



NVIDIA Spectrum SN2000 1U Switch Systems Hardware User Manual

**10/25/40/50/100GbE Open Ethernet Switch Systems Models: SN2700, SN2740,
SN2410, SN2201, SN2100, SN2010**

Table of Contents

1	Ordering Information	7
1.1	Legacy End-of-Life (EOL) and End-of-Support (EOS) Part Numbers	7
2	Introduction	11
2.1	Speed and Switching Capabilities	12
2.2	Management Interfaces, PSUs and Fans.....	13
2.3	Features.....	13
2.4	Certifications	13
3	Installation	14
3.1	System Installation and Initialization	14
3.2	Safety Warnings.....	14
3.3	Air Flow	14
3.4	Package Contents	16
3.5	System Mounting Options.....	16
3.6	SN2700 Static Rail Kit.....	17
3.6.1	Package Contents.....	17
3.6.2	Rail-kit Contents.....	17
3.6.3	Installation Instructions	19
3.6.3.1	Removing the System from the Rack	22
3.7	SN2700 Telescopic Rail Kit.....	23
3.7.1	Removing the System from the Rack	27
3.8	SN2410 Static Rail Kit.....	27
3.8.1	Package Contents.....	28
3.8.2	Rail Kit Contents	28
3.8.3	Installation Instructions	30
3.9	SN2100/SN2010 Side by Side Mounting Rail Kit.....	33
3.9.1	Safety Precautions	34
3.9.2	Package Contents.....	34
3.9.3	Rail Kit Contents	34
3.9.4	Installation Instructions	37
3.10	SN2100/SN2010 Static Single Switch Rail Kit.....	42
3.10.1	Package Contents.....	42
3.10.2	Rail Kit Contents	43

3.10.3	Safety Precautions	44
3.10.4	Installation Instructions	44
3.11	Cable Installation	46
3.11.1	Power Cable and Cable Retainer	46
3.11.2	Port Cables	48
3.11.2.1	Splitter (Breakout) Cables and Adapters.....	49
3.11.2.1.1	Using Splitter (Breakout) Cables with NVIDIA Onyx (MLNX-OS).....	49
3.11.2.1.2	Using Splitter (Breakout) Cables with Cumulus Linux	49
3.11.2.1.3	SN2700 Splitting Options.....	50
3.11.2.1.4	SN2410 Splitting Options.....	50
3.11.2.1.5	SN2100 Splitting Options.....	51
3.11.2.1.6	SN2010 Splitting Options.....	51
3.12	Initial Power On.....	51
3.13	System Bring-Up.....	53
3.13.1	Configuring Network Attributes Using NVIDIA Onyx (MLNX-OS).....	53
3.13.1.1	Manual Host Configuration	53
3.13.1.2	Disable Dynamic Host Configuration Protocol (DHCP).....	55
3.13.1.3	Remote Connection with NVIDIA Onyx (MLNX-OS)	56
3.13.2	Configuring Network Attributes Using Cumulus Linux	56
3.13.2.1	Remote Connection with Cumulus Linux	56
3.14	FRU Replacements	56
3.14.1	Power Supply	56
3.14.2	Fans.....	58
4	Interfaces	60
4.1	Speed.....	60
4.2	I2C/RS232 (Console).....	60
4.3	Management.....	60
4.4	USB.....	61
4.5	Reset Button.....	61
4.6	Status and Port LEDs	61
4.7	Data Interfaces and High Power Transceivers Support.....	62
4.7.1	Data Interfaces.....	62
4.7.1.1	High Power Transceivers Support.....	62
4.8	LED Notifications	63
4.8.1	System Status LEDs	64
4.8.2	Fan Status LEDs.....	65

4.8.3	Power Supply Status LEDs.....	65
4.8.4	Unit Identification LED.....	67
4.8.5	Bad Port LED	68
4.8.6	Port LEDs.....	68
4.9	Inventory Information.....	70
5	Software Management.....	72
5.1	Upgrading Software	72
5.1.1	NVIDIA Onyx (MLNX-OS) Software Upgrade.....	72
5.1.2	Switch Firmware Update.....	72
5.1.3	Cumulus Linux Software Upgrade	72
6	Troubleshooting	73
7	Specifications	75
7.1	SN2700 Series	75
7.2	SN2410 Series	75
7.3	SN2100 Series	76
7.4	SN2010 Series	77
8	Appendixes	79
8.1	Accessory and Replacement Parts	79
8.2	Thermal Threshold Definitions.....	80
8.3	Interface Specifications	81
8.3.1	QSFP28 Pin Description.....	81
8.3.2	SFP28 Pin Description	83
8.3.3	RJ-45 CONSOLE and I ² C Interface.....	84
8.3.4	RJ45 to DB9 Harness Pinout.....	85
8.3.5	RJ45 to RJ45 Harness.....	85
8.4	Disassembly and Disposal.....	86
8.4.1	Disassembly Procedure	86
8.4.2	Disposal.....	86
8.4.2.1	Lithium Battery.....	87
8.5	Safety Warnings.....	87
8.5.1	Switch Safety Warnings (English)	87
8.5.1.1	Taiwan RoHS Declaration - Switch Systems.....	89
8.5.1.1.1	Restricted Substances Presence Condition (Declaration Table).....	89
8.5.1.2	Taiwan RoHS Declaration - Gateway Systems	90
8.5.1.2.1	設備名稱 (Equipment Name)：閘道器 (Gateway).....	90

8.5.1.3	Taiwan BSMI Class A Statement - Warning to the User!.....	90
8.5.2	Nordic Countries Notices.....	91
8.5.3	安裝安全性警告 (Simplified Chinese)	91
8.5.3.1	China CCC Warning Statement	93
8.5.3.1.1	For altitude 2000 meter and below:.....	93
8.5.3.1.2	Warning for Class A:	93
8.5.3.2	Taiwan RoHS Declaration.....	94
8.5.3.3	Taiwan BSMI Class A Statement - Warning to the User!.....	94
8.5.4	安裝安全性警告 (Traditional Chinese).....	94
8.5.5	Avertissements de sécurité pour l'installation (French).....	96
8.5.6	Installation Sicherheitshinweise (German).....	98
8.5.7	Advertencias de seguridad de instalación (Spanish)	100
8.5.8	Предупреждения по технике безопасности при установке (Russian)	102
8.5.9	Avertismente privind siguranța la instalare (Romanian).....	104
8.5.10	Sigurnosna upozorenja za instaliranje (Croatian).....	106
8.5.11	Avvertenze di sicurezza per l'installazione (Italian)	108
8.5.12	Montaj Güvenlik Uyarıları (Turkish).....	110
8.5.13	Japan VCCI Statement	111
8.5.14	הוראות ואזהרות התקנה	112
8.5.15	تعليمات التركيب والسلامة.....	113
9	Document Revision History	116

Relevant for Models: SN2100, SN2010, SN2410, SN2700

About this Manual

This manual describes the installation and basic use of NVIDIA Ethernet switches based on the NVIDIA Spectrum IC device.

Ordering Information

See [Introduction](#)

Intended Audience

This manual is intended for IT managers and system administrators.

Related Documentation

- [NVIDIA Onyx \(MLNX-OS\) User Manual](#)
- [Cumulus Linux User Guide](#)
- [Open Network Install Environment \(ONIE\) Quick Start Guide](#)
- Hands-on workshops:
 - [Cumulus Linux training course](#)
 - [Onyx training course](#)

For onsite or remote services, contact nbu-services-sales@nvidia.com

Revision History

A list of the changes made to this document are provided in [Document Revision History](#).

1 Ordering Information

All systems documented in this manual are no longer available for ordering.

1.1 Legacy End-of-Life (EOL) and End-of-Support (EOS) Part Numbers

NVIDIA SKU	Legacy OPN	Marketing Description	Lifecycle Phase
920-9N100-00F4-OC0	MSN2100-BB2FC	NVIDIA Spectrum 40GbE 1U switch w/Cumulus Linux, 16 QSFP28 ports, 2 AC PSUs, x86 2 core, short depth, P2C airflow, Rails to be purchased separately, (Cumulus License Key is required)	EOL (End of Life)
920-9N100-00F4-0X0	MSN2100-BB2F	NVIDIA Spectrum based 40GbE 1U Open Ethernet Switch with Onyx, 16 QSFP28 ports, 2 Power Supplies (AC), x86 CPU, short depth, P2C airflow. Rail Kit must be purchased separately	EOL (End of Life)
920-9N100-00F7-ON0	MSN2100-CB2FO	NVIDIA Spectrum based 100GbE 1U Open Switch with ONIE, 16 QSFP28 ports, 2 AC PSUs, x86 2-core, short depth, P2C airflow, Rail Kit must be purchased separately, RoHS6	EOL (End of Life)
920-9N100-00F7-0X0	MSN2100-CB2F	NVIDIA Spectrum based 100GbE, 1U Open Ethernet Switch with NVIDIA Onyx (MLNX-OS), 16 QSFP28 ports, 2 AC PSUs, x86 2-core, short depth, P2C airflow, Rail Kit must be purchased separately, RoHS6	EOL (End of Life)
920-9N100-00F7-OC0	MSN2100-CB2FC	NVIDIA Spectrum 100GbE 1U switch w/Cumulus Linux, 16 QSFP28 ports, 2 AC PSUs, x86 2-core, short depth, P2C airflow, Rails to be purchased separately, (Cumulus License Key is required)	EOL (End of Life)
920-9N100-00R7-OC0	MSN2100-CB2RC	NVIDIA Spectrum 100GbE 1U switch w/Cumulus Linux, 16 QSFP28 ports, 2 AC PSUs, x86 2-core, short depth, C2P airflow, Rails to be purchased separately, (Cumulus License Key is required)	EOL (End of Life)
920-9N100-00R4-ON0	MSN2100-BB2RO	NVIDIA Spectrum based 40GbE 1U Open Ethernet switch with ONIE, 16 QSFP28 ports, 2 power supplies (AC), x86 CPU, short depth, C2P airflow. Rail Kit must be purchased separately	EOL (End of Life)
920-9N100-00R4-0X0	MSN2100-BB2R	NVIDIA Spectrum based 40GbE, 1U Open Ethernet Switch with NVIDIA Onyx (MLNX-OS), 16 QSFP28 ports, 2 AC PSUs, x86 2-core, short depth, C2P airflow, Rail Kit must be purchased separately, RoHS6	EOL (End of Life)
920-9N100-00R7-ON0	MSN2100-CB2RO	NVIDIA Spectrum based 100GbE 1U Open Ethernet switch with ONIE, 16 QSFP28 ports, 2 power supplies (AC), x86 CPU, short depth, C2P airflow. Rail Kit must be purchased separately	EOL (End of Life)
920-9N100-00R7-0X0	MSN2100-CB2R	NVIDIA Spectrum based 100GbE, 1U Open Ethernet Switch with NVIDIA Onyx (MLNX-OS), 16 QSFP28 ports, 2 AC PSUs, x86 2-core, short depth, C2P airflow, Rail Kit must be purchased separately, RoHS6	EOL (End of Life)
920-9N101-00F4-OC0	MSN2700-BS2FC	NVIDIA Spectrum 40GbE 1U switch w/Cumulus Linux, 32 QSFP28 ports, 2 AC PSUs, x86 2-core, standard depth, P2C airflow, Rail Kit, RoHS6, (Cumulus License Key is required)	EOL (End of Life)

NVIDIA SKU	Legacy OPN	Marketing Description	Lifecycle Phase
920-9N101-00F4-0X0	MSN2700-BS2F	NVIDIA Spectrum based 40GbE, 1U Open Ethernet Switch with NVIDIA Onyx (MLNX-OS), 32 QSFP28 ports, 2 Power Supplies (AC), x86 CPU, Standard depth, P2C airflow, Rail Kit, RoHS6	EOL (End of Life)
920-9N101-00F7-0C1	MSN2700-CS2FC	NVIDIA Spectrum 100GbE 1U switch w/Cumulus Linux, 32 QSFP28 ports, 2 AC PSUs, x86 2-core, standard depth, P2C airflow, Rail Kit, RoHS6, (Cumulus License Key is required)	EOL (End of Life)
920-9N101-00F7-0N1	MSN2700-CS2FO	NVIDIA Spectrum based 100GbE 1U Open Switch with ONIE, 32 QSFP28 ports, 2 Power Supplies (AC), Standard depth, x86 CPU, P2C airflow, Rail Kit, RoHS6	EOL (End of Life)
920-9N101-00F7-0X0	MSN2700-CB2F	NVIDIA Spectrum based 100GbE 1U Open Ethernet Switch with Onyx, 32 QSFP28 ports, 2 Power Supplies (AC), x86 CPU, short depth, P2C airflow, Rail Kit	EOL (End of Life)
920-9N101-00F7-0X4	MSN2700-CS2F	NVIDIA Spectrum based 100GbE, 1U Open Ethernet Switch with NVIDIA Onyx (MLNX-OS), 32 QSFP28 ports, 2 Power Supplies (AC), x86 CPU, Standard depth, P2C airflow, Rail Kit, RoHS6	EOL (End of Life)
920-9N101-00F7-1C1	MSN2700-CSBFC	NVIDIA Spectrum based 100GbE 1U Open Ethernet Switch with Cumulus Linux, 32 QSFP28 ports, 2 Power Supplies (DC), x86 CPU, standard depth, P2C airflow, Rail Kit	EOL (End of Life)
920-9N101-00F7-1N0	MSN2700-CBBFO	NVIDIA Spectrum based 100GbE, 1U Open Ethernet Switch with ONIE, 32 QSFP28 ports, 2 power-supplies (DC), x86 CPU, short depth, P2C airflow, Rail Kit	EOL (End of Life)
920-9N101-00R4-0X0	MSN2700-BS2R	NVIDIA Spectrum based 40GbE, 1U Open Ethernet Switch with NVIDIA Onyx (MLNX-OS), 32 QSFP28 ports, 2 Power Supplies (AC), x86 CPU, Standard depth, C2P airflow, Rail Kit, RoHS6	EOL (End of Life)
920-9N101-00R7-0C0	MSN2700-CS2RC	NVIDIA Spectrum 100GbE 1U switch w/Cumulus Linux, 32 QSFP28 ports, 2 AC PSUs, x86 2-core, standard depth, C2P airflow, Rail Kit, RoHS6, (Cumulus License Key is required)	EOL (End of Life)
920-9N101-00R7-0N0	MSN2700-CS2RO	NVIDIA Spectrum based 100GbE 1U Open Ethernet switch with ONIE, 32 QSFP28 ports, 2 power supplies (AC), x86 CPU, standard depth, C2P airflow, Rail Kit	EOL (End of Life)
920-9N101-00R7-0X0	MSN2700-CB2R	NVIDIA Spectrum based 100GbE, 1U Open Ethernet Switch with Onyx, 32 QSFP28 ports, 2 Power Supplies (AC), x86 CPU, Short depth, Reverse airflow, Rail Kit, RoHS6	EOL (End of Life)
920-9N101-00R7-0X2	MSN2700-CS2R	NVIDIA Spectrum based 100GbE, 1U Open Ethernet Switch with NVIDIA Onyx (MLNX-OS), 32 QSFP28 ports, 2 Power Supplies (AC), x86 CPU, Standard depth, C2P airflow, Rail Kit, RoHS6	EOL (End of Life)
920-9N110-00R7-0X1	MSN2740-CB2R1	Spectrum based 100GbE 1U Open Ethernet Switch with Onyx, 32 QSFP28 ports, 2 power supplies (AC), x86 CPU, short depth, C2P airflow, Rail Kit	EOS (End of Support)
920-9N110-09R7-0S0	MSN2740-CB2R1OS	Spectrum based 100GbE 1U Open Ethernet Switch with ONIE/SONiC, 32 QSFP28 ports, 2 power supplies (AC), x86 Atom CPU, short depth, C2P airflow, Rail Kit, RoHS6	EOS (End of Support)
920-9N110-00F7-0N1	MSN2740-CB2F1O	Spectrum based 100GbE 1U Open Ethernet switch with ONIE, 32 QSFP28 ports, 2 power supplies (AC), x86 CPU, short depth, P2C airflow, Rail Kit	EOS (End of Support)
920-9N110-00F7-0X1	MSN2740-CB2F1	Spectrum based 100GbE 1U Open Ethernet Switch with Onyx, 32 QSFP28 ports, 2 power supplies (AC), x86 CPU, short depth, P2C airflow, Rail Kit	EOS (End of Support)

NVIDIA SKU	Legacy OPN	Marketing Description	Lifecycle Phase
920-9N110-09F7-OSO	MSN2740-CB2F10S	Spectrum based 100GbE 1U Open Ethernet Switch with ONIE/ SONIC, 32 QSFP28 ports, 2 power supplies (AC), x86 Atom CPU, short depth, P2C airflow, Rail Kit, RoHS6	EOS (End of Support)
920-9N110-00F7-OCO	MSN2010-CB2F3C	NVIDIA Spectrum based 25GbE/100GbE, 1U Open Ethernet switch with Cumulus Linux, 18 SFP28 and 4 QSFP28 ports, 2 power supplies (AC), x86 CPU, 32G RAM and 30G SSD, short depth, P2C airflow, Rail Kit must be purchased separately	EOL (End of Life)
920-9N110-00F7-ONO	MSN2010-CB2FO	NVIDIA Spectrum-based 25GbE/100GbE, 1U Open Ethernet Switch with ONIE, 18 SFP28 ports and 4 QSFP28 ports, 2 Power Supplies (AC), x86 quad core, short depth, P2C airflow, Rail Kit must be purchased separately	EOL (End of Life)
920-9N110-00F7-0X2	MSN2010-CB2F	NVIDIA Spectrum-based 25GbE/100GbE, 1U Open Ethernet Switch with NVIDIA Onyx, 18 SFP28 and 4 QSFP28 ports, 2 Power Supplies (AC), short depth, x86 quad core, P2C airflow, Rail Kit must be purchased separately	EOL (End of Life)
920-9N110-00R7-ONO	MSN2010-CB2RO	NVIDIA Spectrum based 25GbE/100GbE 1U Open Ethernet switch with ONIE, 18 SFP28 ports and 4 QSFP28 ports, 2 power supplies (AC), x86 CPU, short depth, C2P airflow. Rail Kit must be purchased separately	EOL (End of Life)
920-9N110-00R7-0X2	MSN2010-CB2R	NVIDIA Spectrum-based 25GbE/100GbE, 1U Open Ethernet Switch with NVIDIA Onyx, 18 SFP28 ports and 4 QSFP28 ports, 2 Power Supplies (AC), short depth, x86 quad core, C2P airflow, Rail Kit must be purchased separately	EOL (End of Life)
920-9N100-00F7-OCO	MSN2100-CB2FC	NVIDIA Spectrum 100GbE 1U switch w/Cumulus Linux, 16 QSFP28 ports, 2 AC PSUs, x86 2-core, short depth, P2C airflow, Rails to be purchased separately, (Cumulus License Key is required)	EOL (End of Life)
920-9N100-00R7-OCO	MSN2100-CB2RC	NVIDIA Spectrum 100GbE 1U switch w/Cumulus Linux, 16 QSFP28 ports, 2 AC PSUs, x86 2-core, short depth, C2P airflow, Rails to be purchased separately, (Cumulus License Key is required)	EOL (End of Life)
920-9N112-00F7-OC2	MSN2410-CB2FC	NVIDIA Spectrum 25GbE/100GbE switch w/Cumulus Linux, 48 SFP28 ports + 8 QSFP28 ports, 2 AC PSUs, x86 2 core, short depth, P2C air flow, Rail Kit, (Cumulus License Key is required)	EOL (End of Life)
920-9N112-00F7-OC3	MSN2410-BB2FC	NVIDIA Spectrum 10GbE/100GbE switch w/Cumulus Linux, 48 SFP28 ports + 8 QSFP28 ports, 2 AC PSUs, x86 2-core, short depth, P2C air flow, Rail Kit, (Cumulus License Key is required)	EOL (End of Life)
920-9N112-00F7-ON2	MSN2410-CB2FO	NVIDIA Spectrum based 25GbE/100GbE 1U Open Ethernet switch with ONIE, 48 SFP28 ports, 8 QSFP28 ports, 2 power supplies (AC), x86 dual core, Short depth, P2C airflow, Rail Kit, RoHS6	EOL (End of Life)
920-9N112-00F7-ON3	MSN2410-BB2FO	NVIDIA Spectrum based 10GbE/100GbE 1U Open Ethernet switch with ONIE, 48 SFP28 ports, 8 QSFP28 ports, 2 power supplies (AC), x86 dual core, Short depth, P2C airflow, Rail Kit, RoHS6	EOL (End of Life)
920-9N112-00F7-0X0	MSN2410-BB2F	NVIDIA Spectrum based 10GbE/100GbE 1U Open Ethernet switch with Onyx, 48 SFP28 ports and 8 QSFP28 ports, 2 Power Supplies (AC), x86 CPU, short depth, P2C airflow, Rail Kit	EOL (End of Life)

NVIDIA SKU	Legacy OPN	Marketing Description	Lifecycle Phase
920-9N112-00F7-0X2	MSN2410-CB2F	NVIDIA Spectrum based 25GbE/100GbE 1U Open Ethernet switch with NVIDIA Onyx (MLNX-OS), 48 SFP28 ports, 8 QSFP28 ports, 2 power supplies (AC), x86 dual core, Short depth, P2C airflow, Rail Kit, RoHS6	EOL (End of Life)
920-9N112-00R7-0C2	MSN2410-CB2RC	NVIDIA Spectrum 25GbE/100GbE switch w/Cumulus Linux, 48 SFP28 ports + 8 QSFP28 ports, 2 AC PSUs, x86 2 core, short depth, C2P air flow, Rail Kit, (Cumulus License Key is required)	EOL (End of Life)
920-9N112-00R7-0C3	MSN2410-BB2RC	NVIDIA Spectrum based 10GbE/100GbE 1U Open Ethernet switch with Cumulus Linux, 48 SFP28 ports and 8 QSFP28 ports, 2 power supplies (AC), x86 CPU, short depth, C2P airflow, Rail Kit	EOL (End of Life)
920-9N112-00R7-0N1	MSN2410-BB2RO	NVIDIA Spectrum based 10GbE/100GbE 1U Open Ethernet switch with ONIE, 48 SFP28 ports and 8 QSFP28 ports, 2 power supplies (AC), x86 CPU, short depth, C2P airflow, Rail Kit	EOL (End of Life)
920-9N112-00R7-0X1	MSN2410-CB2R	NVIDIA Spectrum based 25GbE/100GbE 1U Open Ethernet switch with NVIDIA Onyx (MLNX-OS), 48 SFP28 ports, 8 QSFP28 ports, 2 power supplies (AC), x86 dual core, Short depth, C2P airflow, Rail Kit, RoHS6	EOL (End of Life)
920-9N112-00R7-0X2	MSN2410-BB2R	NVIDIA Spectrum based 10GbE/100GbE 1U Open Ethernet switch with NVIDIA Onyx (MLNX-OS), 48 SFP28 ports, 8 QSFP28 ports, 2 power supplies (AC), x86 dual core, Short depth, C2P airflow, Rail Kit, RoHS6	EOL (End of Life)
920-9N112-00R7-1C0	MSN2410-CBBRC	NVIDIA Spectrum based 25GbE/100GbE 1U Open Ethernet switch with Cumulus Linux, 48 SFP28 ports and 8 QSFP28 ports, 2 power supplies (DC), x86 CPU, short depth, C2P airflow, Rail Kit	EOL (End of Life)

2 Introduction

NVIDIA Spectrum[®] based 1U switch systems are an ideal spine and Top of Rack (ToR) solution, allowing maximum flexibility, with port speeds spanning from 10Gb/s to 100Gb/s per port, and port density that enables full rack connectivity to any server at any speed. The uplink ports allow a variety of blocking ratios that suit any application requirement. Powered by the NVIDIA Spectrum ASIC, the systems carry whopping switching and processing capacities in a compact 1U form factor.

