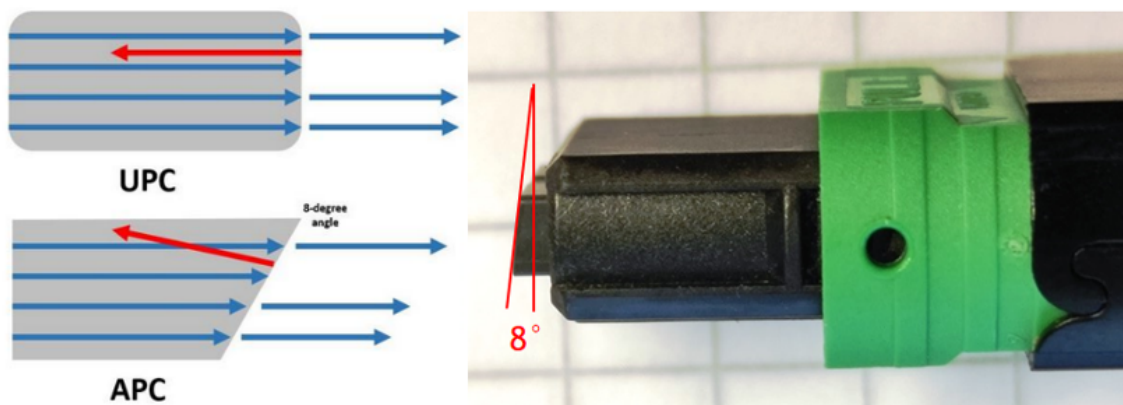
Transceivers have alignment pins for precise positioning of the cable connector against the optical beams. The fiber cable has alignment holes matching the transceiver's pins.

Single-Mode Fiber Cable with MPO/APC Connectors:



The MPO connectors are the angle-polished (APC) type which provide minimal reflection of the optical signal for optimal signal integrity.

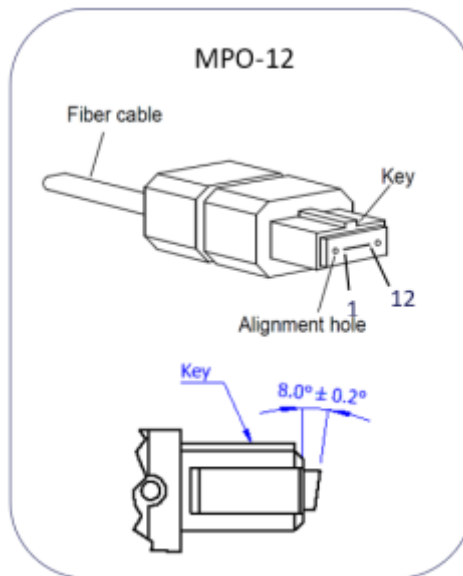
Detail of the MPO/APC Connector:



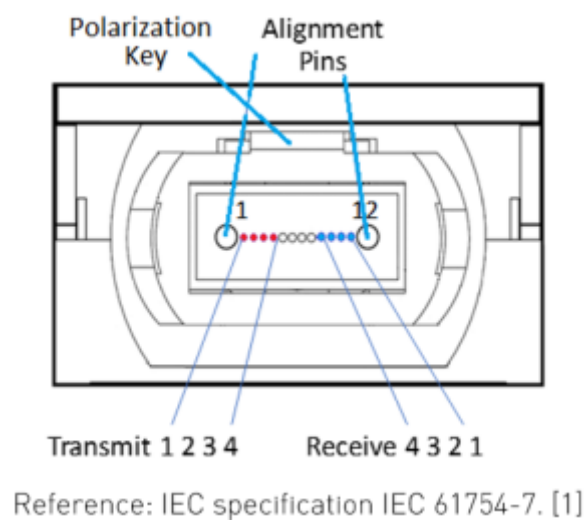
The MFP7E30-Nxxx fiber cables have 8 individual fibers, 4 in each direction. A positioning key together with the alignment pins define the fiber position numbering scheme

Transceivers have alignment pins for precise positioning of the cable connector against the optical beams. The fiber cable has alignment holes matching the transceiver's pins.