Keeping with the NVIDIA tradition of setting performance record switch systems, the NVIDIA Spectrum-based systems introduce the world's lowest latency for 100GbE switching and routing elements, and do so while having the lowest power consumption in the market. They enable the use of 10, 25, 40, 50 and 100GbE in a large scale without changing power infrastructure facilities.

The NVIDIA Spectrum-based 1U switch systems are a part of NVIDIA's complete end-to-end solution, which provides 10GbE through 100GbE interconnectivity within the data center. Other devices in this solution include ConnectX[®]-4 based network interface cards, and LinkX[®] copper or fiber cabling/transceivers. This end-to-end solution is topped with NEO, a management application that relieves some of the major obstacles standing in the way when deploying a network. NEO enables a fully certified and interoperable design, speeds up time to service and RoI. The systems introduce hardware capabilities for multiple tunneling protocols that enable increased reachability and scalability for today's data centers. Implementing MPLS, NVGRE and VXLAN tunneling encapsulations in the network layer of the data center allows more flexibility for terminating a tunnel by the network, in addition to termination on the server endpoint.

While NVIDIA Spectrum provides the thrust and acceleration that powers the switch systems, they get yet another angle of capabilities, running with a powerful x86-based processor, which allows them to not only be the highest performing switch fabric elements, but also grants them the ability to incorporate a Linux running server into the same device. This opens up multiple application aspects of utilizing the high CPU processing power and the best switching fabric, to create a powerful machine with unique appliance capabilities that can improve numerous network implementation paradigms. The NVIDIA Spectrum-based 1U switch systems support the Open Network Install Environment (ONIE) for zero touch installations of network operating systems. While all Ethernet systems can be purchased preloaded with NVIDIA Onyx (MLNX-OS), the SN2000 switches are offered with Cumulus Linux as well, and support SONiC (Software for Open Networking in the Cloud) as an alternative operating system.

For a full list of all available ordering options, see [Ordering Information](#).

Front View

SN2700



SN2410



SN2100



SN2010

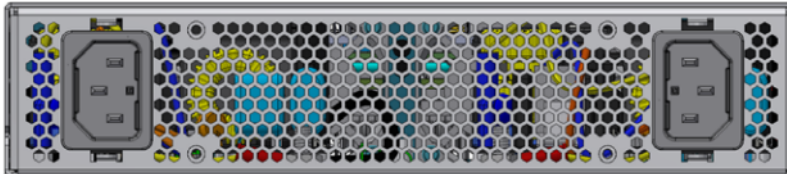


Rear View

SN2700 and SN2410



SN2100



SN2010



2.1 Speed and Switching Capabilities

The table below describes maximum throughput and interface speed per system model.

System Model	1GbT RJ45 Interfaces	1/10/25GbE SFP28 Interfaces*	40/50/100GbE QSFP28 Interfaces*	Max Throughput
SN2700	32**	64 (using QSFP to SFP splitter cables)	32	6.4Tb/s
SN2410	48**+8**	Total 64, 48SFP+16 (using QSFP to SFP splitter cables)	8	4Tb/s
SN2100	16**	64 (using QSFP to SFP splitter cables)	16 (or 32 50GbE interfaces when using QSFP to 2xQSFP splitter cables)	3.2Tb/s
SN2010	18**+4**	Total 34 - 18SFP+16 (using QSFP to SFP splitter cables)	4 (or 8 50GbE interfaces when using QSFP to 2xQSFP splitter cables)	1.7Tb/s

(*) Requiring a 1GBT SFP module

(**) Requiring a QSA adapter and a 1GBT SFP module

2.2 Management Interfaces, PSUs and Fans

The table below lists the various management interfaces, PSUs and fans per system model.

System Model	USB	MGT	Console	PSU	Fan
SN2700	Rear	Rear (2 ports)	Rear	Yes, 2	Yes, 4
SN2410	Rear	Rear (2 ports)	Rear	Yes, 2	Yes, 4
SN2100	Front (mini USB)	Front (1 port)	Front	Yes 2 (non-replaceable)	Yes, 4 (non-replaceable)
SN2010	Front	Front (1 port)	Front	Yes, 2 (non-replaceable)	Yes, 4 (non-replaceable)

2.3 Features

For a full feature list, please refer to the system's product brief. Go to <https://www.nvidia.com/en-us/networking/>. In the main menu, click on Products > Ethernet Switch Systems, and select the desired product page.

2.4 Certifications

The list of certifications (such as EMC, Safety and others) per system for different regions of the world is located on the NVIDIA website at <https://www.nvidia.com/en-us/networking/environmental-and-regulatory-compliance/>.

3 Installation

3.1 System Installation and Initialization

Installation and initialization of the system require attention to the normal mechanical, power, and thermal precautions for rack-mounted equipment.

 The rack mounting holes conform to the EIA-310 standard for 19-inch racks. Take precautions to guarantee proper ventilation in order to maintain good airflow at ambient temperature.

 Unless otherwise specified, NVIDIA products are designed to work in an environmentally controlled data center with low levels of gaseous and dust (particulate) contamination. The operation environment should meet severity level G1 as per ISA 71.04 for gaseous contamination and ISO 14644-1 class 8 for cleanliness level.

The installation procedure for the system involves the following phases:

Step	Procedure	See
1	Follow the safety warnings	Safety Warnings
2	Pay attention to the air flow consideration within the system and rack	Air Flow
3	Make sure that none of the package contents is missing or damaged	Package Contents
4	Mount the system into a rack enclosure	19" System Mounting Options
5	Power on the system	Initial Power On
6	Perform system bring-up	System Bring-Up
7	[Optional] FRU replacements	FRU Replacements

3.2 Safety Warnings

Prior to the installation, please review the [Safety Warnings](#). Note that some warnings may not apply to all models.

3.3 Air Flow

- 
- The following information does not apply to SN2100/SN2010. In the SN2100/SN2010 systems, the fan units are non-replaceable.
 - The drawings are provided for illustration purposes only. The panel and modules design may vary depending on the system.

The systems are offered with two air flow patterns:

- Power (rear) side inlet to connector side outlet - marked with blue power supplies/fans FRUs' handles or blue dots that are placed on the power inlet side.

Air Flow Direction Marking - Power Side Inlet to Connector Side Outlet



- Connector (front) side inlet to power side outlet - marked with red power supplies/fans FRUs' handles or red dots that are placed on the power inlet side.

Air Flow Direction Marking - Connector Side Inlet to Power Side Outlet



All servers and systems in the same rack should be planned with the same airflow direction.

All FRU components need to have the same air flow direction. A mismatch in the air flow will affect the heat dissipation.

The table below provides an air flow color legend and respective OPN designation.

Direction	Description and OPN Designation
	Connector side inlet to power side outlet. The airflow direction is indicated by red latches or by red dots that are placed on the power inlet side. OPN designation is "-R".
	Power side inlet to connector side outlet. The airflow direction is indicated by blue latches or by blue dots that are placed on the power inlet side. OPN designation is "-F".

3.4 Package Contents

Before installing your new system, unpack it and check against the parts list below that all the parts have been sent. Check the parts for visible damage that may have occurred during shipping.

The SN2700 and SN2410 package content is as follows:

- 1 – System
- 1 – Rail kit
- 1 – Power cable for each power supply unit – Type C13-C14
- 1 – Cable retainer for each power supply unit
- 1 – DB9 to RJ-45 2m harness
- 1 – RJ-45 to RJ-45 2m harness

The SN2100/SN2010 package content is as follows:

- 1 – System
- 1 – Power cable for each power supply unit – Type C13-C14
- 1 – DB9 to RJ-45 2m harness

 A designated rail kit for the SN2100/SN2010 systems can be purchased separately.

 If the product is supplied with dust caps, do not remove them until installation is required. Keep dust caps installed on all unused ports to prevent foreign object contamination of the cage and to avoid thermal air-pressure leakage.

 If anything is damaged or missing, contact your sales representative at enterprisesupport@nvidia.com.

3.5 System Mounting Options

The systems are shipped with the rail-kits specified in the following table:

System Model	Rail Kit
SN2700	SN2700 Static Rail Kit
	Optional: SN2700 Telescopic Rail Kit
SN2410	SN2410 Static Rail Kit
SN2100, SN2010	The systems are shipped without a rail kit. A designated rail kit can be purchased separately. For installation instructions, see SN2100/SN2010 Side by Side Mounting Rail Kit .

3.6 SN2700 Static Rail Kit

Part Number	Legacy Part Number	Rack Size and Rack Depth Range
930-9BRKT-00JC-000	MTEF-KIT-A	Short (17"-24") or Standard (24"-34")

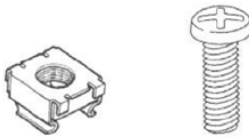
3.6.1 Package Contents

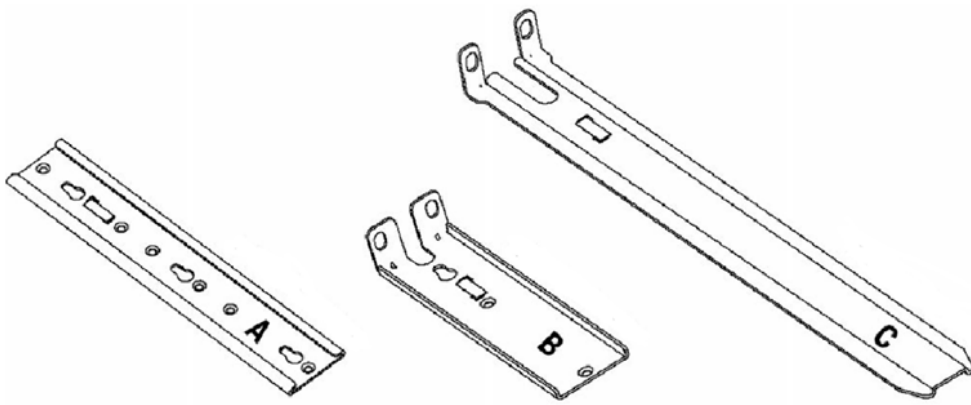
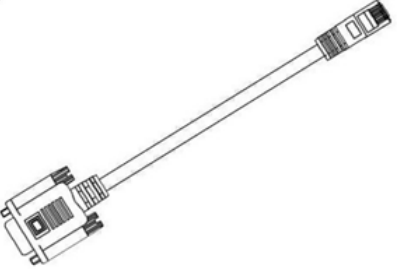
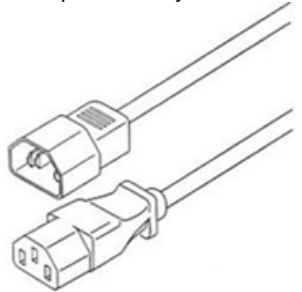
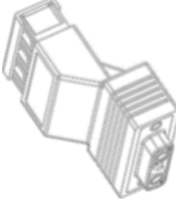
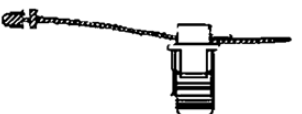
- 1 x System
- Rail Kit for short depth (17"-24" / 432-610mm) or standard depth (24"- 34" / 610-863mm) racks
- 2 x Power cables – Type C13-C14 (or DC adapters in DC powered systems)
- 1 x Harness RS232 2M cable – DB9 to RJ-451

3.6.2 Rail-kit Contents

- 2x Rack mount rails (A)
- 2x Rack mount brackets (B)
- 2x Rack mount blades (C)
- 8x M6 Standard cage nuts^{1 2} and 8x M6 Standard pan-head Phillips screws¹ (D)
- 4x Phillips100 DEG F.H TYPE-I ST.ST 6-32 X 1/4 screws with a round patch (E)

¹ Other threads are available by special order: M5, 10-32, 12-24. ² G-type cage-nut is available by special order.

Quantity	Item
X4	
X8 (of each)	

Quantity	Item	
X2 (of each)		
X1		
X2	In AC powered systems: 	In DC powered systems: 
X2		

Prerequisites:

Before mounting the system to the rack, select the way you wish to place the system. Pay attention to the airflow within the rack cooling, connector and cabling options.

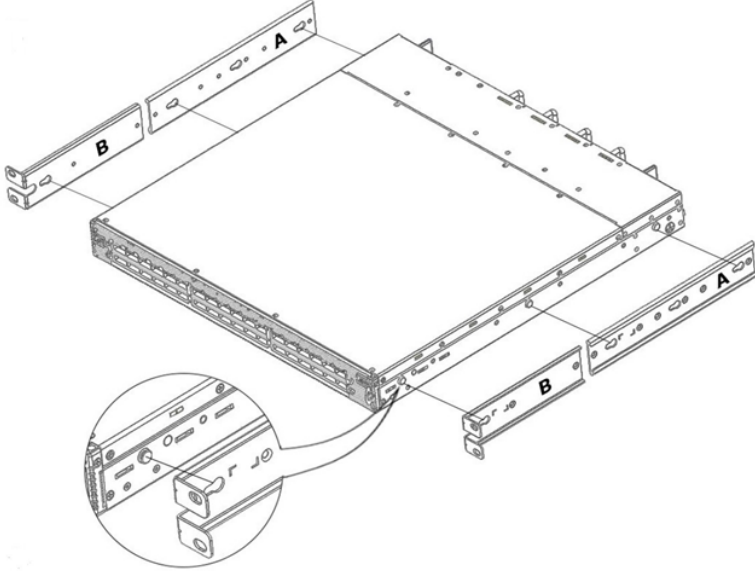
While planning how to place the system, consider the two installation options shown in the figure below, and review the following points:

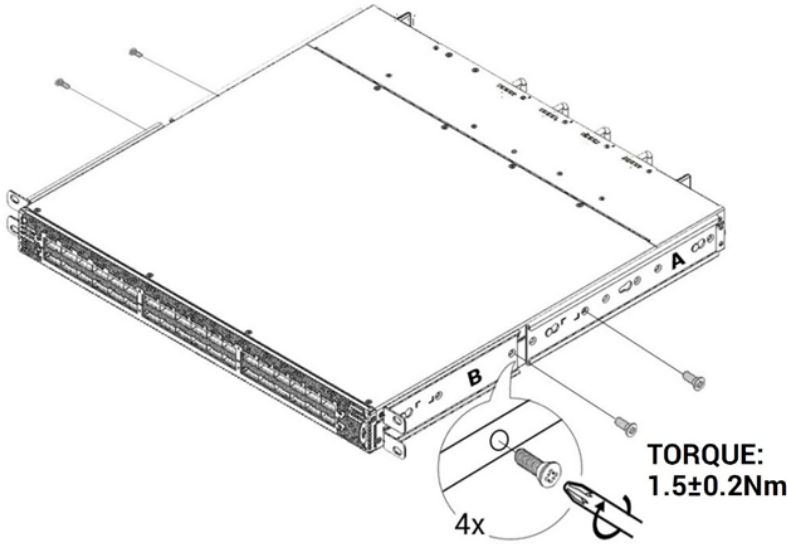
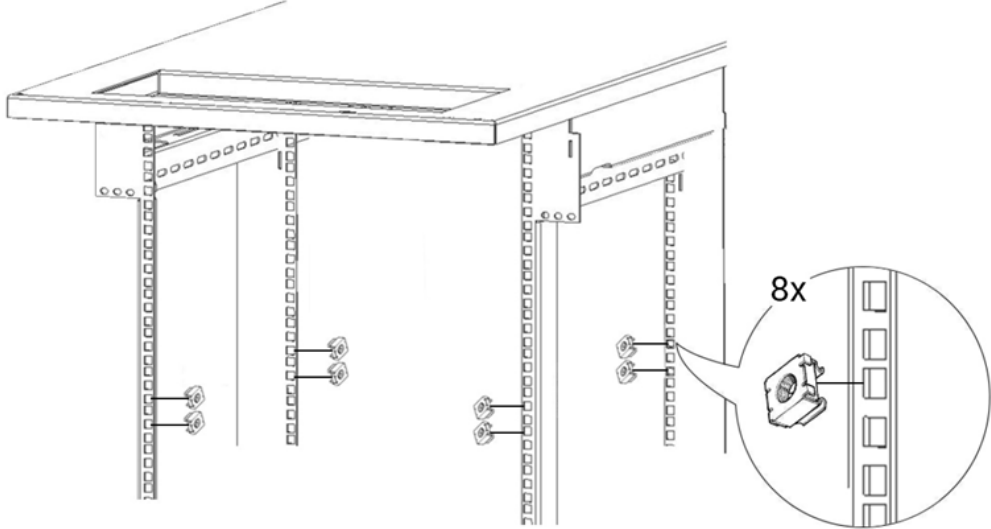
- Make sure the system air flow is compatible with your installation selection. It is important to keep the airflow within the rack in the same direction.
- Note that the part of the system to which you choose to attach the rails (the front panel direction, as demonstrated in Option 1 or the FRUs direction, as demonstrated in Option 2) will determine the system's adjustable side. The system's part to which the brackets are attached will be adjacent to the cabinet.
- The FRU side is extractable. Mounting the rack brackets inverted to the FRU side (Option 2) will allow you to slide the FRUs, in and out.

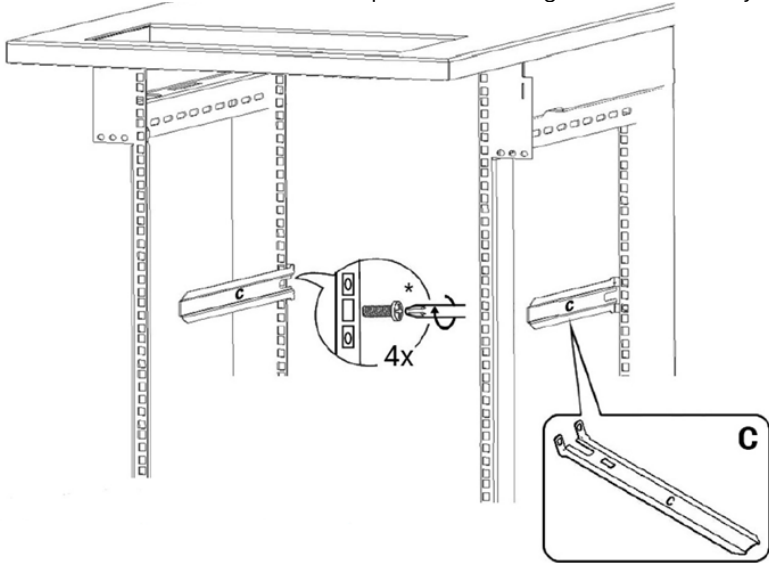
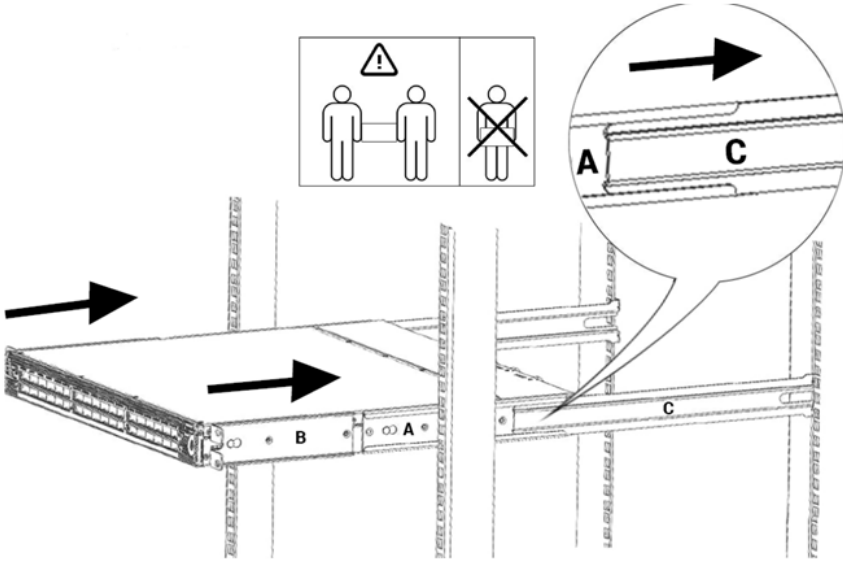
To mount the system into the rack:

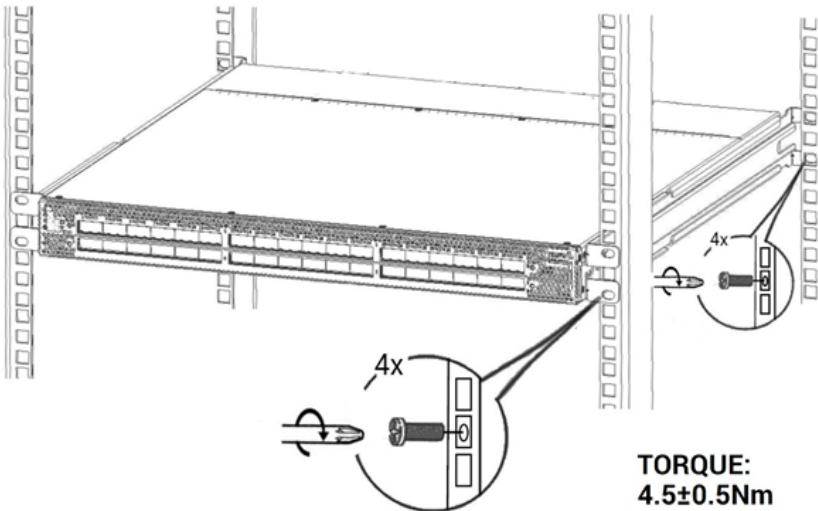
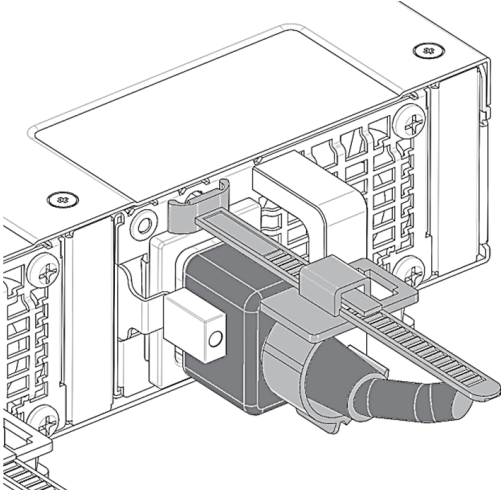
✗ At least two people are required to safely mount the system in the rack.

3.6.3 Installation Instructions

#	Illustration
1	Attach the left and right rack mount rails (A) and the left and right rack mount brackets (B) to the switch, by gently pushing the switch chassis' pins through the slider key holes, until locking occurs. 

#	Illustration
2	Secure the system in the rails and brackets by screwing 4 flat head Phillips screws (E) in the designated points with a torque of 1.5 ± 0.2 Nm. 
3	Install 8 cage nuts in the desired slots of the rack: 4 cage nuts in the non-extractable side (in the top and bottom holes only) and 4 cage nuts in the extractable side.  While each rack U (unit) consists of three holes, the cage nut should be installed vertically with its ears engaging the top and bottom holes only. 

#	Illustration
4	Attach the two blades (C) to the rack's posts. Do not tighten the screws yet. 
5	While your installation partner is supporting the system's weight, perform the following steps: - Mount the system into the rack enclosure, and attach the brackets installed on the system to the rack's posts. Secure the brackets to the rack's posts by inserting four M6 screws in the designated cage nuts, as described in the figure below. Do not tighten the screws yet. - Slide the two blades into the left and right rails, and adjust them to fit your rack's depth. Use four M6 screws (D) to fix the blades into the rack. Do not tighten the screws yet. 

#	Illustration
6	Secure the system in the rack by tightening the 8 screws inserted in Step 4 and Step 5 with a torque of 4.5 ± 0.5 Nm. 
7	A cable retainer should be used to secure the power cord when plugging it into each power socket (located on the rear side of the switch). To secure the power cord inside the retainer, press the small tab on the retainer strip to loosen the loop and pull. (The following diagram is for general illustration; the rear view does not necessarily match that of the actual system). 

3.6.3.1 Removing the System from the Rack

To remove a unit from the rack:

1. Turn off the system and disconnect it from peripherals and from the electrical outlet.
While your installation partner is supporting the system's weight:
2. Loosen the screws attaching the brackets to the rack. Do not remove them yet.
3. Loosen the screws attaching the blades to the rack, and pull the blades towards you, while your partner is holding the system.
4. Extract the loosened screws from Step 2 and dismount the system from the rack.

5. Remove the rails and brackets from the chassis by unscrewing 8 screws.

3.7 SN2700 Telescopic Rail Kit

 The telescopic rail kit is not included in the system's package, and can be purchased separately.

There are two installation kit options:

- Standard depth systems should be mounted using the standard rail kit.
- Short depth systems can be mounted using either of the rail kits.

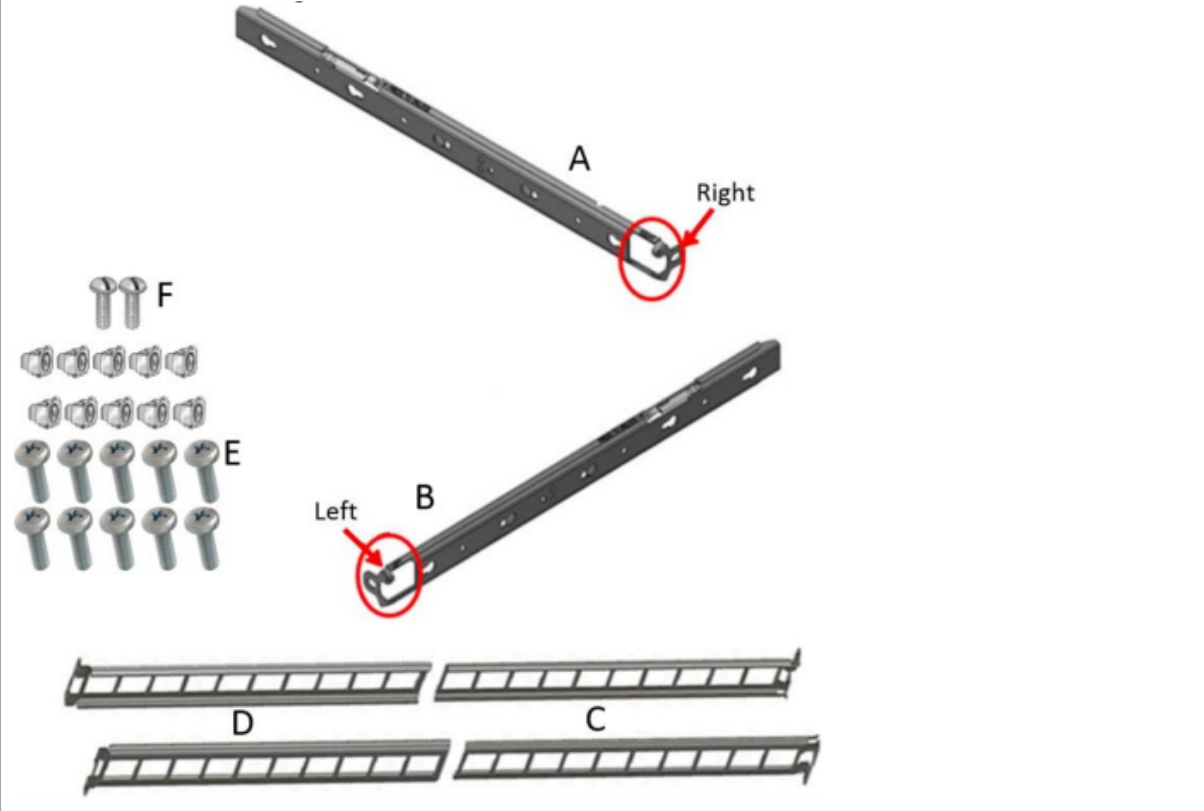
Kit Part Number	Kit Legacy Part Number	Rack Size and Rack Depth Range
930-9BRKT-00JD-000	MTEF-KIT-B	Short: 17"-24" (43.1 to 61 cm)
930-9NRKT-00JT-000	MTEF-KIT-S	Standard: 24"-34" (61 to 86.3 cm)

The following parts are included in the rail kit package (see figure below):

- 1x Right inner rail (A) +2x Outer rails (C) - Bundled
- 1x Left inner rail (B) + 2x Outer rails (D) - Bundled
- 10x M6 Standard cage nuts^{1 2} and 10x M6 Standard pan-head Phillips screws¹ (E)
- 2x Phillips100 DEG F.H TYPE-I ST.ST 6-32 X 1/4 screw with a round patch (F)

¹ Other threads are available by special order: M5, 10-32, 12-24. ² G-type cage-nut is available by special order.

Rack Rail Kit Parts

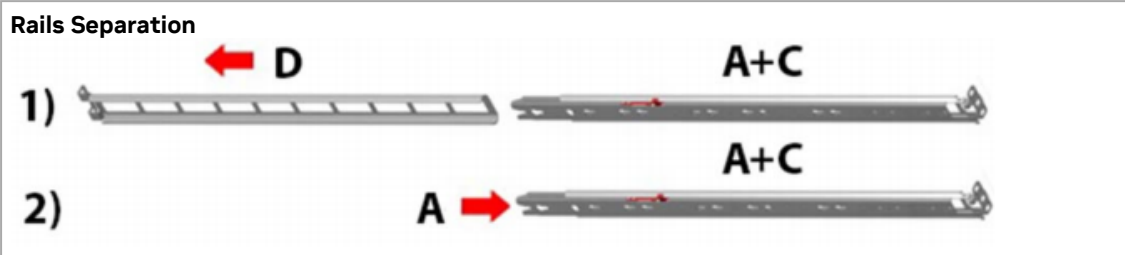


Prerequisites

⚠ The rails must be separated prior to the installation procedure.

To separate the rails:

1. Extend the rail assembly by pulling the extension outwards (D).
2. Extract rail A from rail C by pushing it outside from the rear part of the assembly. To allow complete separation of rail A from rail C, press the quick-release latch.



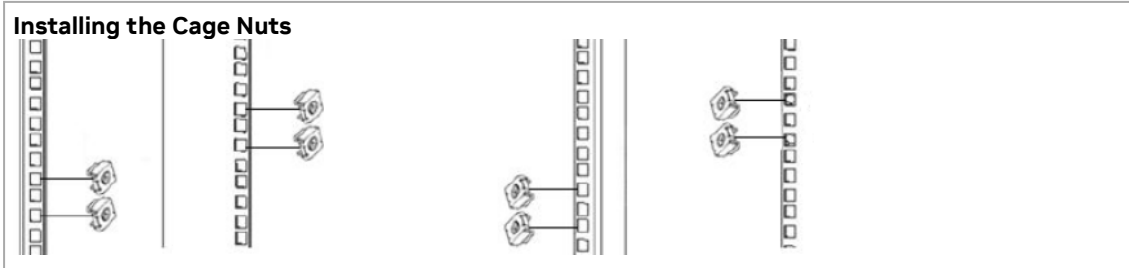
Before mounting the system to the rack, select the way you wish to place the system. Pay attention to the airflow within the rack cooling, connector and cabling options.

While planning how to place the system, review the following points:

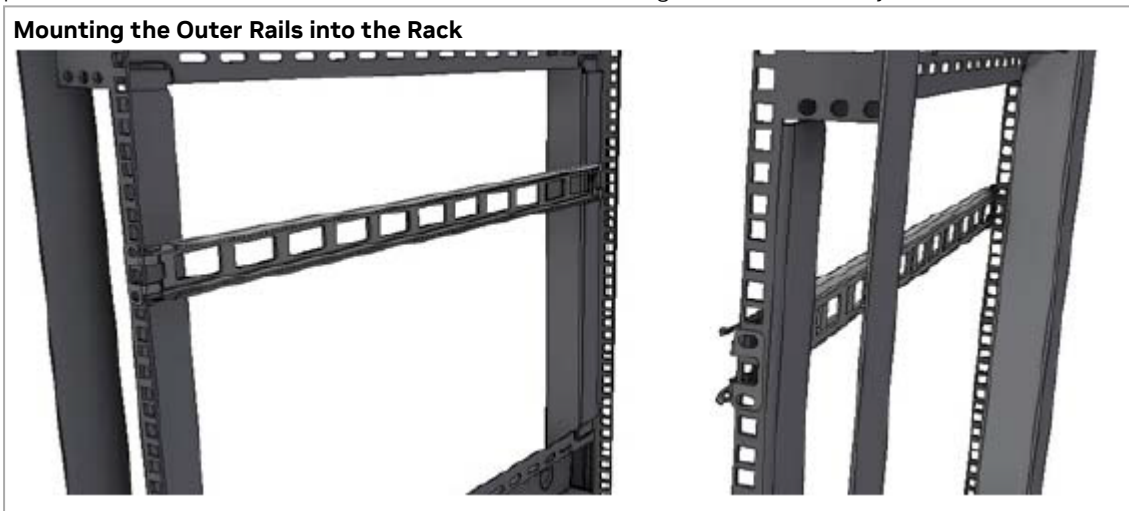
- Make sure the system air flow is compatible with your installation selection. It is important to keep the airflow within the rack in the same direction.
- In case there are cables that cannot bend within the rack, or in case more space is needed for cable bending radius, it is possible to recess the connector side or the FRU side by 3" or 4" (7.62 or 10.16cm) by optional placement of the system's rails.
- The FRU side is extractable. Mounting the sliding rail inverted to the system will allow you to slide the FRU side of the system, in and out.

To mount the system into the rack:

1. Insert 10 cage nuts into the desired slots of the rack: 4 cage nuts in the non-extractable side and 6 cage nuts in the extractable side.

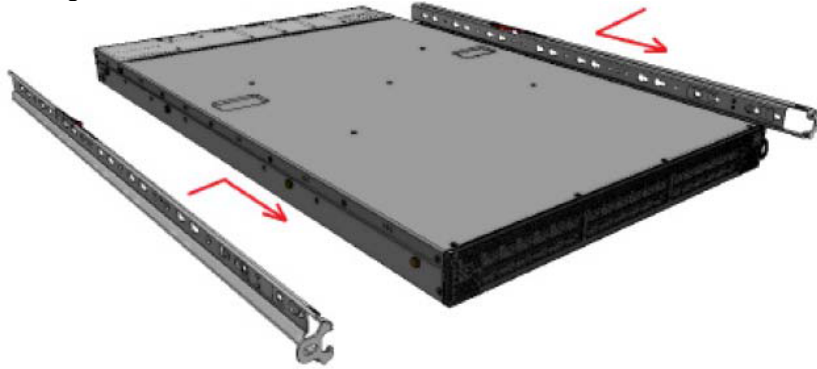


2. Mount both of the outer rails (C+D) into the rack (as illustrated below), and use 8 standard pan-head screws (E) to fix them to the rack. Do not tighten the screws yet.



3. If cable accommodation is required, route the power cable and/or Eth cable through either of the outer rails.
4. Attach left and right inner rails (A+B) to the switch sides, by gently pushing the switch chassis' pins through the slider key holes, until locking occurs.

Attaching the Inner Rails



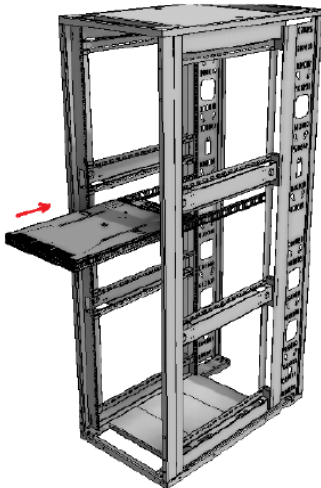
5. Secure the chassis in the inner rails by screwing the 2 flat head Phillips screws (F) in the designated points with a torque of 1.5 ± 0.2 Nm.

Securing the Chassis in the Inner Rails



6. Slide the switch into the rack by carefully pushing the inner rails into the outer rails installed on the rack.

Sliding the Switch into the Rack



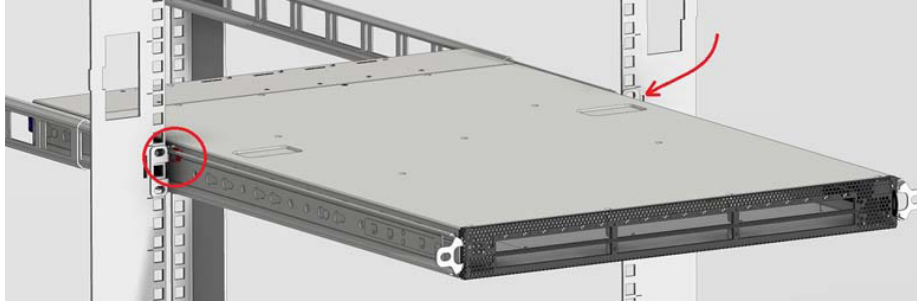
7. When fully inserted, fix the switch by closing the remaining 2 screws in the middle and tightening the 8 screws inserted in Step 2 with a torque of 4.5 ± 0.5 Nm.

3.7.1 Removing the System from the Rack

To remove a unit from the rack:

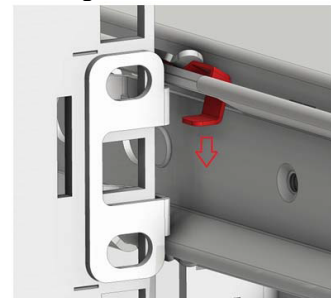
1. Turn off the system and disconnect it from peripherals and from the electrical outlet.
2. Unscrew the two M6 screws securing the front of the inner rails' ears to the outer rails and to the rack.
3. Pull the unit out until braking is felt. For safety purposes, the locking mechanism will not allow a complete removal of the unit at this stage.

Pulling the Unit Outwards



4. Press on the locking spring (appears in red in the figure below) on both sides simultaneously, and continue pulling the unit towards you until it is fully removed.

Locking Mechanism



3.8 SN2410 Static Rail Kit



By default, the system is sold with the standard-depth rail kit. The short-depth rail kit can be supplied upon request.

Kit Part Number	Legacy Kit Part Number	Rack Size and Rack Depth Range
930-9NRKT-00JE-000	MTEF-KIT-BP	Short: 19.7"-23.6" (50 to 60 cm)
930-9NRKT-00JV-000	MTEF-KIT-SP	Standard: 23.6"-31.5" (60 to 80 cm)

3.8.1 Package Contents

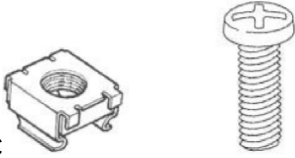
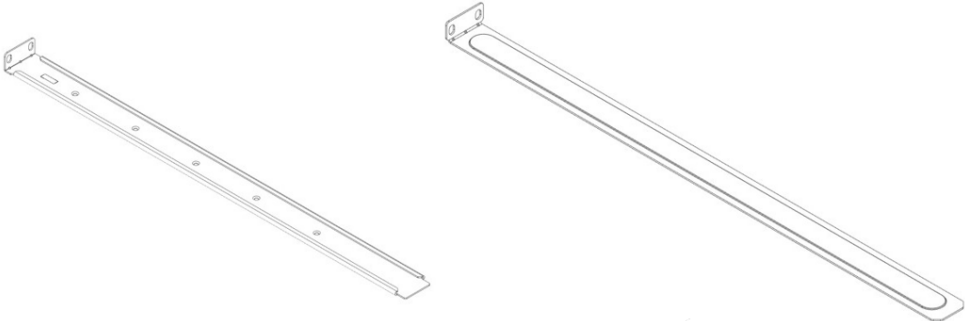
- 1 x System
- Rail kit for short depth racks (19.7"-23.6" / 500-600mm) or for standard depth racks (23.6"-31.5" / 600-800mm)
- 2 x Power cables – Type C13-C14
- 1 x Harness RS232 2M
- 1 x Harness CAT6A 2M – RJ-45 to RJ-45 cable
- 6 x Cable ties
- 2 x Cable retainers

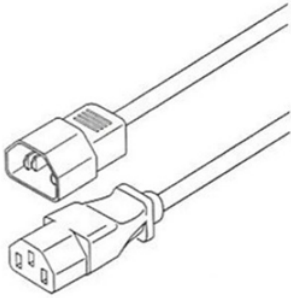
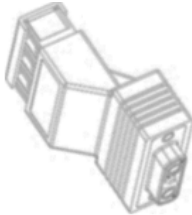
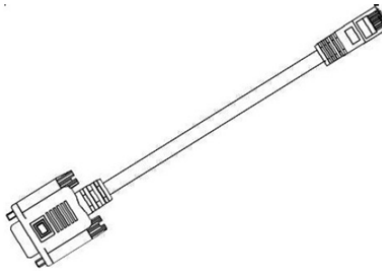
3.8.2 Rail Kit Contents

The following parts are included in the static rail kit (see figure below):

- 2x Rack mount rails (A)
- 2x Rack mount blades (B)
- 8x M6 Standard cage nuts^{1 2} and 8x M6 Standard pan-head Phillips screws¹ (C)
- 4x Phillips100 DEG F.H TYPE-I ST.ST 6-32 X 1/4 screw with around patch (D).

¹ Other threads are available by special order: M5, 10-32, 12-24. ² G-type cage-nut is available by special order.

Quantity	Item	
X4	 D	
X8 (of each)	 C	
X2 (of each)	 A,B	

Quantity		Item
X2	 In AC powered systems: Power cables	 In DC powered systems: DC adapters
X1		
X2		

Prerequisites

Before mounting the system to the rack, select the way you wish to place the system. Pay attention to the airflow within the rack cooling, connector and cabling options.

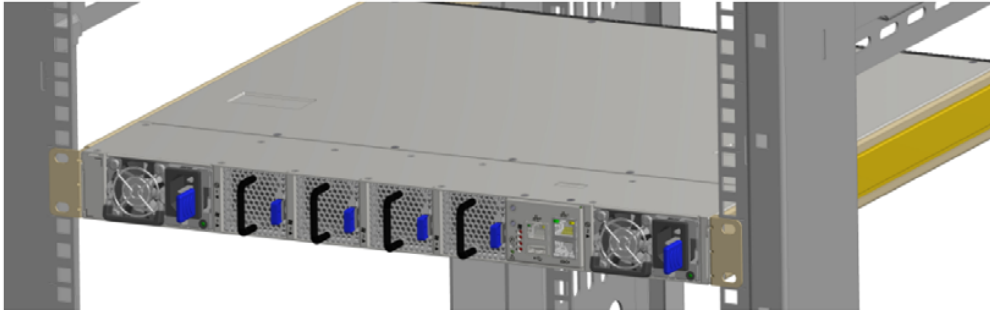
While planning how to place the system, consider the two installation options shown in the **Installation Options** figure below, and review the following points:

- Make sure the system air flow is compatible with your installation selection. It is important to keep the airflow within the rack in the same direction.
- Note that the part of the system to which you choose to attach the rails (the front panel direction, as demonstrated in Option 1 or the FRUs direction, as demonstrated in Option 2) will determine the system's adjustable side. The system's part to which the blades are attached, will be adjacent to the cabinet.
- In case there are cables that cannot bend within the rack, or in case more space is needed for cable bending radius, it is possible to recess the connector side or the FRU side by 3.5" (8.9 cm), by optional placement of the system's rails.
- The FRU side is extractable. Mounting the rack blades inverted to the FRU side (Option 2) will allow you to slide the FRUs, in and out.

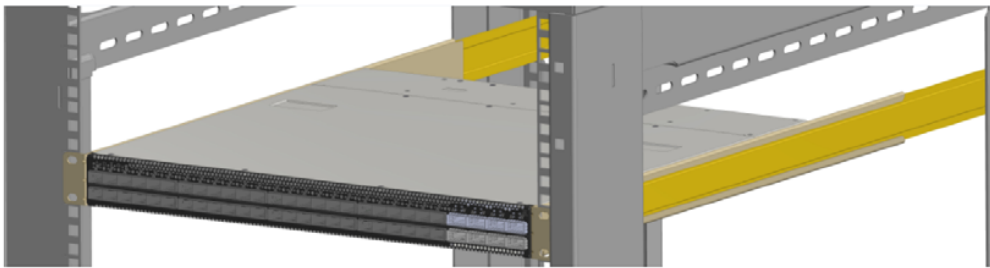
3.8.3 Installation Instructions

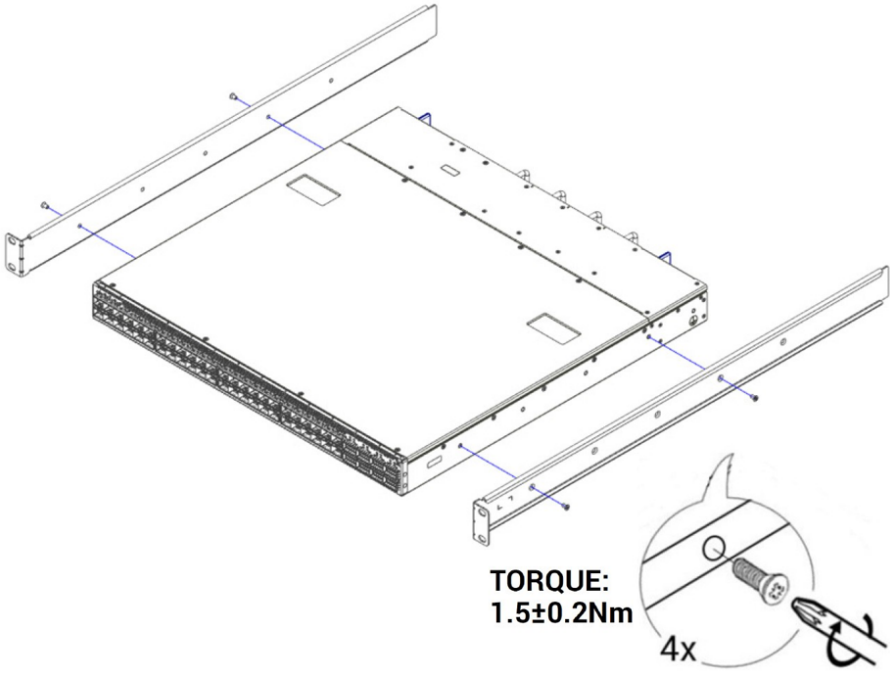
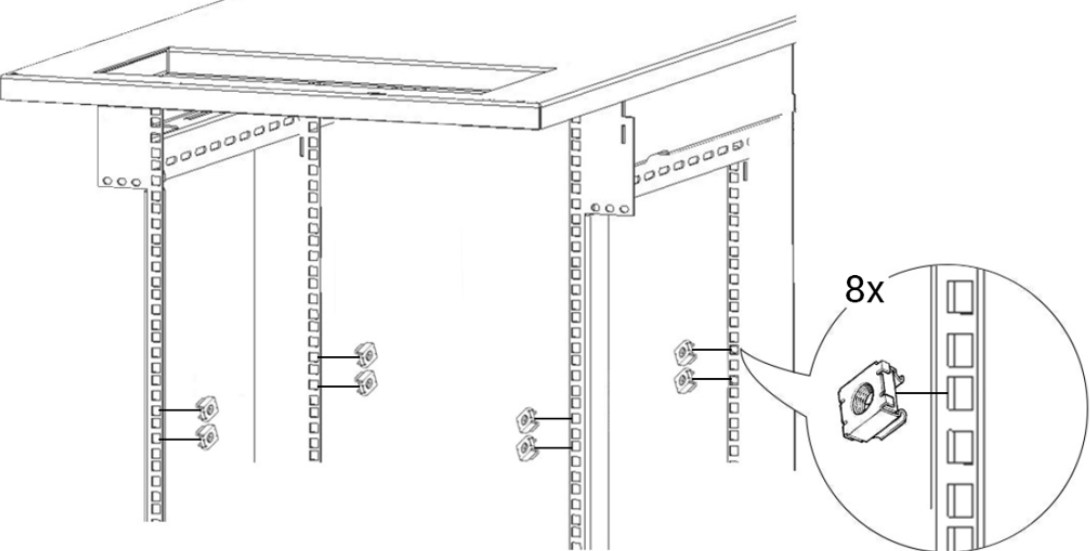
Installation Options