MPO Connector with Alignment Holes and Positioning Key:



Optical Receptacle and Lane Assignment (transceiver, front view):



2.2 Handling Precautions

The cable is shipped with dust caps which protect the connectors from contamination during shipment and installation. The caps should stay in place until the cable is plugged in at the time of installation. Prior to insertion of the fiber cable into the transceiver, **always clean both the cable and the transceiver connector** using optical connector cleaners to remove any accidental contamination. Liquids must not be applied.

Fiber cables have no conductive parts and are not ESD sensitive. However, they plug into ESD sensitive transceivers. Due to that, standard ESD handling precautions must be observed during installation.

MPO Connector with Dust Cap



Optical Connector Cleaning Tool



3 Specifications

3.1 Absolute Maximum Specifications

Absolute maximum ratings are those beyond which damage to the device may occur.

Prolonged operation between the operational specifications and absolute maximum ratings is not intended and may cause permanent device degradation.

3.1.1 Environmental Specifications

This table shows the environmental specifications for the product.

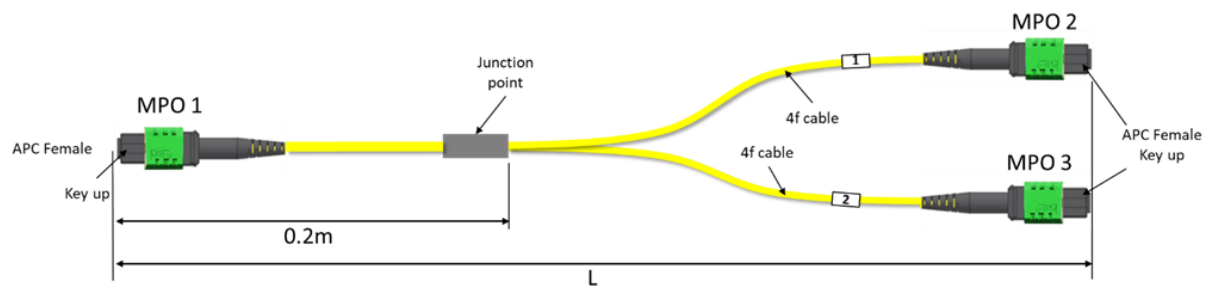
Parameter	Min	Max	Units
Storage temperature	-40	85	°C
Operating temperature	0	70	°C
Humidity	10	85	%RH

3.2 Mechanical and Optical Specifications

Table 2: Mechanical Specifications for MFP7E20-Nxxx

Parameter	Note	Value	Units
Tolerance on length,	Length < 10 m Length ≥ 10 m	-0/+0.2 -0/+0.5	m m
Number of Fibers		8	
Cable diameter		3 ± 0.2	mm
Minimum bending radius	Anywhere on the cable	30	mm
Cable Jacket		Yellow, LSZH-OFNR	
Topology	Crossed	Type B	
Connectors and connector end face	Usconnect MTP Elite or Senko MPO/APC Low loss	APC, female	
Insertion Loss, connector end face, IL	L=length {m}	≤0.35+0.0004 x L	dB
Return Loss, connector end face, RL		≥ 60	dB

Definition of Cable Length and location of splicing point:



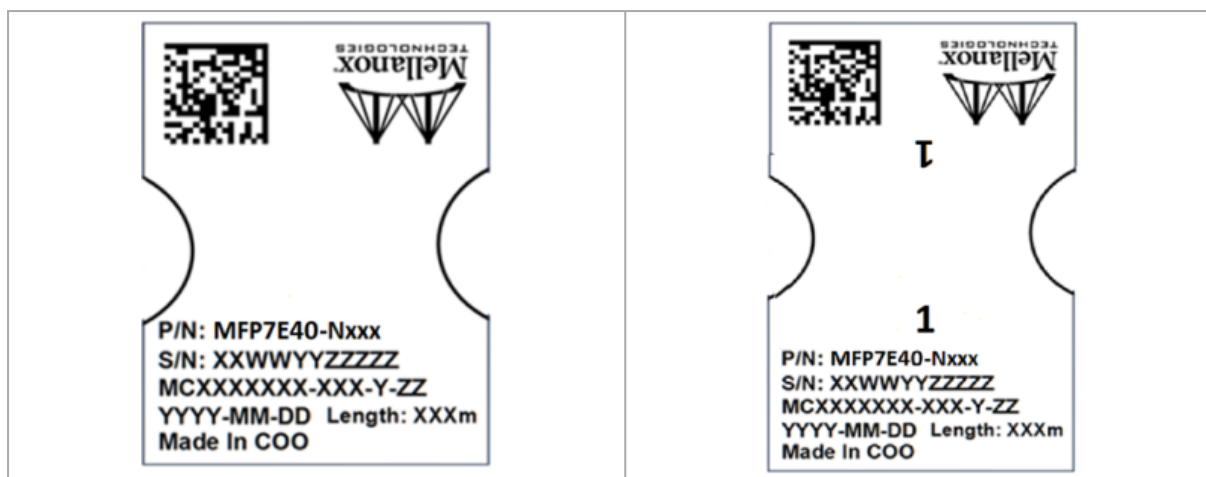
3.3 Interconnection Scheme

The fiber which connects transceiver A's lane 1 must end at transceiver B's lane 12 at the other end of the link. This calls for a crossed MPO cable, commonly referred to as Type B.

MPO1 MPO/APC Female	Connection	MPO2 MPO/APC Female	MPO3 MPO/APC Female
1	----->	12	-
2	----->	11	-
3	----->	-	12
4	----->	-	11
5	Not Connected	-	-
6	Not Connected	-	-
7	Not Connected	-	-
8	Not Connected	-	-
9	<-----	-	2
10	<-----	-	1
11	<-----	2	-
12	<-----	1	-

3.4 Labels

Below is an example of the labels that are wrapped on each cable end.



Tail '1' label shown as example. The other tail is marked '2'.



Images are for illustration purposes only. Product labels, colors, and lengths may vary.

3.4.1 Label Legend

Symbol	Meaning	Notes
YY	Year of manufacturing	2 digits
WW	Week of manufacturing	2 digits
XX	Manufacturer site	2 characters
ZZZZZ	Serial number	5 digits for serial number, starting from 00001. Reset at start of week to 00001.
Miscellaneous		
ZZ	HW and SW revision	2 alpha-numeric characters
YYYY	Year of manufacturing	4 digits
MM	Month of manufacturing	2 digits
DD	Day of manufacturing	2 digits
COO	Country of origin	E.g. China or Malaysia

Symbol	Meaning	Notes
XXm	Cable length	Meter
	Quick response code	Serial number (MTYYWWXX SSSSS)

Note: The serial number and barcode are for NVIDIA internal use only.

3.4.2 Regulatory Compliance and Classification

The laser module is classified as class I according to IEC 60825-1, IEC 60825-2 and 21 CFR 1040 (CDRH).

- Safety: CB, cTUVus, CE
- EMC: CE, FCC, ICES, RCM, VCCI

Ask your NVIDIA FAE for a zip file of the certifications for this product.

3.4.3 FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



4 Ordering Information

Legacy OPN	NVIDIA OPN	Description
MFP7E40-N003	980-9I58K-00N003	NVIDIA passive fiber cable, SMF, MPO12 APC to 2xMPO12 APC, 3m
MFP7E40-N005	980-9I58L-00N005	NVIDIA passive fiber cable, SMF, MPO12 APC to 2xMPO12 APC, 5m
MFP7E40-N007	980-9I58M-00N007	NVIDIA passive fiber cable, SMF, MPO12 APC to 2xMPO12 APC, 7m
MFP7E40-N010	980-9I58N-00N010	NVIDIA passive fiber cable, SMF, MPO12 APC to 2xMPO12 APC, 10m
MFP7E40-N015	980-9I56O-00N015	NVIDIA passive fiber cable, SMF, MPO12 APC to 2xMPO12 APC, 15m
MFP7E40-N020	980-9I56P-00N020	NVIDIA passive fiber cable, SMF, MPO12 APC to 2xMPO12 APC, 20m
MFP7E40-N030	980-9I56Q-00N030	NVIDIA passive fiber cable, SMF, MPO12 APC to 2xMPO12 APC, 30m
MFP7E40-N050	980-9I56R-000050	NVIDIA passive fiber cable, SMF, MPO12 APC to 2xMPO12 APC, 50m

For more information please contact your sales representative or send an Email to:
networking-support@nvidia.com.

5 References

- IEC 61754-7: Fibre optic interconnecting devices and passive components - Part 7-1: Type MPO connector family - One fibre row <https://webstore.iec.ch/publication/5847>
- GR-1435: Generic Requirements for Multi-Fiber Optical Connectors, <https://telecom-info.njdepot.ericsson.net/site-cgi/ido/docs.cgi?ID=SEARCH&DOCUMENT=GR-1435&>
- Application Note Optical Cables-Connectors for NDR – available from NVIDIA NBU support.