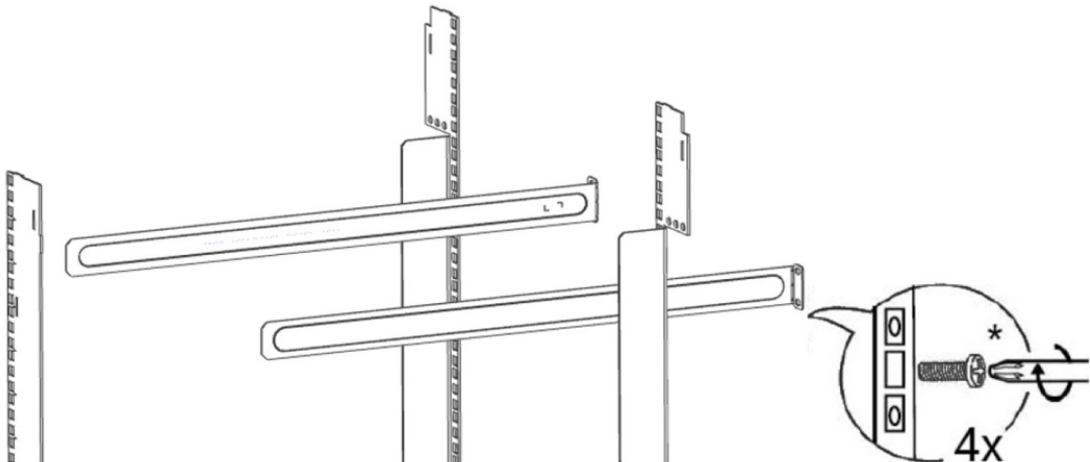
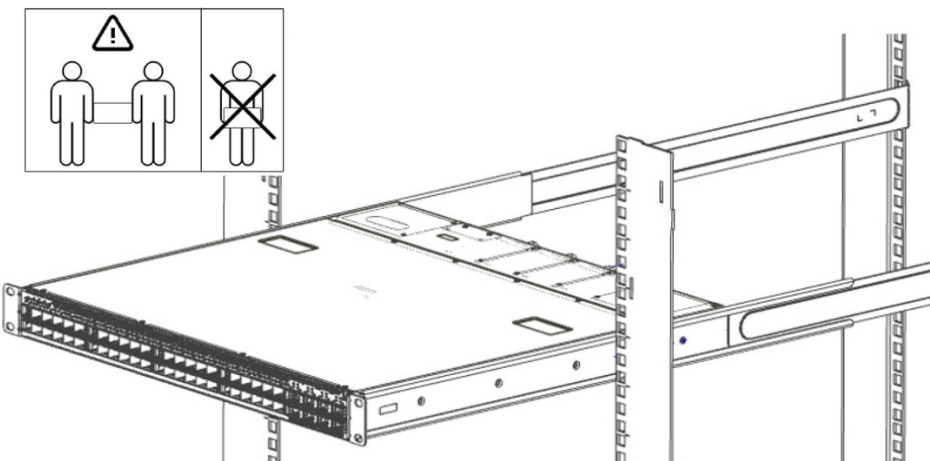
Option 1:

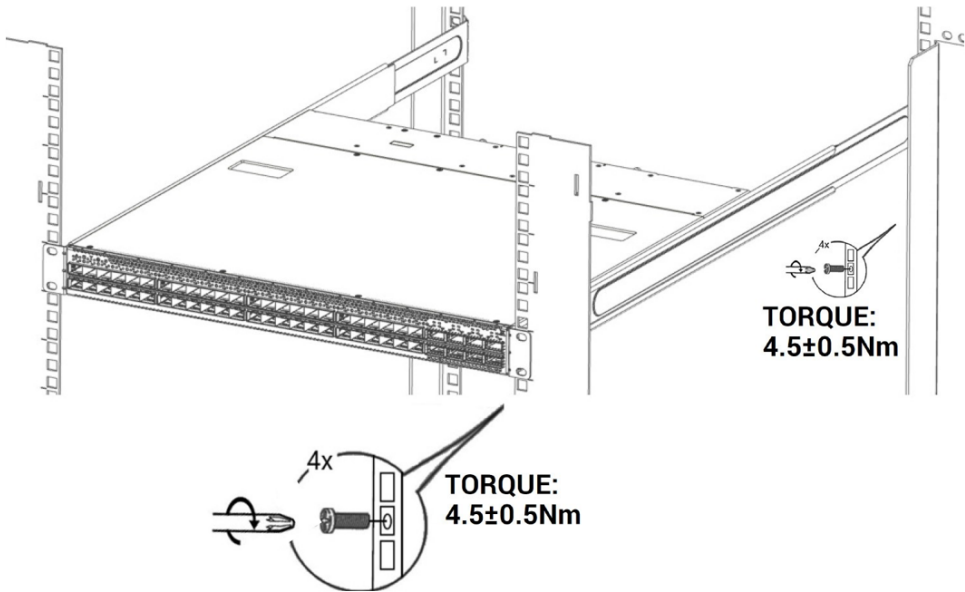
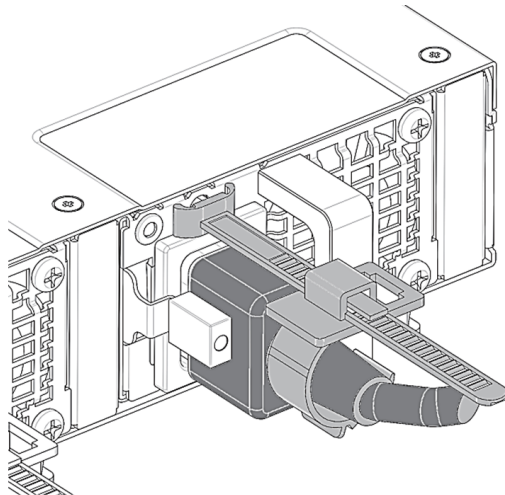


Option 2:



#	Illustration
1	Attach the left and right rack mount rails (A) to the switch, and secure the chassis in the rails by screwing 2 flat head Phillips screws (D) in the designated points on each side (a total of 4 screws). To tighten the screws, use a torque of 1.5 ± 0.2 Nm. 
2	Install 8 cage nuts (C) in the desired slots of the rack: 4 cage nuts in the non-extractable side and 4 cage nuts in the extractable side. Note that while each rack U (unit) consists of three holes, the cage nut should be installed vertically with its ears engaging the top and bottom holes only. 

#	Illustration
3	On the rear side of the cabinet, install the two blades (B) in the selected rack unit, using four M6 screws (C). Do not tighten the screws yet. 
4	While your installation partner is supporting the system's weight, perform the following steps: Slide the two blades into the left and right rails, and adjust them to fit your rack's depth. Use four M6 screws (D) to fix the blades into the rack. Do not tighten the screws yet. 

#	Illustration
5	Secure the system in the rack by tightening the 8 screws inserted in Step 3 and Step 4 with a torque of 4.5 ± 0.5 Nm. 
8	A cable retainer should be used to secure the power cord when plugging it into each power socket (located on the rear side of the switch). To secure the power cord inside the retainer, press the small tab on the retainer strip to loosen the loop and pull. (The following diagram is for general illustration; the rear view does not necessarily match that of the actual system). 

3.9 SN2100/SN2010 Side by Side Mounting Rail Kit



The installation process is demonstrated on an SN2100 system, but applies to the SN2010 series as well.

A designated rail kit for the SN2100/SN2010 systems can be purchased separately.

This section is relevant to short-depth systems that allow such a form of installation only.

Kit Part Number	Kit Legacy Part Number	Rack Size and Rack Depth Range
930-9NRKT-0 OJG-000	MTEF- KIT-D	Rack installation kit for SN2100/SN2010 series short depth 1U switches, allows installation of one or two switches side-by-side into standard depth racks.

3.9.1 Safety Precautions

- All servers and systems in the rack should be planned with the airflow direction. All FRU components must have the same **air flow direction**. A mismatch in the air flow will affect the heat dissipation.

3.9.2 Package Contents

- 1 x System
- 2 x Power cables – Type C13-C14
- 1 x Harness RS232 2M cable – DB9 to RJ-45

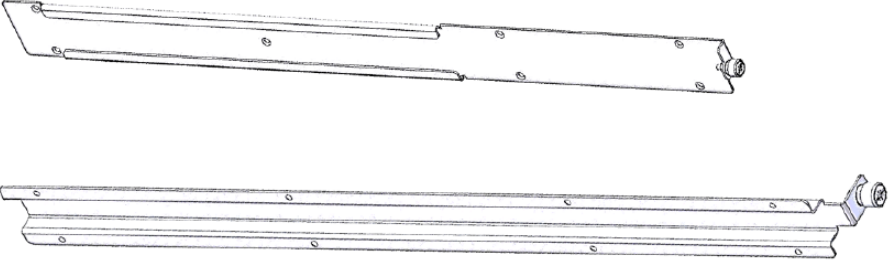
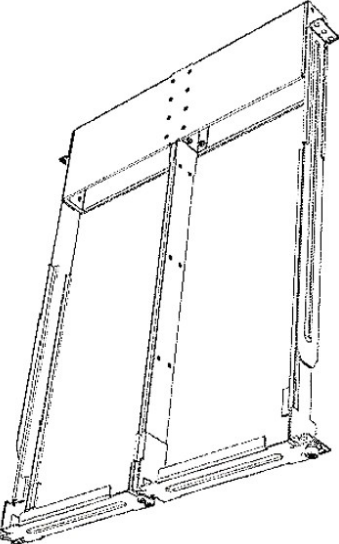
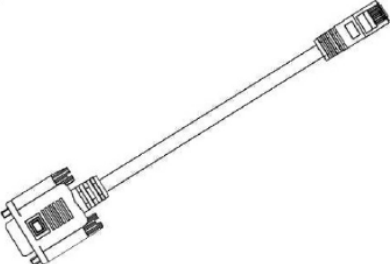
The following items are not included in the SN2010 package, and can be purchased separately:

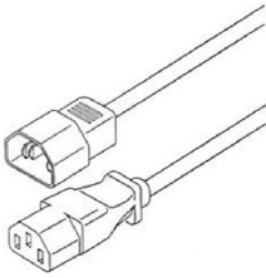
- Rack installation kit for SN2010 series short depth 1U switches, allows installation of one switch into standard depth racks (23.6"-31.5"/600-800mm)

3.9.3 Rail Kit Contents

- 1 metal frame for two systems (A)
- 2 system mounting blades with 8 screw holes - the kit contains enough rails to install 2 systems (B)
- 2 system mounting blades with 7 screw holes - the kit contains enough rails to install 2 systems (C)
- 2 blank (installed) covers (D)
- 30 flat head 4-40 screws - the kit contains enough screws to install 2 systems (E)
- 2 frame rail slides (F)
- 10 (+2 spare units) M6 pan head screws (G)
- 10 (+2 spare units) M6 spring washers (H)
- 10 (+2 spare units) M6 spring steel cage nuts (I)
- 6 (+2 spare units) cable-ties (J)

Quantity	Item
X30 - For Side-by-Side Installation X15 - For a single switch	 E

Quantity	Item
X10 (of each)	 I, G, H
X2 (of each)	C B+F 
1X	 A+D
X1	

Quantity	Item
X2	
X8	 J

If anything is damaged or missing, contact your NVIDIA representative at Networking-support@nvidia.com.

Prerequisites

Before mounting the system to the rack, select the way you wish to place the system. Pay attention to the airflow within the rack cooling, connector and cabling options.

- The installation kits come with enough system mounted rails and flat head screws to install two systems.
- The 2 system metal frame will fit into racks with from 23.6" (600mm) to 31.5" (800mm) space between the vertical supports.
- You may choose to install your system in the right or in the left part of the metal frame. The following instructions apply to installation in the right part. For installation in the frame's left part, follow the same instructions, while replacing "right" with "left", and vice versa.

 **At least two people are required to safely mount the system in the rack.**

3.9.4 Installation Instructions

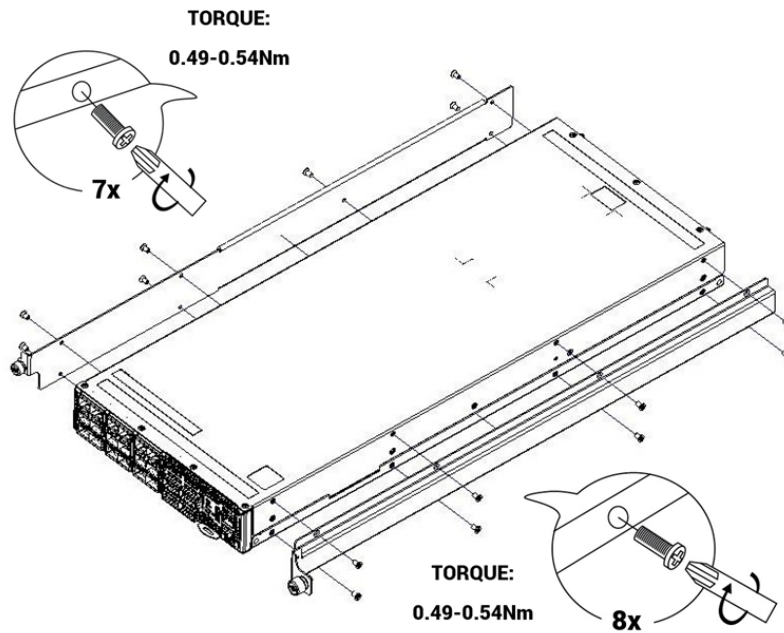
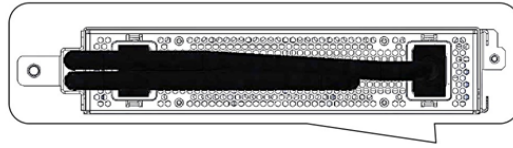
#	Illustration
1	Insert the SE (single ended) plugs to the dedicated inlets in the system's rear panel. Carefully position the SE cables one on top of the other, and use 3 cable-ties to pair them together.  While pairing the cables, make sure the cables are paired in symmetry to the switch, in order to avoid damaging the cables.  Place the coupled cables in the designated area within the right flat blade (the blade with 7 screw holes). 

#	Illustration
2	 In the this step you will be attaching the mounting rails to the switch sides. Before doing that, make sure the cables are laid properly within them. Avoid using excessive pressure, as it can damage the cables.

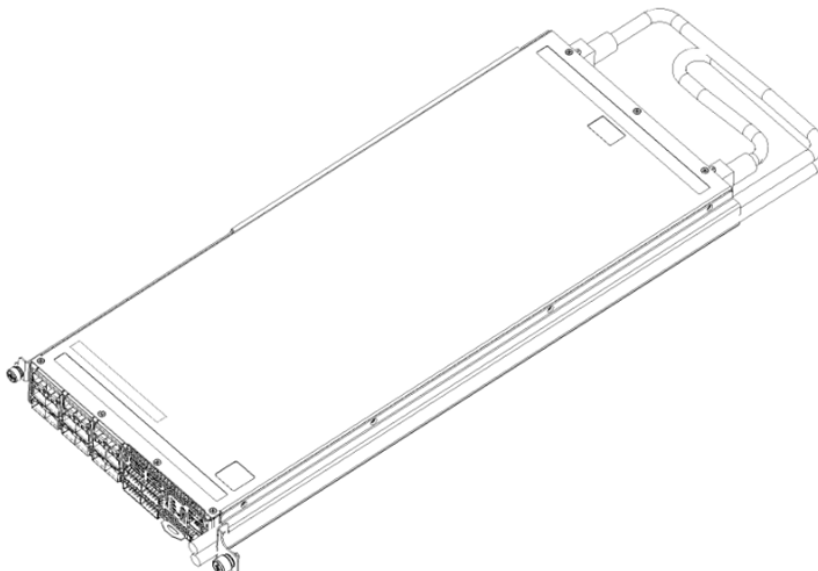
#

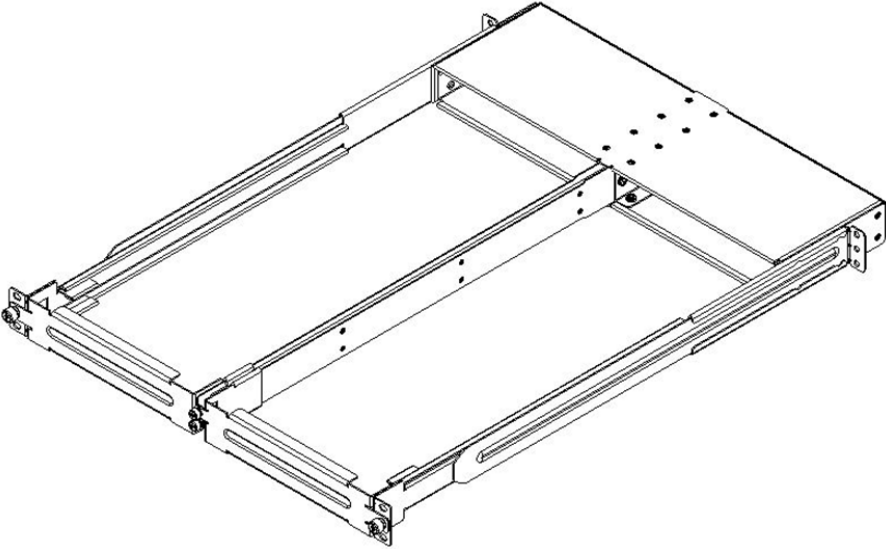
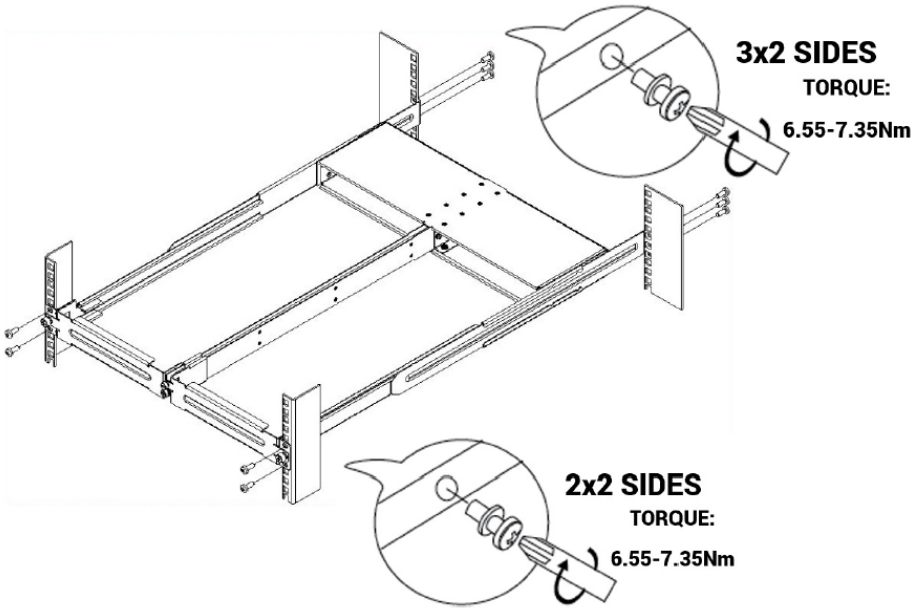
Illustration

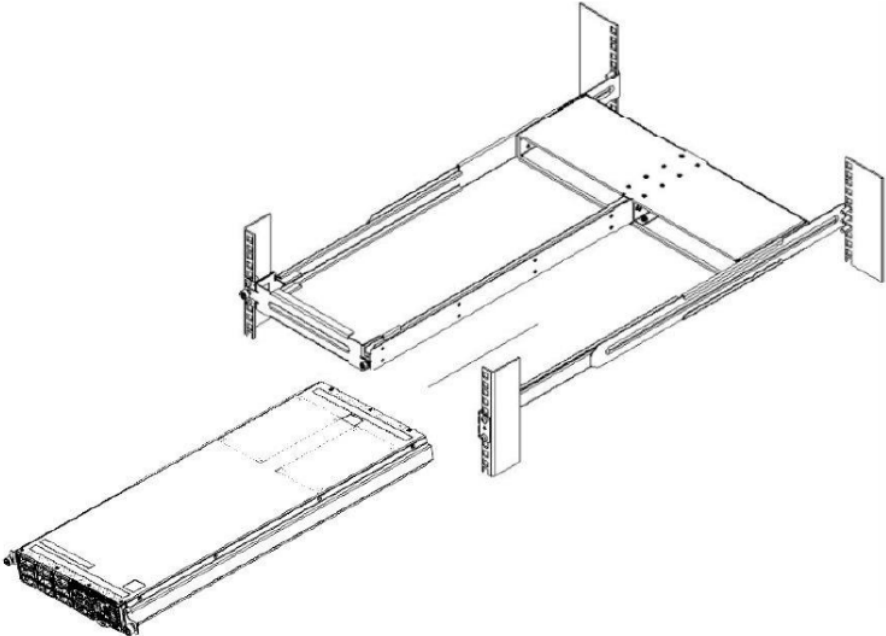
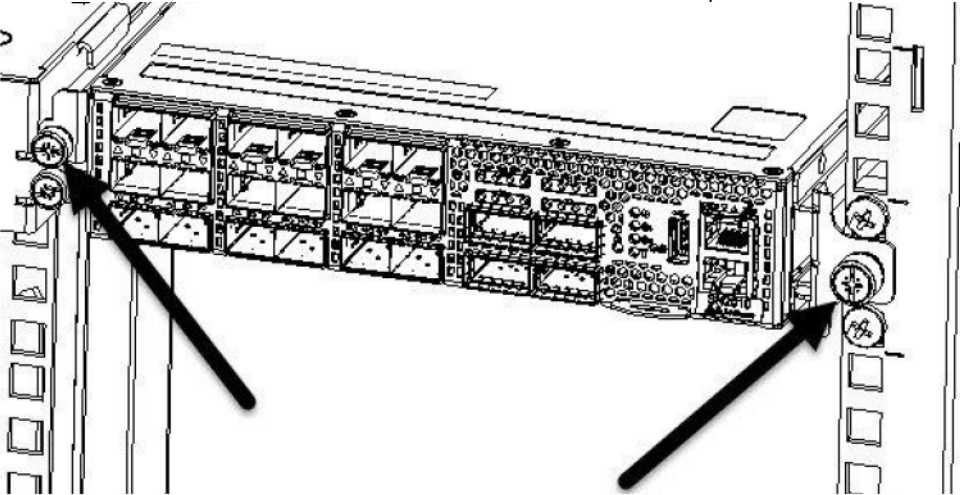
While holding the cables stably together in the blade's rail with one hand, use your other hand to secure the blades to the chassis. Screw the right blade with eight 4-40 flathead screws, and the left blade with seven 4-40 flathead screws. The recommended torque is 0.49-0.54 Nm.

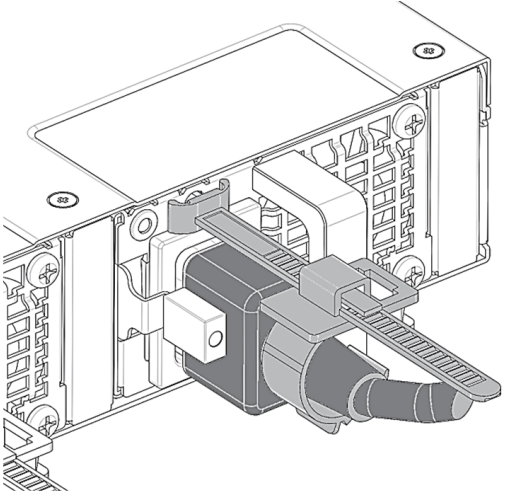


Attached Rail with Threaded Cables - Top View:



#	Illustration
3	Slide the two frame slides into the dedicated rails in the metal frame. 
4	Attach the frame to the rack by using ten spacer cage nuts, and screw ten M6 pan head screws - four in the front part of the rack, and 6 in its rear part. The recommended torque is 6.55-7.35 Nm.  3x2 SIDES TORQUE: 6.55-7.35Nm 2x2 SIDES TORQUE: 6.55-7.35Nm

#	Illustration
5	Remove the blank cover from the selected slot in the frame, and mount the system by sliding its mounting blades into the frame. Repeat this step to install an additional system in the other side of the frame, if needed. ❌ Do not remove both of the blank covers at the same time. When no system is installed, at least one of them should be present to support the frame's partition. 
5	Tighten the capture nuts to secure the system in the frame. The recommended torque on the right screw is 3.0-3.36 Nm while on the left screw recommended torque is 0.89-0.98 Nm. 

#	Illustration
6	! A cable retainer should be used to secure the power cord when plugging it into each power socket (located on the rear side of the switch). To secure the power cord inside the retainer, press the small tab on the retainer strip to loosen the loop and pull. (The following diagram is for general illustration; the rear view does not necessarily match that of the actual system). 

3.10 SN2100/SN2010 Static Single Switch Rail Kit

- !** The installation process is demonstrated on an SN2100 system, but applies to the SN2010 series as well.
- This rail kit is not included with the SN2100/SN2010 systems, and can be purchased separately.
- This section is relevant to short-depth systems that allow such form of installation only.

Kit Part Number	Kit Legacy Part Number	Rack Size and Rack Depth Range
930-9BRKT-00 JI-000	MTEF-KIT-E	Rack installation static kit for SN2100/SN2010 systems short depth 1U half-width switches, allows installation of a single switch into standard depth racks.

The following parts are included in the rail kit (see figure below):

3.10.1 Package Contents

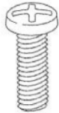
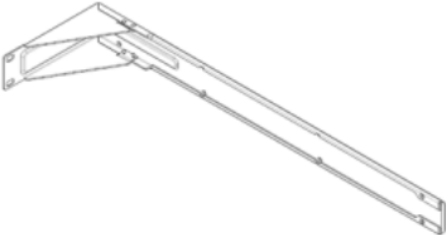
- 1 x System
- 1 x Power cables – Type C13-C14
- 1 x Harness RS232 2M cable – DB9 to RJ-45

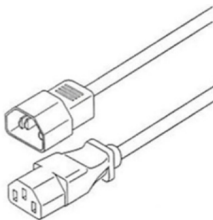
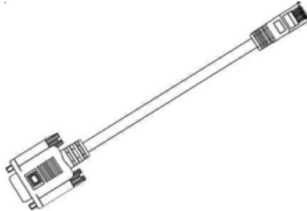
The following items are not included in the package, and can be purchased separately:

- Rack installation kit for SN2100 series short depth 1U switches, allows installation of one switch into standard depth racks (23.6"-31.5" / 600- 800mm).

3.10.2 Rail Kit Contents

- 16 flat head 4-40 screws (A)
- 8 M6 spring steel cage nuts (B)
- 8 M6 pan head screws (C)
- 8 M6 spring washers (D)
- 8 M6 flat washers (E)
- 2 rack mount blades (F)
- 2 system brackets (G)

Quantity	Item
X18	A 
X8 (of each)	B, C   D  E 
X2 (of each)	F, G  

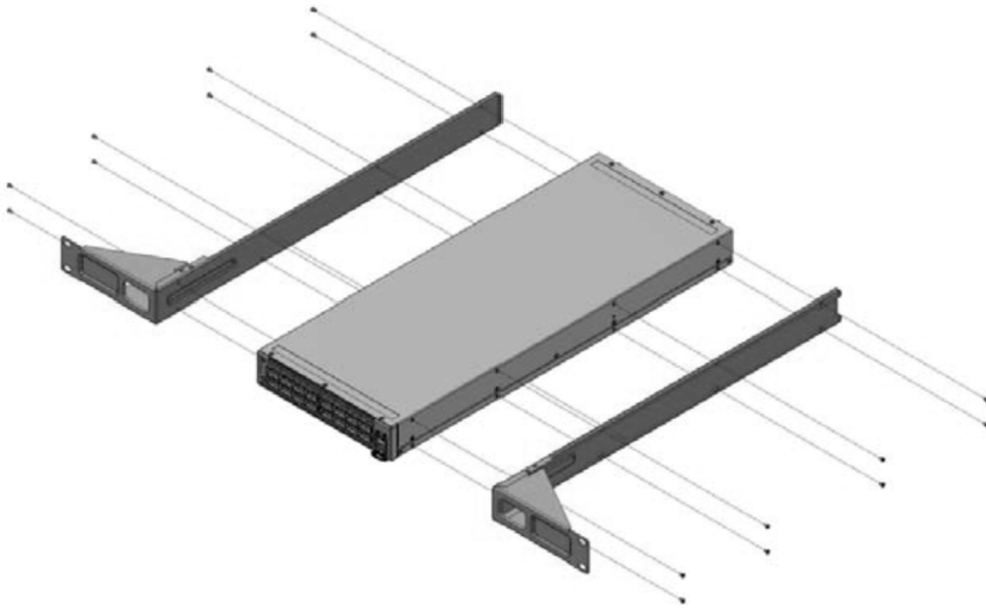
Quantity	Item
X2	
X1	

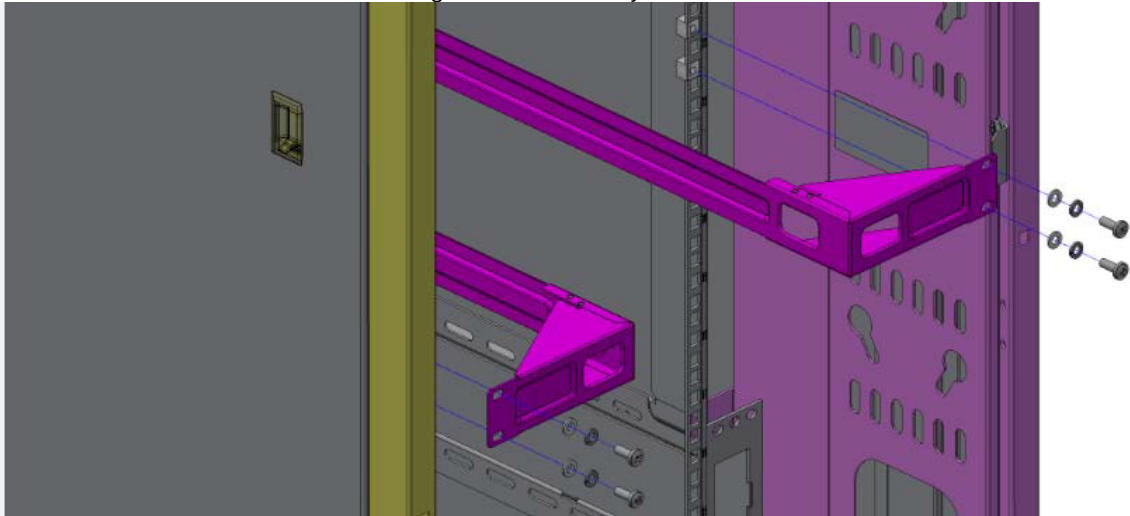
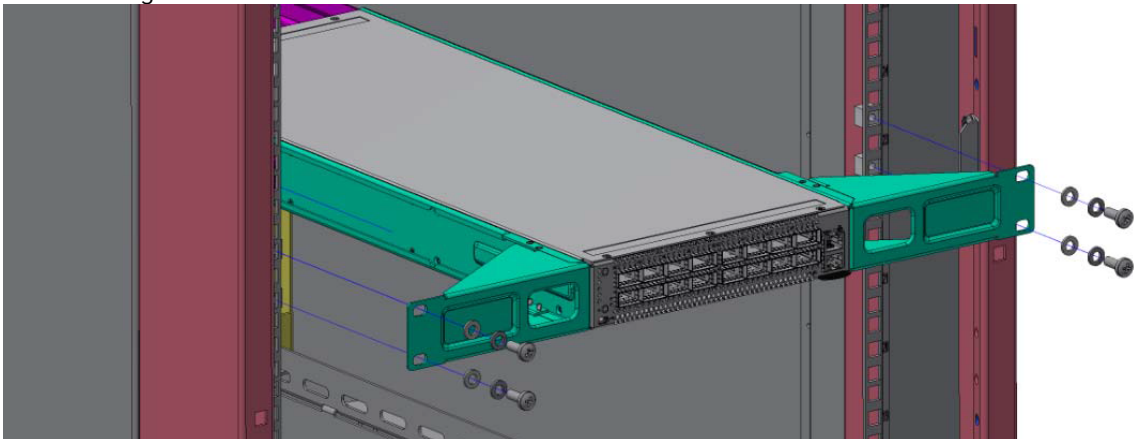
If anything is damaged or missing, contact your NVIDIA representative at Networking-support@nvidia.com.

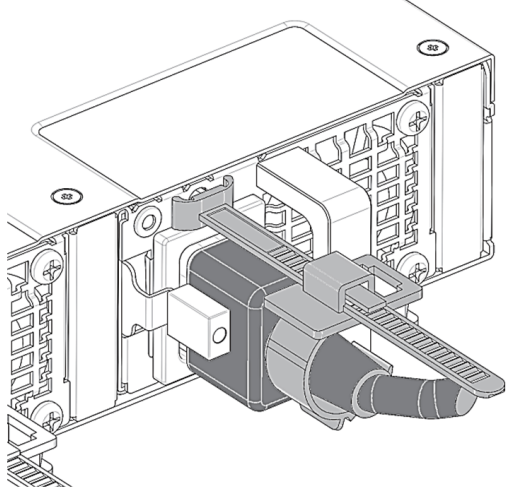
3.10.3 Safety Precautions

All servers and systems in the rack should be planned with the airflow direction. All FRU components must have the same air flow direction. A mismatch in the air flow will affect the heat dissipation.

3.10.4 Installation Instructions

#	Illustration
1	Attach the 2 system rails (F,G) to the system's sides using 8 flat head 4-40 screws (A) in each side. 

#	Illustration
2	Install 8 cage nuts of the relevant type - square or round holes, according to your rack type. 
3	While your installation partner is supporting the system's weight, perform steps 3 and 4: On the rear side of the cabinet, install the two blades (F, G) in the selected rack unit, using four M6 screws and washers (C+D+E). Do not tighten the screws yet. 
4	Mount the system into the rack enclosure by sliding the rails in the rack. Secure the brackets to the rack's posts by inserting four M6 screws and washers (C+D+E) in the designated cage nuts - 2 in each side. Tighten all screws. 

#	Illustration
5.	A cable retainer should be used to secure the power cord when plugging it into each power socket (located on the rear side of the switch). To secure the power cord inside the retainer, press the small tab on the retainer strip to loosen the loop and pull. (The following diagram is for general illustration; the rear view does not necessarily match that of the actual system). 

3.11 Cable Installation

3.11.1 Power Cable and Cable Retainer

In some switch models, the product's package includes cable retainers. It is highly recommended to use them in order to secure the power cables in place. Please adhere to the following instructions:

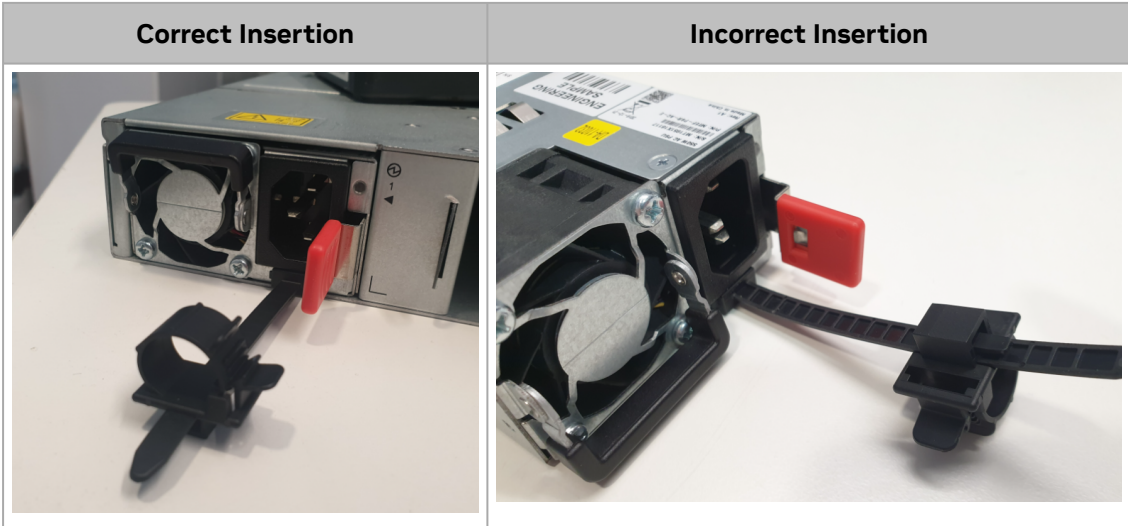
1. Verify the integrity of the retainer assembly, as demonstrated in the below table:- The snaps' push-pins must have visible edges with no broken or torn parts.
- The shoulders' pins should be in-tact and must not be bent inwards.

Proper Condition	Improper Condition
	

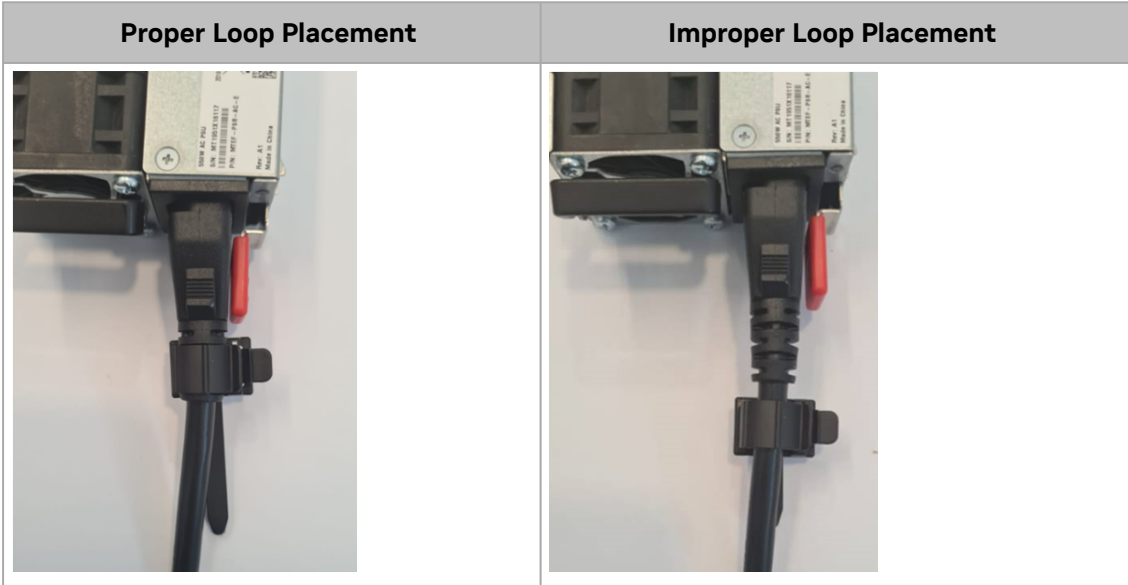
2. It is advised to place the PSU on a flat, stable surface. While you secure the PSU in place, use two thumbs to insert the retainer's two snaps into the designated holes located near the AC inlet. Make sure that the retainer's plastic loop is facing upwards, as demonstrated in the below table.



For demonstration purposes, the images in this document show C2P (Connector-to-Power) airflow PSUs with red latches, yet the instructions apply to P2C (Power-to-Connector) PSUs with blue latches as well.



3. Push the retainer until the shoulders' pins (in blue circles below) are open and aligned with the PSU front panel.
4. Make sure that the retainer is fully locked in place by gently attempting to pull it outwards.
5. Open the plastic loop and route the AC cord through it. Locate the loop over the AC cord, as shown in the following table, and fasten it tightly.





Each cable retainer can be used once only. Once the retainer has been fully inserted and the shoulders' pins have been adjusted, the retainer cannot be used again, and should be discarded if pulled out.

3.11.2 Port Cables

All cables can be inserted or removed with the unit powered on.

To insert a cable, press the connector into the port receptacle until the connector is firmly seated. The LED indicator, corresponding to each data port, will light when the physical connection is established. When a logical connection is made, the relevant port LED will turn on.

To remove a cable, disengage the locks and slowly pull the connector away from the port receptacle. The LED indicator for that port will turn off when the cable is unseated.

For a list of Supported Cables and Transceivers, please refer to [LinkX interconnect guides](#).

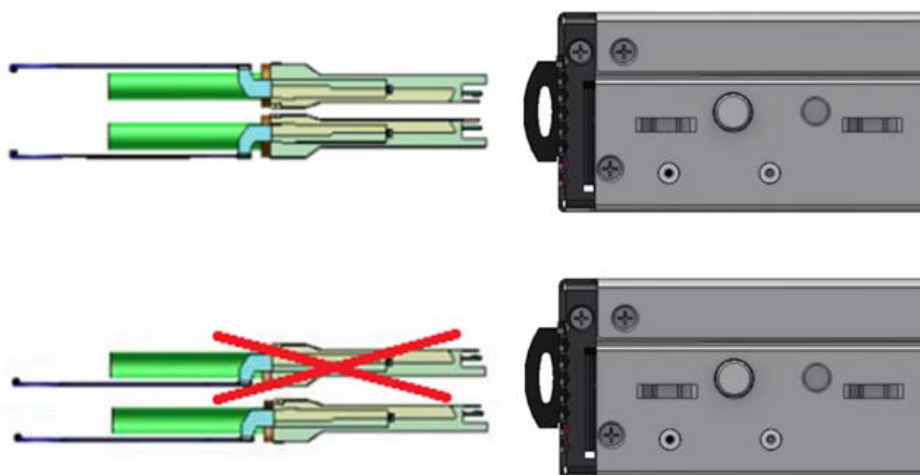
For full cabling guidelines, please refer to [NVIDIA Cable Management Guidelines and FAQs Application Note](#).

For more information about port LEDs, refer to Port LEDs.

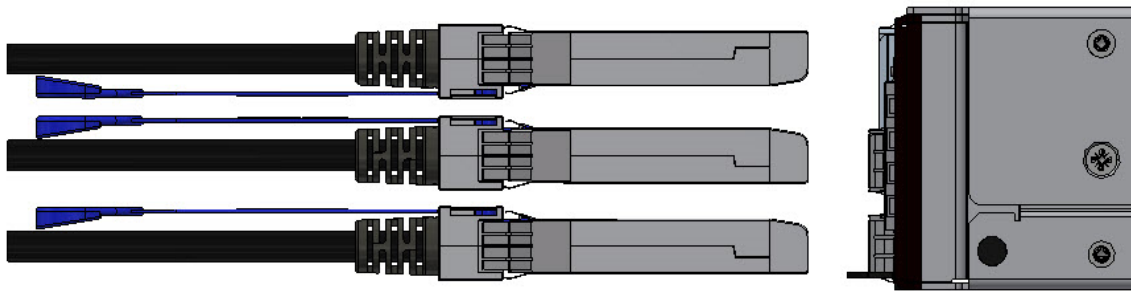


Do not force the cable into the cage with more than 40 newtons/9.0 pounds/4kg force. Greater insertion force may cause damage to the cable or to the cage.

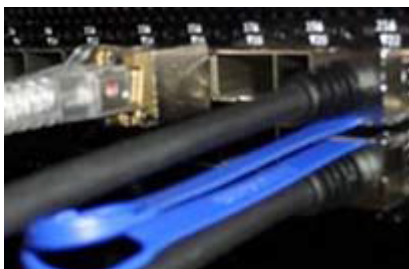
QSFP Cable Orientation



SN2010 SFP Cable Orientation



SN2410 Cable Orientation



✗ The SN2410 system includes ports of different types. The figure above does not apply to the SFP28 ports; see "SN2410 Splitting Options" below.

3.11.2.1 Splitter (Breakout) Cables and Adapters

A 100GbE port can be split to two 50GbE ports, or to four (or less) 25GbE ports, using an NVIDIA splitter cable.

Splitting a 100GbE QSFP28 port to 4 separate 25GbE ports (using a splitter cable) may disable (unmap) the 100GbE port below it. See specific splitting options per system detailed below.

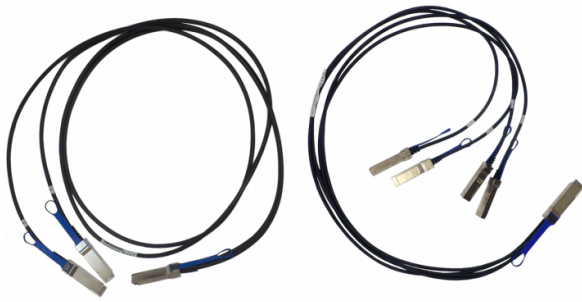
3.11.2.1.1 Using Splitter (Breakout) Cables with NVIDIA Onyx (MLNX-OS)

When using this feature, you should log into the NVIDIA Onyx (MLNX-OS) CLI and configure the individual ports to be 'split-2' or 'split-4'. For further information on NVIDIA's cable, visit <https://www.nvidia.com/en-us/networking/interconnect/>.

3.11.2.1.2 Using Splitter (Breakout) Cables with Cumulus Linux

If you are using 4x10G direct attach copper cables or active optical cables, edit the `/etc/cumulus/ports.conf` to enable support for these cables, then restart the switchd service using the `sudo systemctl restart switchd` command. For more details, see [Switch Port Attributes](#) in the [Cumulus Linux User Guide](#).

Examples of Splitter (Breakout or Fanout) Cables



3.11.2.1.3 SN2700 Splitting Options

The top QSFP28 ports marked in green are splittable to 4 SFP28 ports, each.
The bottom QSFP28 ports (gray) are blocked when the upper ports are in split mode.
All QSFP28 ports can be split to 2 QSFP28 ports.