For more documentation, please contact your sales representative or the Support team.

6 Document Revision History

Revision	Date	Description
1.1	Sep. 2023	Converted to HTML. Updated Introduction and Specifications sections.
1.0	Apr. 2021	Initial release; preliminary and subject to change.

Notice

This document is provided for information purposes only and shall not be regarded as a warranty of a certain functionality, condition, or quality of a product. Neither NVIDIA Corporation nor any of its direct or indirect subsidiaries and affiliates (collectively: "NVIDIA") make any representations or warranties, expressed or implied, as to the accuracy or completeness of the information contained in this document and assumes no responsibility for any errors contained herein. NVIDIA shall have no liability for the consequences or use of such information or for any infringement of patents or other rights of third parties that may result from its use. This document is not a commitment to develop, release, or deliver any Material (defined below), code, or functionality.

NVIDIA reserves the right to make corrections, modifications, enhancements, improvements, and any other changes to this document, at any time without notice. Customer should obtain the latest relevant information before placing orders and should verify that such information is current and complete.

NVIDIA products are sold subject to the NVIDIA standard terms and conditions of sale supplied at the time of order acknowledgement, unless otherwise agreed in an individual sales agreement signed by authorized representatives of NVIDIA and customer ("Terms of Sale"). NVIDIA hereby expressly objects to applying any customer general terms and conditions with regards to the purchase of the NVIDIA product referenced in this document. No contractual obligations are formed either directly or indirectly by this document.

NVIDIA products are not designed, authorized, or warranted to be suitable for use in medical, military, aircraft, space, or life support equipment, nor in applications where failure or malfunction of the NVIDIA product can reasonably be expected to result in personal injury, death, or property or environmental damage. NVIDIA accepts no liability for inclusion and/or use of NVIDIA products in such equipment or applications and therefore such inclusion and/or use is at customer's own risk.

NVIDIA makes no representation or warranty that products based on this document will be suitable for any specified use. Testing of all parameters of each product is not necessarily performed by NVIDIA. It is customer's sole responsibility to evaluate and determine the applicability of any information contained in this document, ensure the product is suitable and fit for the application planned by customer, and perform the necessary testing for the application in order to avoid a default of the application or the product. Weaknesses in customer's product designs may affect the quality and reliability of the NVIDIA product and may result in additional or different conditions and/or requirements beyond those contained in this document. NVIDIA accepts no liability related to any default, damage, costs, or problem which may be based on or attributable to: (i) the use of the NVIDIA product in any manner that is contrary to this document or (ii) customer product designs.

No license, either expressed or implied, is granted under any NVIDIA patent right, copyright, or other NVIDIA intellectual property right under this document. Information published by NVIDIA regarding third-party products or services does not constitute a license from NVIDIA to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property rights of the third party, or a license from NVIDIA under the patents or other intellectual property rights of NVIDIA.

Reproduction of information in this document is permissible only if approved in advance by NVIDIA in writing, reproduced without alteration and in full compliance with all applicable export laws and regulations, and accompanied by all associated conditions, limitations, and notices.

THIS DOCUMENT AND ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS, AND OTHER DOCUMENTS (TOGETHER AND SEPARATELY, "MATERIALS") ARE BEING PROVIDED "AS IS." NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY, OR OTHERWISE WITH RESPECT TO THE MATERIALS, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF NONINFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT NOT PROHIBITED BY LAW, IN NO EVENT WILL NVIDIA BE LIABLE FOR ANY DAMAGES, INCLUDING WITHOUT LIMITATION ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES, HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, ARISING OUT OF ANY USE OF THIS DOCUMENT, EVEN IF NVIDIA HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Notwithstanding any damages that customer might incur for any reason whatsoever, NVIDIA's aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the Terms of Sale for the product.



Trademarks

NVIDIA, the NVIDIA logo, and Mellanox are trademarks and/or registered trademarks of NVIDIA Corporation and/or its affiliates in the U.S. and in other countries. Other company and product names may be trademarks of the respective companies with which they are associated.

Copyright

© 2026 NVIDIA Corporation & affiliates. All Rights Reserved.