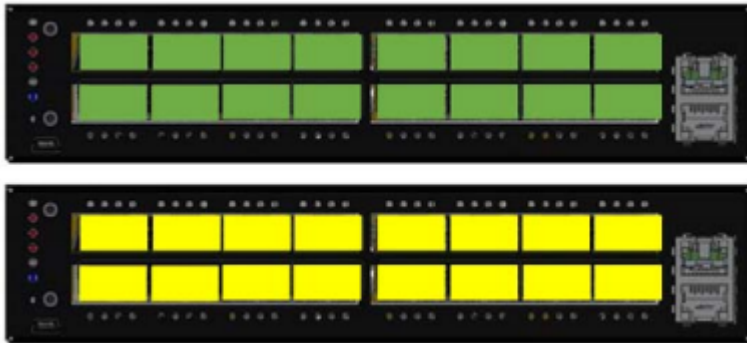
3.11.2.1.4 SN2410 Splitting Options

The top QSFP28 ports – 49, 51, 53, 55 (green) – are splittable to 4 SFP28 ports each.
The bottom QSFP28 ports – 50, 52, 54, 56 (gray) – are blocked when the upper ports are in 4 SFP28 split mode.
All QSFP28 ports can be split into two QSFP28 ports.



3.11.2.1.5 SN2100 Splitting Options

All QSFP28 ports are splittable. Each port can be split into 4xSFP28 (10/25G) or 2xQSFP28 (50G) ports. There are no blocking requirements.



3.11.2.1.6 SN2010 Splitting Options

All QSFP28 ports are splittable. Each port can be split into 4xSFP28 (10/25G) or 2xQSFP28 (50G) ports. There are no blocking requirements.



3.12 Initial Power On

Each system's input voltage is specified in the [Specifications](#) chapter.

The power cords should be standard 3-wire AC power cords including a safety ground and rated for 15A or higher.

- ✗ The system platform will automatically power on when AC power is applied. There is no power system. Check all boards, power supplies, and fan tray modules for proper insertion before plugging in a power cable.

1. Plug in the first power cable.
2. Plug in the second power cable.
3. Wait for the System Status LED to turn green.

✗ It may take up to five minutes to turn on the system. If the System Status LED shows amber after five minutes, unplug the system and call your NVIDIA representative for assistance.

4. Check the System Status LEDs and confirm that all of the LEDs show status lights consistent with normal operation (initially flashing, and then moving to a steady color) as shown in the figures below. For more information, refer to [LED Notifications](#).

System Status LEDs* 5 Minutes After Power On



*The icons order and style may vary depending on the system.

*The SN2100 and SN2010 systems have two PSU System Status LEDs each.

*The Bad Port LED exists in SN2700 and SN2410 only.

✗ After inserting a power cable and confirming the green System Status LED light is on, make sure that the Fan Status LED shows green. If the Fan Status LED is not green, unplug the power connection and check that the fan module is inserted properly and that the mating connector of the fan unit is free of any dirt and/or obstacles. If no obstacles were found and the problem persists, call your NVIDIA representative for assistance.

Two Power Inlets - Electric Caution Notifications:

- ✗
- Risk of electric shock and energy hazard. The two power supply units are independent. Disconnect all power supplies to ensure a powered down state inside of the switch platform.
 - ACHTUNG Gefahr des elektrischen Schocks. Entfernen des Netzsteckers eines Netzteils spannungsfrei. Um alle Einheiten spannungsfrei zu machen sind die Netzstecker aller Netzteile zu entfernen.
 - ATTENTION Risque de choc et de danger électrique. Le débranchement d'une seule alimentation stabilisée ne débranch uniquement qu'un module "Alimentation Stabilisée". Pour isoler complètement le module en cause, il faut débrancher toutes les alimentations stabilisées.

3.13 System Bring-Up

For bring-up of a switch system with NVIDIA Onyx (MLNX-OS) operating system installed, see [Configuring Network Attributes Using NVIDIA Onyx \(MLNX-OS\)](#).

For bring-up of a switch system with Cumulus Linux operating system installed, see [Configuring Network Attributes Using Cumulus Linux](#).

3.13.1 Configuring Network Attributes Using NVIDIA Onyx (MLNX-OS)

The procedures described in this chapter assume that you have already installed and powered on the system according to the instructions in this document. The system comes with a pre-configured DHCP. If you wish to disable it, refer to [Disable Dynamic Host Configuration Protocol \(DHCP\)](#). In case a manual configuration is required, please refer to the instructions in [Manual Host Configuration](#).

3.13.1.1 Manual Host Configuration

To perform initial configuration of the system:

Step 1. Connect a host PC to the Console RJ45 port of the system, using the supplied harness cable (DB9 to RJ45).



Make sure to connect to the Console RJ45 port, and not to the (Ethernet) MGT port. Pay attention to the icons:

Console RJ45	IOIOI
Ethernet MGT	

Step 2. Configure a serial terminal program (for example, HyperTerminal, minicom, or Tera Term) on your host PC with the settings described in the table below. Once you perform that, you should get the CLI prompt of the system.

Serial Terminal Program Configuration

Parameter	Setting
Baud Rate	115200
Data bits	8
Stop bits	1
Parity	None
Flow Control	None

Step 3. Login as admin and use admin as password. On the first login, the NVIDIA Onyx (MLNX-OS) configuration wizard will start.

Step 4. To configure network attributes and other initial parameters to the system, follow the configuration wizard as shown in the Configuration Wizard Session table below.

Configuration Wizard Session

Wizard Session Display	Comments
NVIDIA configuration wizard Do you want to use the wizard for initial configuration? yes	You must perform this configuration the first time you operate the system or after resetting the system. Type 'y' and then press <Enter>.
Step 1: Hostname? [switch-1]	If you wish to accept the default hostname, press <Enter>. Otherwise, type a different hostname and press <Enter>.
Step 2: Use DHCP on mgmt0 interface? [no] yes	Perform this step to obtain an IP address for the system. (mgmt0 is the management port of the system). If you wish the DHCP server to assign the IP address, type 'yes' and press <Enter>. If you type 'no' (no DHCP), then you will be asked whether you wish to use the 'zeroconf' configuration or not. If you enter 'no' (no Zeroconf), you must enter a static IP, and the session will continue.
Step 3: Enable IPv6? [yes]	The management interface will be able to use IPv6 addresses. If you enter "no" (no IPv6), you will automatically be referred to Step 6.
Step 4: Enable IPv6 auto-config (SLAAC) on mgmt0 interface? [no]	This turns on auto-configuration of the IPv6 addresses. This is unsuitable for DHCPv6.
Step 5: Enable DHCPv6 on mgmt0 interface? [no]	To enable DHCPv6 on the MGMT0 interface.
Step 6: Admin password (Press <Enter> to leave unchanged)? <new_password> Step 6: Confirm admin password? <new_password>	To avoid illegal access to the machine, please type a password and then press <Enter>. Then confirm the password by re-entering it. Note that password characters are not printed.
You have entered the following information: <A summary of the configuration is now displayed.> To change an answer, enter the step number to return to or hit <enter> to save changes and exit. Choice: <Enter> Configuration changes saved.	The wizard displays a summary of your choices and then asks you to confirm the choices or to re-edit them. Either press <Enter> to save changes and exit, or enter the configuration step number that you wish to return to. <i>Note: To re-run the configuration wizard, run the command "configuration jump-start" in Config mode.</i>

The table below shows an example of static IP configuration for mgmt0 interface.

Configuration Wizard Session - Static IP Configuration

```
Mellanox configuration wizard
Do you want to use the wizard for initial configuration? yes

Step 1: Hostname? []
Step 2: Use DHCP on mgmt0 interface? [yes] no
Step 3: Use zeroconf on mgmt0 interface? [no]
Step 4: Primary IP address? [for example 192.168.10.4] 10.10.10.10
Mask length may not be zero if address is not zero (interface eth0)
Step 5: Netmask? [0.0.0.0] 255.255.255.0
Step 6: Default gateway? [for example 192.168.10.1] 10.10.10.255
Step 7: Primary DNS server?
Step 8: Domain name?
Step 9: Enable IPv6? [yes]
Step 10: Enable IPv6 autoconfig (SLAAC) on mgmt0 interface? [no]
Step 11: Admin password (Enter to leave unchanged)?

To change an answer, enter the step number to return to.
```

```
Otherwise hit <enter> to save changes and exit.
Choice:
Configuration changes saved.

To return to the wizard from the CLI, enter the "configuration jump-start"
command from configure mode. Launching CLI...
```

Step 5. Before attempting a remote (for example, SSH) connection to the system, check the mgmt0 interface configuration. Specifically, verify the existence of an IP address. To check the current mgmt0 configuration, enter the following command:

```
switch01 (config) # show interfaces mgmt0
Interface mgmt0 status:
  Comment:
  Admin up:      yes
  Link up:       yes
  DHCP running:  yes
  IP address:    192.168.1.100
  Netmask:       255.255.255.0
  IPv6 enabled:  yes
  Autoconf enabled: no
  Autoconf route: yes
  Autoconf privacy: no
  DHCPv6 running: no
  IPv6 addresses: 1
  IPv6 address:  fe80::202:c9ff:fe63:b55a/64
  Speed:         1000Mb/s (auto)
  Duplex:        full (auto)
  Interface type: ethernet
  Interface source: physical
  MTU:           1500
  HW address:    00:02:C9:63:B5:5A

RX bytes:      968810197      TX bytes:      1172590194
RX packets:    10982099      TX packets:    10921755
RX mcast packets: 0          TX discards:    0
RX discards:   0            TX errors:      0
RX errors:     0            TX overruns:    0
RX overruns:   0            TX carrier:     0
RX frame:      0            TX collisions:  0
TX queue len:  1000

switch01 (config) #
```

Step 6. Check the software version embedded in your system, using the command 'show version'. Compare this version to the latest version that can be retrieved from NVIDIA support site. To upgrade software, please refer to the [NVIDIA Onyx \(MLNX-OS\) User Manual](#).

3.13.1.2 Disable Dynamic Host Configuration Protocol (DHCP)

DHCP is used for automatic retrieval of management IP addresses.

If a user connects through SSH, runs the wizard and turns off DHCP, the connection is immediately terminated, as the management interface loses its IP address. In such a case, the serial connection should be used.



```
<localhost># ssh admin@<ip-address>
```

```
Mellanox Onyx (MLNX-OS) Switch Management
```

```
Password:
```

```
Mellanox Switch
```

```
Mellanox configuration wizard
```

```
Do you want to use the wizard for initial configuration? yes
```

```
Step 1: Hostname? [my-switch]
```

```
Step 2: Use DHCP on mgmt0 interface? [yes] no
```

```
<localhost>#
```

3.13.1.3 Remote Connection with NVIDIA Onyx (MLNX-OS)

Once the network attributes are set, you can access the CLI via SSH or the WebUI via HTTP/HTTPS.

To access the CLI, perform the following steps:

1. Set up an Ethernet connection between the system and a local network machine using a standard RJ45 connector.
2. Start a remote secured shell (SSH) using the command: `ssh -l <username> <IP_address>`

```
# ssh -l <username> <ip_address>
Mellanox Onyx (MLNX-OS) Switch Management
Password:
```

3. Login as admin (default username is *admin*, password is *admin*).
4. Once you get the CLI prompt, you are ready to use the system.

For additional information about NVIDIA Onyx (MLNX-OS), refer to the *NVIDIA Onyx (MLNX-OS) User Manual* located on the [NVIDIA Networking Documentation Website](#).

3.13.2 Configuring Network Attributes Using Cumulus Linux

For Cumulus Linux initial configuration instructions, see Configuring Cumulus Linux in the [Cumulus Linux Quick Start Guide](#).

3.13.2.1 Remote Connection with Cumulus Linux

Cumulus Linux uses the OpenSSH package to provide SSH functionality. To securely access a Cumulus Linux switch remotely, please follow the instructions on the "SSH for Remote Access" page in the [Cumulus Linux User Guide](#).

3.14 FRU Replacements

 The following information does not apply to the SN2100/SN2010 series. The SN2100/SN2010 systems include two non-replaceable power supply units and four non-replaceable fan units.

3.14.1 Power Supply

NVIDIA systems that are equipped with two replaceable power supply units work in a redundant configuration. Either unit may be extracted without bringing down the system.

 Make sure that the power supply unit that you are NOT replacing is showing green for the power supply unit LED.

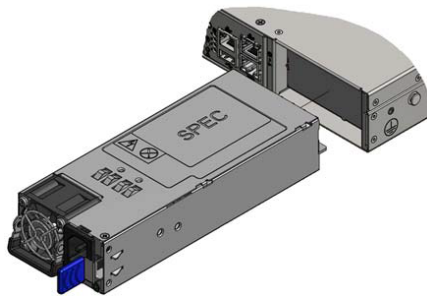
- ✗ Power supply units have directional air flows similar to the fan module. The fan module airflow must coincide with the airflow of all of the power supply units. If the power supply unit airflow direction is different from the fan module airflow direction, the system's internal temperature will be affected. For power supply unit air flow direction, refer to [Air Flow](#).

To extract a power supply unit:

- ✗ The power supply slots of SN2410 should not be left empty for more than 5 minutes.

1. Remove the power cord from the power supply unit.
2. Grasping the handle with your hand, push the latch release with your thumb while pulling the handle outward. As the power supply unit unseats, the power supply unit status LEDs will turn off.
3. Remove the power supply unit.

PS Unit Pulled Out



*The drawing is for illustration purposes. The design may slightly vary depending on the system.

To insert a power supply unit:

1. Make sure the mating connector of the new unit is free of any dirt and/or obstacles.

- ✗ Do not attempt to insert a power supply unit with a power cord connected to it.

2. Insert the power supply unit by sliding it into the opening, until a slight resistance is felt.
3. Continue pressing the power supply unit until it seats completely. The latch will snap into place, confirming the proper installation.
4. Insert the power cord into the supply connector.
5. Insert the other end of the power cord into an outlet of the correct voltage.

- ✗ The green power supply unit indicator should light. If it does not, repeat the whole procedure to extract the power supply unit and re-insert it.

3.14.2 Fans

The system can fully operate if one fan FRU is dysfunctional. Failure of more than one fan is not supported.

- ✘ Make sure that the fans have the air flow that matches the model number. An air flow opposite to the system design will cause the system to operate at a higher (less than optimal) temperature. For power supply unit air flow direction, refer to [Air Flow](#).

To remove a fan unit:

- ⚠ When replacing a faulty fan unit in an operational switch system, do not leave the slot unpopulated for more than 60 seconds.

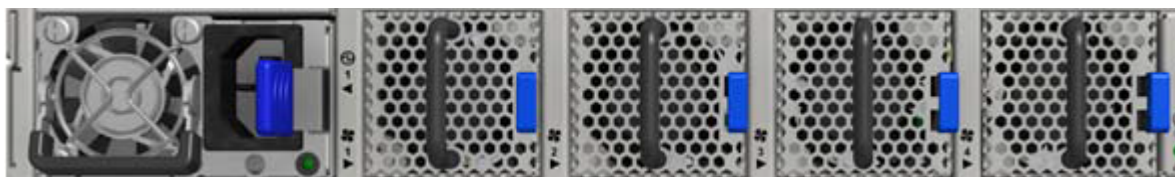
1. Grasping the handle with your right hand, push the latch release (if exists) with your thumb, while pulling the handle outward. As the fan unit unseats, the fan unit status LEDs will turn off.
2. Remove the fan unit.

To insert a fan unit:

1. Make sure the mating connector of the new unit is free of any dirt and/or obstacles.
2. Insert the fan unit by sliding it into the opening until slight resistance is felt. Continue pressing the fan unit until it seats completely.

- ✘ The green Fan Status LED should light. If not, extract the fan unit and reinsert it. After two unsuccessful attempts to install the fan unit, power off the system before attempting any system debug.

Fan Module Latches Examples





4 Interfaces

The systems support the following interfaces:

- Data interfaces - Ethernet: 1/10/25/40/50/56/100GbE
- USB port (mini USB in SN2100)
- RS232 Console port
- Management interface(s) (Eth. RJ45) – 100MbE/1GbE
- Reset button
- Status and Port LEDs

In order to review the full configuration options matrix, refer to [Management Interfaces, PSUs and Fans](#).

4.1 Speed

Ethernet speed must be set manually. The system's ports can be manually configured to run at speeds ranging from 10GbE to 100GbE (for more details, see [Specifications](#)). To change the port speed configuration, use the command “speed” under interface configuration mode. Refer to the *NVIDIA Onyx (MLNX-OS) User Manual* for instructions on port speed re-configuration.

4.2 I²C/RS232 (Console)

The port labeled “Console” is an RS232 serial port on the back side of the chassis in SN2700 and SN2410, and on the front side in SN2100/SN2010. It is used for initial configuration and debugging. Upon first installation of the system, you need to connect a PC to this interface and configure network parameters for remote connections. Refer to [Configuring Network Attributes Using NVIDIA Onyx \(MLNX-OS\)](#) to view the full procedure.



- This interface is not found in externally managed systems.
- Apart from the initial configuration, the I²C interface is made exclusively for debugging and troubleshooting. Only FAEs are authorized to connect through it.



Only original NVIDIA cables supplied with the switch package can be used to connect a switch system to the server.

Connecting any cable other than the NVIDIA supplied console cable may cause an I²C hang. Using uncertified cables may damage the I²C interface.

Refer to the [Replacement Parts Ordering Numbers](#) appendix for harness details.

4.3 Management



The RJ45 Ethernet “MGT” port is labeled .

The RJ45 Ethernet ports provide access for remote management. The management ports are configured with auto-negotiation capabilities by default (100MbE to 1GbE). The management ports' network attributes (such as IP address) need to be pre-configured via the RS232 serial console port or by DHCP before use. Refer to [Configuring Network Attributes Using NVIDIA Onyx \(MLNX-OS\)](#) to view the full procedure.

 In the SN2100/SN2010 systems there is only one MGT port.

 Make sure you use only FCC compliant Ethernet cables.

4.4 USB

The USB interface is USB 2.0 (mini USB in SN2100) compliant (USB 1.0 is not supported) and can be used by NVIDIA Onyx (MLNX-OS) software to connect to an external disk for software upgrade or file management. The connector comes in a standard USB shape.

To view the full matrix of the USB configuration options, refer to [Management Interfaces, PSUs and Fans](#).

 Do not use excessive force when inserting or extracting the USB disk to and from the connector.

4.5 Reset Button

The reset button is located on the rear side of the system next to the fan status LEDs in SN2700 and SN2410, and on the front side in SN2100/SN2010. This reset button requires a tool to be pressed.

 Do not use a sharp pointed object such as a needle or a push pin for pressing the reset button. Use a flat object to push the reset button.

To reset the system and the CPU of its management board, push the reset button and keep it pressed for up to 15 seconds.

To reset the system, the CPU of its management board, and the “admin” password, push the reset button and keep it pressed for at least 15 seconds. When using a NVIDIA Onyx (MLNX-OS) based system, this should allow you to enter without a password and set a new password for the user “admin”.

For Cumulus Linux password reset instructions, please refer to the Single User Mode - Boot Recovery section in the [Cumulus Linux User Guide](#).

4.6 Status and Port LEDs

See [LED Notifications](#).

4.7 Data Interfaces and High Power Transceivers Support

4.7.1 Data Interfaces

The data interfaces use QSFP28 connectors. The full list of interfaces per system is provided in [Speed and Switching Capabilities](#).

Each QSFP28 port can be connected with a QSFP28 cable or connector for 25/40/50/56/100GbE, or 1/10/25GbE when connecting through NVIDIA QSFP28 to SFP28 (Dynamix QSA™) adapters, hybrid or split cables. The systems offer support of up to 3.5W transceivers in all QSFP28 ports, and support of up to 1.5W in all SFP28 ports.

The systems offer several high-power ports for optical transceivers that require such support. The following table specifies each system's ports max power capabilities:

4.7.1.1 High Power Transceivers Support

Model Family	Ports	Maximum High Power Support
SN2700	1, 2, 31, 32	5.0W ^(b)
SN2410	1, 2, 47, 48 ^(c)	2.5W ^(a)
	49, 50, 55, 56	5.0W ^(b)
SN2100	1, 2, 15, 16	5.0W ^(b)
SN2010	19, 20, 21, 22	4.5W ^(a)
	1, 2, 17, 18 ^(c)	2.5W

Notes:

- a. 4.5W high power modules are supported on NVIDIA Onyx (MLNX-OS) from version 3.6.3004 onwards.
- b. 5.0W high power modules are supported on NVIDIA Onyx (MLNX-OS) from version 3.x.1xxx onwards for 100GbE Fiber Optics up to 80km.
- c. SFP28 ports.

Using 5.0W Modules on Ports 49, 50, 55, 56 in SN2410M/SN2410bM



Supported Passive Cables in SN2010bM

- For server ports:
 - 25GbE cables (all ports can be used):
 - 1m-1.5m: any DAC

- 2m: MCP2M00-A002E30N
- 2.5m: MCP2M00-A02AE26N
- 3m: MCP2M00-A003E26N
- 10GbE cables (all ports can be used):
 - 0.5m to 5m: any DAC
- For IPL ports (SN2010 to SN2010 connection):
 - 40/100GbE cables (all ports can be used):
 - No limitations
 - 25GbE cables (only ports 3, 6, 9, 12, 15, 18 can be used)
 - Up to 2m: any DAC
 - 10GbE cables (all ports can be used):
 - 0.5m to 5m: any DAC
- For connections with other switches:
 - AOCs/Transceivers only

Supported 25GbE and 40/100GbE Cables on IPL Ports (SN2010 to SN2010 Connection)



4.8 LED Notifications

The system's LEDs are an important tool for hardware event notification and troubleshooting.

LEDs Symbols

Symbol	Name	Description	Normal Conditions
	System Status LED	Shows the health of the system.	Green/Flashing green when booting
	Fan Status LED	Shows the health of the fans.	Green

Symbol	Name	Description	Normal Conditions
a 	Power Supply Units LEDs	Shows the health of the power supply units.	Green
b 	Bad Port LED	Lights up when a symbol error is detected on one of the ports.	Off
	Unit Identifier LED	Lights up on command through the CLI.	Off or blue when identifying a port

- a. There are two PSU LEDs in SN2100/SN2010.
b. This LED exists in SN2700 and SN2410 only.

4.8.1 System Status LEDs

Both of the System Status LEDs (front and back, if exist) supply identical information.

System Status LEDs - Front and Rear Sides

LED Type	System	Front	Rear
System Status LEDs 	SN2700	Yes	Yes
	SN2410	Yes	Yes
	SN2100	Yes	No
	SN2010	Yes	No

✗ It may take up to five minutes to turn on the system. If the System Status LED shows red after five minutes, unplug the system and call your NVIDIA representative for assistance.

System Status LED Assignments

LED Behavior	Description	Action Required
Solid Green	The system is up and running normally.	N/A
Flashing Green	The system is booting up.	Wait up to five minutes for the end of the booting process.
Solid Red	Major error has occurred. For example, corrupted firmware, system is overheated etc.	If the System Status LED shows red five minutes after starting the system, unplug the system and call your NVIDIA representative for assistance.

4.8.2 Fan Status LEDs

LED Type	System	Front	Rear
Fan Status LEDs 	SN2700	Yes	Yes, 4
	SN2410	Yes	Yes, 4
	SN2100	Yes	No
	SN2010	Yes	No

*The fans status is reflected by the LEDs only once the Network Operating System boot is complete.

Fan Status Front LED Assignments

LED Behavior	Description	Action Required
Solid Green	All fans are up and running.	N/A
Solid Red	Error, one or more fans are not operating properly.	The faulty FRUs should be replaced.
Off	System boot	N/A

Fan Status Rear LED Assignments (One LED per Fan)



The following table does not apply to the SN2100/SN2010 systems.

LED Behavior	Description	Action Required
Solid Green	A specific fan unit is operating.	N/A
Solid Red	A specific fan unit is missing or not operating properly.	The fan unit should be replaced.
Off	System boot	N/A



Risk of Electric Shock! With the fan module removed, power pins are accessible within the module cavity. Do not insert tools or body parts into the fan module cavity.

4.8.3 Power Supply Status LEDs

Power Supply Status LEDs

LED Type	System	Front	Rear
Power Supply Unit Status LED 	SN2700	Yes	Yes
	SN2410	Yes	Yes
	SN2100	Yes, 2	No

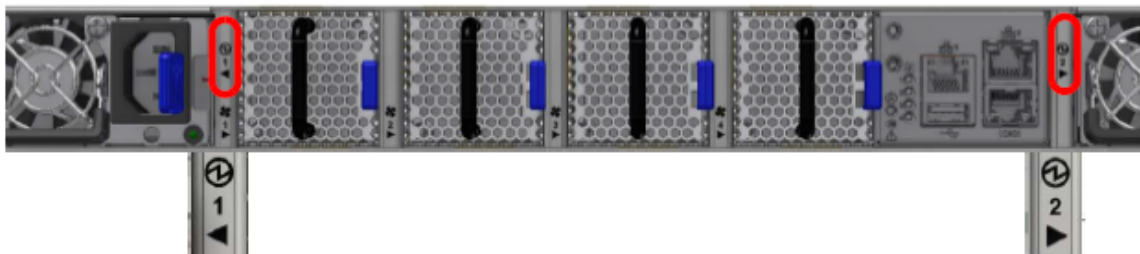
LED Type	System	Front	Rear
	SN2010	Yes, 2	No



The following information does not apply to the SN2100/SN2010 systems. In these systems, the power supply units are non-replaceable, and there is a designated LED for each unit in the system's front panel.

There are two power supply inlets in the system (for redundancy). The system can operate with only one power supply connected. In case the power supply is an FRU, a second power supply unit can be added to support hot-swap ability. Each power supply unit has a single 2 color LED on the right side of the unit, that indicates the status of the unit.

SN2700 and SN2410 Rear Side Panel



The primary power supply (PS) unit is located on the left side, and the secondary unit is located on the right side.

Power Supply Unit Status Front LED Assignments for SN2700 and SN2410

LED Behavior	Description	Action Required
Solid Green	All plugged (one or two) power supplies are running normally.	N/A
Solid Red	PSU is faulty or disconnected.	Make sure the AC cable is plugged in and active. If the problem resumes, the FRUs might be faulty, and should then be replaced.
Off	N/A	N/A

Power Supply Unit Status Front LED Assignments for SN2100/SN2010

LED Behavior	Description	Action Required
Solid Green	Power supply is running normally.	N/A
Solid Red	PSU is faulty or disconnected.	Make sure the AC cable is plugged in and active. If the problem resumes, the PSU might be faulty.

LED Behavior	Description	Action Required
Off	PSU not present	N/A

The power supply status LEDs on the rear side of the system (in SN2700 and SN2410 only) are located on the PSUs themselves. Each PSU has one LED of its own.

Power Supply Unit Status Rear LED Assignments

LED Behavior	Description	Action Required
Solid Green	The PSU is running normally.	N/A
Flashing Green 1Hz	AC present / Only 12VSB on (PSU off) or PSU in Smart-on state.	Call your NVIDIA representative for assistance.
Amber	AC cord unplugged or AC power lost while the second power supply still has AC input power.	Plug in the AC cord of the faulty PSU.
	PS failure (including voltage out of range and power cord disconnected).	Check voltage. If OK, call your NVIDIA representative for assistance.
Flashing Amber	Power supply warning events where the power supply continues to operate; high temp, high power, high current, slow fan.	Call your NVIDIA representative for assistance.
Off	No AC power to all power supplies.	Call your NVIDIA representative for assistance.

 The table above (Power Supply Unit Status Rear LED Assignments) does not apply to the SN2100/SN2010 systems.

4.8.4 Unit Identification LED

The UID LED is a debug feature, that the user can use to find a particular system within a cluster by turning on the UID blue LED.

To activate the UID LED on a switch system, run:

```
switch (config) # led MGMT uid on
```

To verify the LED status, run:

```
switch (config) # show leds
Module LED Status
-----
MGMT UID Blues
```

To deactivate the UID LED on a switch system, run:

```
switch (config) # led MGMT uid off
```

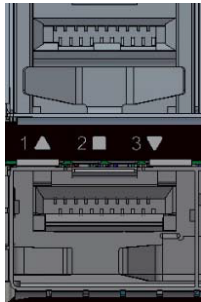
4.8.5 Bad Port LED

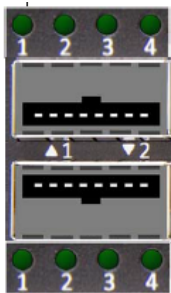
The Bad Port LED indicator is used to indicate symbol errors in one or more system ports.

Bad Port LED Assignments

LED Behavior	Description	Action Required
Off	No symbol errors have been received in last few seconds (normal condition).	N/A
Flashing Amber	Error, one or more ports have received symbol errors. Possible causes are: • Bad cable • Bad connection • Bad connector	Check symbol error counters on the system UI to identify the ports. Replace the cable on these ports.

4.8.6 Port LEDs

System	Port LEDs
SN2700	
SN2410	QSFP28:  SFP28: 
SN2010	QSFP:  SFP: 

System	Port LEDs
SN2100	

In the SN2410 systems, the status of each pair of adjacent QSFP28 ports is indicated by four LEDs, as shown in the picture above:

- While the bottom LEDs signify the port status in regular condition, the upper LEDs operate only when the port is split.
- When one port is split to two, a connection of 100GbE can be utilized in its adjacent port.
- When one port is split to four, its adjacent port is canceled.
- If the ports run at a 100GbE/40GbE speed each, the two lower LEDs (2 and 4) will light green.
- If the ports run at a 50GbE speed each, the left LEDs (1 and 2) will light green for the upper port, and the right LEDs (3 and 4) will light green for the lower port.
- If the ports run at a 25GbE/10GbE speed each, all LEDs may light green, according to the selected lane.

SFP and QSFP Port LEDs in Ethernet System Mode

LED Behavior	Description	Action Required
Off	Link is down	Check the cable.
Solid Green	Link is up with no traffic	N/A
Flashing Green	Link is up with traffic	N/A
Flashing Amber	A problem with the link	Check the cable, and replace it if needed.

1GBase-T LEDs in Ethernet System Mode

LED Behavior	Description	Action Required
Off	Link is down	Check that the near-end and far-end connectors are properly plugged, check cable integrity.
Solid Yellow	Link is up	N/A
Solid Green	Link is up with no traffic	N/A
Flashing Green	Link is up with traffic	N/A

4.9 Inventory Information

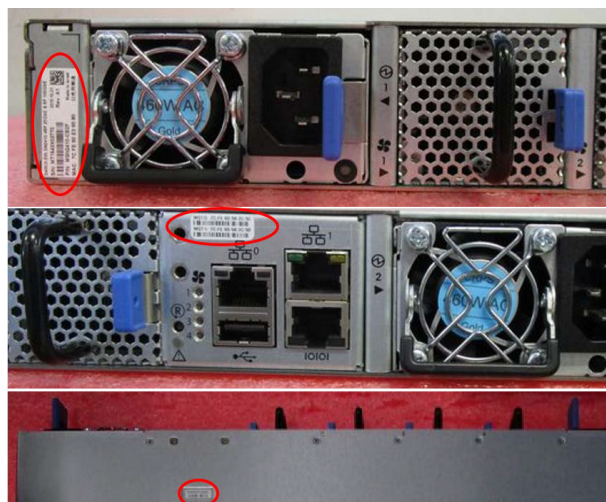
The system's inventory parameters (such as Serial Number, Part Number, GUID and MAC address) can be extracted from the inventory pull-out tab on the lower right side of the front panel.

In some systems, there is no pull-out tab, and the information is provided on labels in several locations.

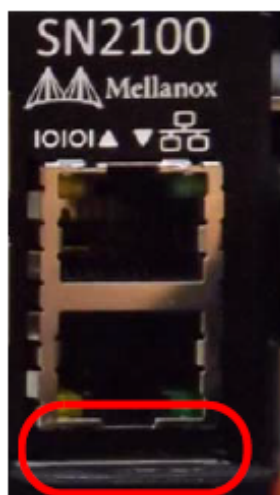
SN2700 Pull-out Tab



SN2410 Inventory Information Illustration



SN2100 Pull-out Tab



SN2010 Pull-out Tab



5 Software Management

The system includes an embedded management CPU card that runs NVIDIA Onyx® (MLNX-OS®) management software. This system includes a CLI, WebUI, SNMP, system management software, Ethernet protocols and IB management software (OpenSM).

- For NVIDIA Onyx (MLNX-OS) systems management package and related documentation, visit the product page at <https://docs.nvidia.com/networking/software/switch-software/index.html#nvidia-onyx-ethernet>.
- For Cumulus® Linux® software management instructions, refer to the [Cumulus Linux User Guide](#).

✗ The Ethernet ports for remote management connect to Ethernet systems. These systems must be configured to 100Mb/1Gb auto-negotiation.

⚠ No more than two subnet managers are recommended for any single fabric.

5.1 Upgrading Software

5.1.1 NVIDIA Onyx (MLNX-OS) Software Upgrade

Software and firmware updates are available from the NVIDIA Support website. Check that your current revision is the latest one available on the NVIDIA Support website. If you do not have the latest revision, upgrade your software using the CLI or the GUI. Copy the updated software to a known location on a remote server within the user's LAN.

For further information please refer to the *NVIDIA Onyx (MLNX-OS) Software User Manual* in the "Upgrading Onyx (MLNX-OS) Software" section.

Prior to updating, read and follow all of the instructions regarding the updating of the software on your system.

5.1.2 Switch Firmware Update

The systems do not require firmware updating. Firmware updating is done through the NVIDIA Onyx (MLNX-OS) management software.

5.1.3 Cumulus Linux Software Upgrade

For Cumulus Linux software upgrade instructions, see Upgrading Cumulus Linux in the [Cumulus Linux User Guide](#).

6 Troubleshooting

Problem Indicator	Symptoms	Cause and Solution
LEDs	System Status LED is blinking for more than 5 minutes	Cause: NVIDIA Onyx (MLNX-OS) software did not boot properly and only firmware is running. Solution: Connect to the system via the console port, and check the software status. You might need to contact an FAE if the NVIDIA Onyx (MLNX-OS) software did not load properly.
	System Status LED is red	Cause: - Critical system fault (CPU error, bad firmware) - Over temperature Solution: - Check environmental conditions (room temperature)
	Fan Status LED is red	Cause: Possible fan issue Solution: - Check that the fan is fully inserted and nothing blocks the airflow - Replace the fan FRU if needed (possible in SN2700, SN2740 and SN2410 only)
	PSU Status LED is red	Cause: Possible PSU issue Solution: - Check/replace the power cable - Replace the PSU if needed (possible in SN2700, SN2740 and SN2410 only)
System boot failure while using NVIDIA Onyx (MLNX-OS)	Software upgrade failed on x86 based systems	Solution: - Connect the RS232 connector (CONSOLE) to a laptop. - Push the system's reset button. - Press the ArrowUp or ArrowDown key during the system boot. GRUB menu will appear. For example: <pre> Default image: 'SX_X86_64 SX_3.4.0008 2014-11-10 20:07:51 x86_64' Press enter to boot this image, or any other key for boot menu Booting default image in 3 seconds. Boot Menu ----- 0: SX_X86_64 SX_3.4.0008 2014-11-10 20:07:51 x86_64 1: SX_X86_64 SX_3.4.0007 2014-10-23 17:27:34 x86_64 ----- Use the ArrowUp and Arrowdown keys to select which entry is highlighted. Press enter to boot the selected image or 'p' to enter a password to unlock the next set of features. Highlighted entry is 0: " </pre> - Select previous image to boot by pressing an arrow key and choosing the appropriate image.
System boot failure while using Cumulus Linux	Software upgrade failed on x86 based systems	See Monitoring and Troubleshooting in Cumulus Linux User Guide .

Problem Indicator	Symptoms	Cause and Solution
System date and time reset	The date and time settings were reset to the default configuration following an AC power loss	Cause: Date and time are reconfigured by the operating system. Solution: - To set the system's date and time manually, run: <pre># clock set <hh:mm:ss> [<yyyy/mm/dd>]</pre> - To verify the configured clock settings, run: <pre># show clock</pre> - It is recommended to enable server time synchronization with a Network Time Protocol (NTP) server. To do that, run: <pre>> enable # config terminal (config)# ntp server <ntp server ip address></pre> - To verify NTP time synchronization is enabled, run: <pre># show ntp</pre> For full configuration instructions, please refer to System Synchronization > NTP and Clock under Onyx User Manual.

7 Specifications

7.1 SN2700 Series

Feature		Value
Mechanical	Size:	Standard depth - 1.72" (H) x 16.84" (W) x 27" (D). 43.8mm (H) x 427.83mm (W) x 686.8mm (D).
		Short depth - 1.72" (H) x 16.84" (W) x 17" (D). 43.9mm (H) x 428mm (W) x 432mm (D).
	Mounting:	19" Rack mount
	Weight:	1 PSU: 10.23kg, 2 PSUs: 11.1kg
	Speed:	10/25/40/50/56/100GbE per port
	Connector cage:	32 QSFP28
Environmental	Temperature:	Operational: 0° to 40°C Non-Operational: -40° to 70°C
	Humidity:	Operational: 10% - 85% non-condensing Non-Operational: 10% - 90% non-condensing
	Altitude:	3050m
	Noise level:	71.6 dB(A)
Regulatory	Safety/ EMC:	CB, cTUVus, CE, CU, S_Mark, CE, FCC, VCCI, ICES, RCM, BSMI, KCC, CCC
	RoHS:	RoHS complaint
Power Supply AC and DC	Input Voltage:	1x/2x, -127VAC; 50/60Hz 4.5A; 200-240 50/60Hz 2.9A/ 40.5-60VDC 12A/ 192-288VDC (not certified)
		-48VDC, Input voltage range (-40) to (-72)VDC
	Global Power Consumption:	40GbE/100GbE Models - Typical power with passive cables (ATIS): 130W
Main Devices	CPU:	Intel x86 1.40GHz Dual Core
	PCIe:	4x Gen2.0
	Switch:	NVIDIA Spectrum
	Memory:	8GB DDR3 RAM, 32G SSD for systems based on Switch rev. B1 and earlier 8GB DDR3 RAM, 16G SSD for systems based on Switch rev. B2 and higher
Throughput		6.4Tb/s

7.2 SN2410 Series

Feature		Value
Mechanical	Size:	43.9mm (H) x 438mm (W) x 394mm (D) 1.72"(H) x 17.24"(W) x 15.5"(D)
	Mounting:	19" Rack mount

Feature		Value
	Weight:	1 PSU weight 6.726kg (14.8 lb) 2 PSU weight 7.526kg (16.6 lb)
	Speed:	10/25GbE per port (ports 1-48), 10/25/40/50/56/100GbE per port (ports 49-56)
	Connector cage:	48xSFP28 and 8xQSFP28
Environmental	Temperature:	Operational: 0° to 40°C Non-Operational: -40° to 70°C
	Humidity:	Operational: 10% - 85% non-condensing Non-Operational: 10% - 90% non-condensing
	Altitude:	3050m
	Noise level:	70.9 dB(A)
Regulatory	Safety/ EMC:	CB, cTUVus, CE, CU, S_Mark, CE, FCC, VCCI, ICES, RCM, BSMI, KCC, CCC
	RoHS:	RoHS complaint
Power Supply AC and DC	Input Voltage:	1x/2x, 100-127VAC; 50/60Hz 4.5A; 200-240 50/60Hz 2.9A/ 40.5-60VDC 12A/ 192-288VDC (not certified)
		-48VDC, Input voltage range (-40) to (-72)VDC
	Global Power Consumption:	40GbE/100GbE Models - Typical power with passive cables (ATIS): 105W
Main Devices	CPU:	Intel x86 1.40GHz Dual Core
	PCIe:	4x Gen2.0
	Switch:	NVIDIA Spectrum
	Memory:	8GB DDR3 RAM, 32G SSD for systems based on Switch rev. B1 and earlier 8GB DDR3 RAM, 16G SSD for systems based on Switch rev. B2 and higher
Throughput		4Tb/s

7.3 SN2100 Series

Feature		Value
Mechanical	Size:	43.8mm (H) x 200mm (W) x 508mm (D) 1.72" (H) x 7.87" (W) x 20" (D)
	Mounting:	19" Rack mount
	Weight:	4.540kg
	Speed:	10/25/40/50/56/100GbE per port
	Connector cage:	16xQSFP28
Environmental	Temperature:	Operational: 0° to 40°C Non-Operational: -40° to 70°C
	Humidity:	Operational: 10% - 85% non-condensing Non-Operational: 10% - 90% non-condensing
	Altitude:	3050m

Feature		Value
	Noise level:	73.7 dB(A)
Regulatory	Safety/ EMC:	CB, cTUVus, CE, CU, S_Mark, CE, FCC, VCCI, ICES, RCM, BSMI, KCC, CCC
	RoHS:	RoHS complaint
Power	Input Voltage:	1x/2x, 100-240Vac, 4A
	Global Power Consumption:	40GbE/100GbE Models - Typical power with passive cables (ATIS): 74W
Main Devices	CPU:	Intel x86 2.40GHz Quad Core
	PCIe:	4x Gen2.0
	Switch:	NVIDIA Spectrum
	Memory:	SDRAM: 8GB DDR3L 1600 MT/s SO-DIMM Storage: 16GB Dual Channel MLC M.2-SATA SSD
Throughput		3.2Tb/s

7.4 SN2010 Series

Feature		Value
Mechanical	Size:	43.8mm (H) x 200mm (W) x 508mm (D) 1.72" (H) x 7.87" (W) x 20" (D)
	Mounting:	19" Rack mount
	Weight:	4.500kg
	Speed:	10/25/40/50/56/100GbE per port
	Connector cage:	18 ports of 10/25GbE and 4 splittable ports of 40/100GbE
Environmental	Temperature:	Operational: 0° to 40°C Non-Operational: -40° to 70°C
	Humidity:	Operational: 10% - 85% non-condensing Non-Operational: 10% - 90% non-condensing
	Altitude:	3050m
	Noise level:	73.7 dB(A)
Regulatory	Safety/ EMC:	CB, cTUVus, CE, CU, S_Mark, CE, FCC, VCCI, ICES, RCM, BSMI, KCC, CCC
	RoHS:	RoHS complaint
Power	Input Voltage:	1x/2x, 100-240Vac, 4A
	Global Power Consumption:	Typical power with passive cables (ATIS): 66W
Main Devices	CPU:	Intel x86 2.40GHz Quad Core
	PCIe:	4x Gen2.0
	Switch:	NVIDIA Spectrum

Feature		Value
	Memory:	SDRAM: 8GB DDR3L 1600 MT/s SO-DIMM Storage: 16GB Dual Channel MLC M.2-SATA SSD
Throughput		1.7Tb/s

8 Appendixes

The document contains the following appendixes:

- [Accessory and Replacement Parts](#)
- [Thermal Threshold Definitions](#)
- [Interface Specifications](#)
- [Disassembly and Disposal](#)
- [Safety Warnings](#)

8.1 Accessory and Replacement Parts

Ordering Part Numbers for Replacement Parts

Part Number	Legacy Part Number	Part Description	Supported Systems	Notes
930-9BRKT-00 JC-000	MTEF-KIT-A	Rack installation kit for 1U systems to be mounted into short or standard depth racks	SN2700	Included in the SN2700 package.
930-9NRKT-00 JT-000	MTEF-KIT-S	Rack installation kit for standard depth 1U systems to be mounted into standard depth racks	SN2700	--
930-9NRKT-00 JE-000	MTEF-KIT-BP	Rack installation kit for 1U wide systems to be mounted into short depth racks	SN2410, SN2740	--
930-9NRKT-00 JV-000	MTEF-KIT-SP	Rack installation kit for 1U wide systems to be mounted into standard depth racks	SN2410, SN2740	Included in the SN2410 and SN2740 packages.
930-9NRKT-00 JG-000	MTEF-KIT-D	Rack installation kit for SN2100 series short depth 1U switches, allows installation of one or two switches side-by-side into standard depth racks	SN2010, SN2100	--
930-9BPSU-00 JX-000	MTEF-PSF-AC-A	460W AC Power Supply w/ P2C air flow (rear to front)	SN2740, SN2700, SN2410	This item is discontinued. It is replaced by MTEF-PSF-AC-I.
930-9BPSU-00 JF-000	MTEF-PSR-AC-A	460W AC Power Supply w/ C2P air flow (front to rear)	SN2700, SN2740, SN2410	This item is discontinued. It is replaced by MTEF-PSR-AC-I.
930-9BPSU-00 J4-000	MTEF-PSF-AC-I	NVIDIA Power-Supply Unit, 550W AC, P2C Airflow, For SB7700, SB7800, SB7890, SN2410, SN2700, SX6710, SN2740, SX1410, SX1710 switches, Power cord included	SN2700, SN2740, SN2410	The Network operating system identifies this module as a 460W PSU.

Part Number	Legacy Part Number	Part Description	Supported Systems	Notes
930-9BPSU-00 JL-000	MTEF-PSR- AC-I	NVIDIA Power-Supply Unit, 550W AC, C2P Airflow, For SB7700, SB7800, SB7890, SN2410, SN2700, SX6710, SN2740 ,SX1410, SX1710 switches, Power cord included	SN2700, SN2740, SN2410	The Network operating system identifies this module as a 460W PSU.
HAR000028	N/A	Harness RS232 2M cable – DB9 to RJ-45	SN2700, SN2740, SN2410, SN2010, SN2100	--
ACC000501	N/A	Power cord Type C13-C14	SN2700, SN2740, SN2410, SN2010, SN2100	--
930-9BFAN-00 IJ-000	MTEF- FANF-A	FAN MODULE W/ P2C air flow (rear to front)	SN2700, SN2410	--
930-9BFAN-00 IY-000	MTEF- FANR-A	FAN MODULE W/ C2P air flow (front to rear)	SN2700, SN2410	--

8.2 Thermal Threshold Definitions

Three thermal threshold definitions are measured by the Spectrum ASICs, and impact the overall switch system operation state as follows:

- **Warning** – 105°C: On managed systems only: When the ASIC device crosses the 100°C threshold, a Warning Threshold message will be issued by the management software, indicating to system administration that the ASIC has crossed the Warning threshold. Note that this temperature threshold does not require nor lead to any action by hardware (such as switch shutdown).
- **Critical** – 120°C: When the ASIC device crosses this temperature, the switch firmware will automatically shut down the device.
- **Emergency** – 130°C: In case the firmware fails to shut down the ASIC device upon crossing its Critical threshold, the device will auto-shutdown upon crossing the Emergency (130°C) threshold.

For thermal threshold definitions in Cumulus Linux, see [Configuring SNMP Traps](#) in the Cumulus User Guide.

8.3 Interface Specifications

8.3.1 QSFP28 Pin Description

J3 and J6

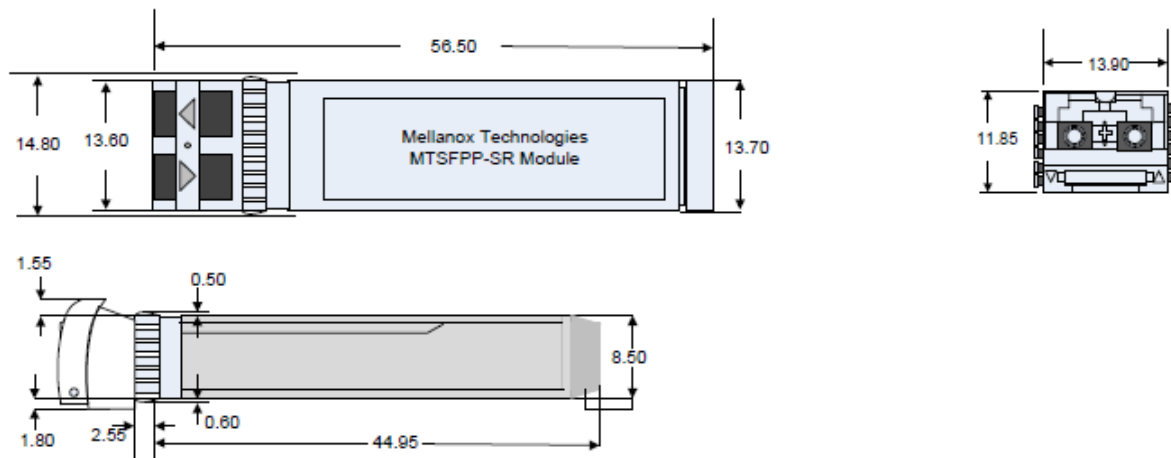
20	GND	GND	19
21	Rx2n	Rx1n	18
22	Rx2p	Rx1p	17
23	GND	GND	16
24	Rx4n	Rx3n	15
25	Rx4p	Rx3p	14
26	GND	GND	13
27	ModPrsL	SDA	12
28	IntL	SCL	11
29	VccTx	Vcc Rx	10
30	Vcc1	ResetL	9
31	LPMode	ModSelL	8
32	GND	GND	7
33	Tx3p	Tx4p	6
34	Tx3n	Tx4n	5
35	GND	GND	4
36	Tx1p	Tx2p	3
37	Tx1n	Tx2n	2
38	GND	GND	1

QSFP Pin Description

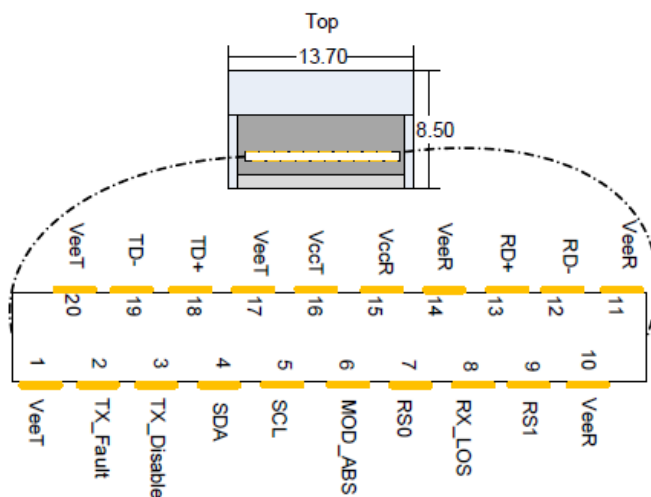
Connector Pin Number	Symbol	Signal Description
1	GND	Ground
2	Tx2n	Connected to Port 2 lane Rx Inverted Data
3	Tx2p	Connected to Port 2 lane Rx Non-Inverted Data
4	GND	Ground
5	Tx4n	Connected to Port 4 lane Rx Inverted Data
6	Tx4p	Connected to Port 4 lane Rx Non-Inverted Data
7	GND	Ground
8	Mod-SelL	Cable/Module Select
9	ResetL	Cable/Module Reset

Connector Pin Number	Symbol	Signal Description
10	Vcc Rx	+3.3 V Power supply receiver
11	SCL	2-wire serial interface clock
12	SDA	2-wire serial interface data
13	GND	Ground
14	Rx3p	Connected to Port 3 lane Tx Non-Inverted Data
15	Rx3n	Connected to Port 3 lane Tx Inverted Data
16	GND	Ground
17	Rx1p	Connected to Port 1 lane Tx Non-Inverted Data
18	Rx1n	Connected to Port 1 lane Tx Inverted Data
19	GND	Ground
20	GND	Ground
21	Rx2n	Connected to Port 2 lane Tx Inverted Data
22	Rx2p	Connected to Port 2 lane Tx Non-Inverted Data
23	GND	Ground
24	Rx4n	Connected to Port 4 lane Tx Inverted Data
25	Rx4p	Connected to Port 4 lane Tx Non-Inverted Data
26	GND	Ground
27	ModPrsL	Module/cable Present
28	IntL	Interrupt
29	Vcc Tx	+3.3 V Power supply transmitter
30	Vcc 1	+3.3 V Power Supply
31	LPMODE	Low Power Mode
32	GND	Ground
33	Tx3p	Connected to Port 3 lane Rx Non-Inverted Data
34	Tx3n	Connected to Port 3 lane Rx Inverted Data
35	GND	Ground
36	Tx1p	Connected to Port 1 lane Rx Non-Inverted Data
37	Tx1n	Connected to Port 1 lane Rx Inverted Data
38	GND	Ground

8.3.2 SFP28 Pin Description



Rear View of Module with Pin Placement



SFP Pin Description

Pin	Symbol Name	Description	Note
1	VeeT	Module Transmitter Ground	--
2	TX_Fault	Module Transmitter Fault	a
3	TX_Disable	Transmitter Disable. Turns off transmitter laser output	b
4	SDA	2-wire Serial Interface Data Line	c
5	SCL	2-wire Serial Interface Clock Line	d
6	MOD_ABS	Module Absent. Grounded within the module	d

Pin	Symbol Name	Description	Note
7	RS0	No connection required	--
8	Rx_LOS	Loss of Signal indication. Logic 0 indicates normal operation.	d
9	RS1	No connection required	--
10	VeeR	Receiver Ground (Common with Transmitter Ground)	a
11	VeeR	Receiver Ground (Common with Transmitter Ground)	a
12	RD-	Receiver Inverted DATA out. AC Coupled	--
13	RD+	Receiver Non-inverted DATA out. AC Coupled	--
14	VeeR	Receiver Ground (Common with Transmitter Ground)	a
15	VccR	Receiver Power Supply	--
16	VccT	Transmitter Power Supply	--
17	VeeT	Transmitter Ground (Common with Receiver Ground)	a
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled	--
19	TD-	Transmitter Inverted DATA in. AC Coupled	--
20	VeeT	Transmitter Ground (Common with Receiver Ground)	a

Notes:

- a. TFAULT is an open collector/drain output, which should be pulled up with a 4.7k-10k Ohms resistor on the host board if intended for use. Pull up voltage should be between 2.0V to Vcc + 0.3V. A high output indicates a transmitter fault caused by either the TX bias current or the TX output power exceeding the preset alarm thresholds. A low output indicates normal operation. In the low state, the output is pulled to <0.8V.
- b. Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V
- c. Should be pulled up with 4.7k Ω -10k Ω on host board to a voltage between 2.0V and 3.6V. MOD_ABS pulls line low to indicate module is plugged in.
- d. LOS is open collector output. Should be pulled up with 4.7k Ω -10k Ω on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

8.3.3 RJ-45 CONSOLE and I²C Interface



RJ-45 Console and I²C interfaces are integrated in the same connector. Due to that, connecting any cable other than the Mellanox supplied console cable may cause an I²C hang.

Using uncertified cables may damage the I²C interface. Refer to the [Replacement Parts Ordering Numbers](#) appendix for harness details.

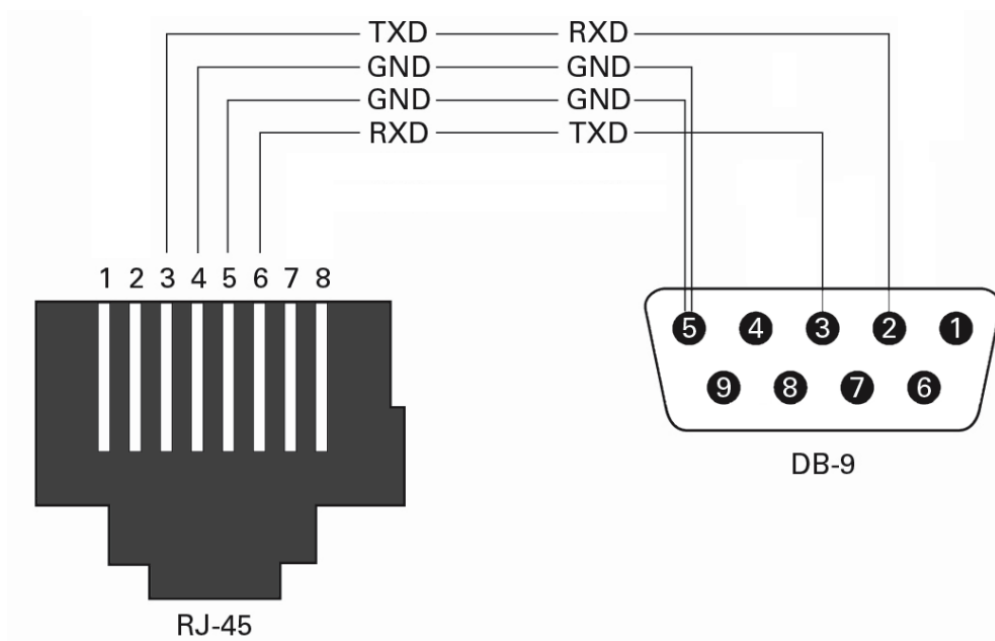
Signal	Pin#	Color
Not connected	1	G/W

Signal	Pin#	Color
I ² C_SCL	2	G
TXD	3	O/W
Not connected	4	Bl
GND	5	Bl/W
RXD	6	O
I ² C_SDA	7	Br/W
Not connected	8	Br

8.3.4 RJ45 to DB9 Harness Pinout

The RS232 harness cable (DB9 to RJ45) is provided within the package to connect a host PC to the system's Console RJ45 port.

RJ45 to DB9 Harness Pinout



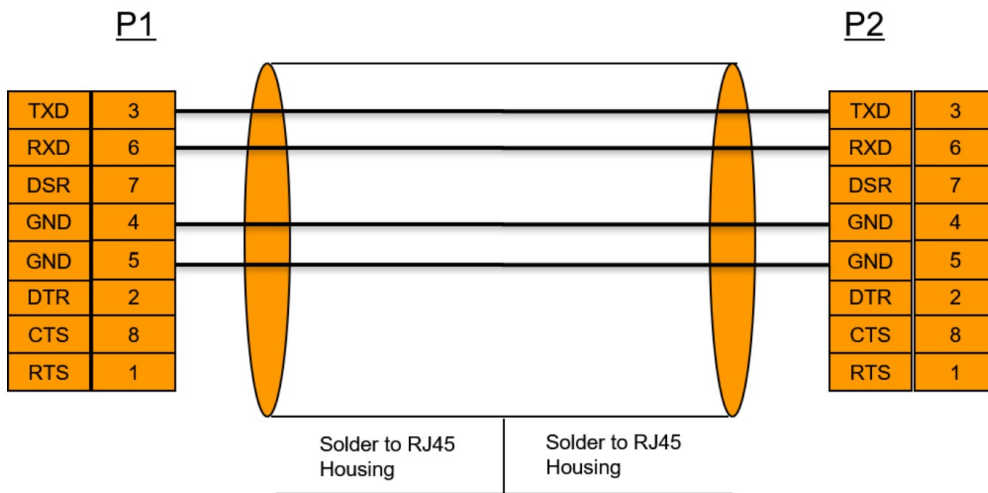
8.3.5 RJ45 to RJ45 Harness

2m RJ45-to-RJ45 serial port cable is provided in the SN2410 and SN2700 packages.

The harness must be used when connecting the switch serial port with the terminal server/console server.



The new harness can be extended by an ordinary flat 1-to-1 RJ45 cable.



8.4 Disassembly and Disposal

8.4.1 Disassembly Procedure

To disassemble the system from the rack:

1. Unplug and remove all connectors.
2. Unplug all power cords.
3. Remove the ground wire.
4. Unscrew the center bolts from the side of the system with the bracket.



Support the weight of the system when you remove the screws so that the system does not fall.

5. Slide the system from the rack.
6. Remove the rail slides from the rack.
7. Remove the caged nuts.

8.4.2 Disposal

According to the WEEE Directive 2002/96/EC, all waste electrical and electronic equipment (EEE) should be collected separately and not disposed of with regular household waste. Dispose of this product and all of its parts in a responsible and environmentally friendly way.

Follow the instructions found [here](#) for proper disassembly and disposal of the switch, according to the WEEE directive.



8.4.2.1 Lithium Battery

The SN2201 system's Real-time Clock includes a Lithium coin battery (CR2032) that contains perchlorate. When replacing the battery, use only a replacement battery that is recommended by the equipment manufacturer.



The battery can explode if not properly used, replaced, or disposed of.

Dispose of the battery according to your local regulations. Do not attempt to recharge the battery, disassemble, puncture, or otherwise damage it.

8.5 Safety Warnings

Safety warnings are provided in multiple languages for your convenience:



Note that not all warnings may apply to all models.

8.5.1 Switch Safety Warnings (English)

	Installation Instructions Read all installation instructions before connecting the equipment to the power source.
	Bodily Injury Due to Weight Use enough people to lift this product safely. <40 lbs <18 kgs 40 - 70 lbs 18 - 32 kgs 70 - 121 lbs 32 - 55 kgs >121 lbs >55 kgs
	Heavy Equipment This heavy equipment should be moved using a mechanical lift to avoid injuries.

	Risk of Electric Shock! • With the fan module removed power pins are accessible within the module cavity. Do not insert tools or body parts into the fan module cavity. • For AC powered switch systems: Disconnecting one power supply only disconnects one module. To isolate the unit completely, all connected power supplies must be disconnected.  In QM97X0/HGX H100 switch systems: for 200-240Vac use only
	Over-temperature This equipment should not be operated in an area with an ambient temperature exceeding the maximum value listed in the product specifications. Moreover, to guarantee proper ventilation, allow at least 8 cm (3 inches) of clearance around the ventilation openings.
	Stacking the Chassis The chassis should not be stacked on any other equipment. If the chassis falls, it can cause bodily injury and equipment damage.
	Redundant Power Supply Connection (OPTIONAL)—Electrical Hazard This product includes a redundant power or a blank in its place. In case of a blank power supply, do not operate the product with the blank cover removed or not securely fastened.
	Double Pole/Neutral Fusing This system has double pole/neutral fusing. Remove all power cords before opening the cover of this product or touching any internal parts.
	Multiple Power Inlets Risk of electric shock and energy hazard. The PSUs are all independent. Disconnect all power supplies to ensure a powered down state inside of the switch platform.
	During Lightning—Electrical Hazard During periods of lightning activity, do not work on the equipment or connect or disconnect cables.
	Copper Cable Connecting/Disconnecting Copper cables are heavy and not flexible, as such they should be carefully attached to or detached from the connectors. Refer to the cable manufacturer for special warnings/instructions.
	Rack Mounting and Servicing When this product is mounted or serviced in a rack, special precautions must be taken to ensure that the system remains stable. In general, the rack should be filled with equipment starting from the bottom to the top.
	Equipment Installation This equipment should be installed, replaced, and/or serviced only by trained and qualified personnel.
	Equipment Disposal Disposal of this equipment should be in accordance to all national laws and regulations.
	Local and National Electrical Codes This equipment should be installed in compliance with local and national electrical codes.
	Installation Codes This device must be installed according to the latest version of the country national electrical codes. For North America, equipment must be installed in accordance to the applicable requirements in the US National Electrical Code and the Canadian Electrical Code.
	Battery Replacement Warning: Replace only with UL Recognized battery, certified for maximum abnormal charging current not less than 4mA. There is a risk of explosion should the battery be replaced with a battery of an incorrect type. Dispose of used batteries according to the instructions.

	UL Listed and CSA Certified Power Supply Cord For North American power connection, select a power supply cord that is UL Listed and CSA Certified, 3 - conductor, [16 AWG], terminated with a molded plug rated at 125 V, [13 A], with a minimum length of 1.5m [six feet] but no longer than 4.5m. For European connection, select a power supply cord that is internationally harmonized and marked "<HAR>", 3 - conductor, minimum 1.0 mm² wire, rated at 300 V, with a PVC insulated jacket. The cord must have a molded plug rated at 250 V, 10 A.
	Installation Codes This device must be installed according to the latest version of the country's national electrical codes. For North America, equipment must be installed in accordance to the applicable requirements in the US National Electrical Code and the Canadian Electrical Code.
	Interconnection of Units Cables for connecting to the unit RS232 and Ethernet Interfaces must be UL certified type DP-1 or DP-2. (Note: when residing in non LPS circuit.)
	Overcurrent Protection A readily accessible Listed branch circuit overcurrent protective device rated 20 A must be incorporated in the building wiring. Acoustic Level Warning The acoustic level listed in Specifications section represents product noise measured in accordance with ISO 7779 under nominal conditions. The actual noise level can vary depending on the installation conditions, including but not limited to the number of racks in the installation, the overall installation size, rack and other equipment material and noise levels, fan faults, room temperature, room configuration, and employee location in relation to the equipment. The data-center owner should manage effective hearing conservation as per the OSHA standard to protect employees against over and extended exposure to noise.
	Do Not Use the Switch as a Shelf or Work Space Caution: Slide/rail mounted equipment is not to be used as a shelf or a work space. The rails are not intended for sliding the unit away from the rack. It is for permanent installation at final resting place only, not used for service and maintenance.
	WEEE Directive According to the WEEE Directive 2002/96/EC, all waste electrical and electronic equipment (EEE) should be collected separately and not disposed of with regular household waste. Dispose of this product and all of its parts in a responsible and environmentally-friendly way.
	Country of Norway Power Restrictions This unit is intended for connection to a TN power system and an IT power system of Norway only.

8.5.1.1 Taiwan RoHS Declaration - Switch Systems

8.5.1.1.1 Restricted Substances Presence Condition (Declaration Table)

Equipment Name (設備名稱): 伺服器 (Server)

Unit (單元)	Lead (Pb) (鉛)	Mercury (Hg) (汞)	Cadmium (Cd) (鎘)	Hexavalent chromium (Cr+6) (六價鉻)	Polybrominated biphenyls (PBB) (多溴聯苯)	Polybrominated diphenyl ethers (PBDE) (多溴二苯醚)
印刷電路板 (Printed Circuit Board)	—	○	○	○	○	○
金屬外殼 (Metal Enclosure)	○	○	○	○	○	○

Unit (單元)	Lead (Pb) (鉛)	Mercury (Hg) (汞)	Cadmium (Cd) (鎘)	Hexavalent chromium (Cr+6) (六價鉻)	Polybrominated biphenyls (PBB) (多溴聯苯)	Polybrominated diphenyl ethers (PBDE) (多溴二苯醚)
塑膠件 (Plastic Parts)	○	○	○	○	○	○
PCB 板電子零件 (PCB Electronic Components)	—	○	○	○	○	○

Notes

- **Note 1 (備考1):** “Exceeding 0.1 wt %” and “exceeding 0.01 wt %” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.
- **Note 2 (備考2):** “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.
- **Note 3 (備考3):** “—” indicates that the restricted substance corresponds to the exemption.

8.5.1.2 Taiwan RoHS Declaration - Gateway Systems

8.5.1.2.1 設備名稱 (Equipment Name)：閘道器 (Gateway)

單元 Unit	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr+6)	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
印刷電路板 (Printed Circuit Board)	—	○	○	○	○	○
金屬外殼 (Metal Housing)	○	○	○	○	○	○
塑膠件 (Plastic Parts)	○	○	○	○	○	○
PCB 板電子零件 (PCB Electronic Components)	—	○	○	○	○	○

備考 (Notes):

1. "超出 0.1 wt %" 及 "超出 0.01 wt %" 係指限用物質之百分比含量超出百分比含量基準值。
2. "○" 係指該項限用物質之百分比含量未超出百分比含量基準值。
3. "—" 係指該項限用物質為排除項目。

8.5.1.3 Taiwan BSMI Class A Statement - Warning to the User!

警告：為避免電磁干擾，本產品不應安裝或使用於住宅環境。

8.5.2 Nordic Countries Notices

	In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"
	In Norway: "Apparatet må tilkoples jordet stikkontakt"
	In Sweden: "Apparaten skall anslutas till jordat uttag"

8.5.3 安裝安全性警告 (Simplified Chinese)

	安装指示 本设备附有备援电源供应器或在适当位置配有空白盖板
	因重量导致的人身受伤 为了安全起见，请安排足够的人员以合力抬起本产品。 
	重设备 本设备极重，应使用机械式起重机来搬移，以避免人员受伤。
	有触电的危险 有触电的危险！拆除风扇模组后，即可接触到机箱内模组空缺处的电源针脚。请勿将工具或机身零件放入机箱内风扇模组空缺处。
	温度过高 本设备不应在超过所建议的最高环境温度的区域中运作：45°C (113°F)。此外，为了保证气流的流通正常，请在通风口旁保留至少 8 公分 (3 英吋) 的间距。
	堆叠机箱 机箱不应堆叠在任何其他设备上。如果机箱掉落，可能造成人员受伤与设备损坏。
	备用电源供应器连接时的电击危险 本设备附有备援电源供应器或在适当位置配有空白盖板。有关电源供应器，在空白盖板已取下或未牢牢固定的情况下，请勿操作本产品
	双极/中性保险丝 本系统具有双极 / 中性保险丝。请拔掉所有电源线后，再打开本产品的盖板或碰触任何内部零件。

	多电源输入座 电击与能源危害的危险。所有 PSU 均各自独立。请将所有电源供应器断电，以确保交换器设备内部的电源为关闭状态。
	閃電時的電擊危險 在閃電期間，不要使用本設備或連接或拔下纜線。
	机架安装与维修 此产品已安装在机架中或在机架中维修时，必须采取特定预防措施以确保系统 维持稳定。一般您应该将设备从底部到顶端放满机架。
	设备安装 本设备仅限由经过训练与 / 或合格的人员安装、更换或维修。
	设备弃置 弃置本设备应遵照所有国内法规。
	当地与国家电气法规 请遵照当地与国家电气法规安装本设备。
	安装法规 请务必遵循最新版的国家电气法规，安装本设备。在北美地区，请务必遵循美 国国 家电工法规和加拿大电工法规中的适用规定，安装本设备。
	更换电池 警告：只能以 UL 认可电池，且取得最大异常充电电流低于 4mA 认证的电池进 行更 换。若更换错误类型的电池，会有爆炸的危险。请依据指示弃置废电池。
	UL 列名和 CSA 认证电源线 北美地区在接上电源时，请选用获得UL 列名和CSA 认证3- 导体[16AWG] 附成型插 头，额定值为125 V、[13 A]，长度至少1.5 公尺[六英尺]，但不超过4.5 公尺的电源 线。 欧洲地区在接上电源时，请选用国际协调式且标示有 <HAR> -3字样、导体标示截面 至少 1.0 平方公厘，额定值为 300 V，采用 PVC 绝缘的电源线。电源线需有成型插 头，额定值为 250 V, 10 A。
	高漏電流 警告：高漏电流；必须执行地线连接，然后再连接电源供应器。
	安装法规 请务必遵循最新版的国家电气法规，安装本设备。在北美地区，请务必遵循美 国国 家电工法规和加拿大电工法规中的适用规定，安装本设备。
	互连设备 连接至 RS232 设备和以太网路介面的缆线必须是 UL 认证类型 DP-1 或 DP-2。(请注 意- 若放置于无 LPS 电路时)
	请勿将交换机作为机架与工作空间使用 小心：具有滑轨 / 导轨设备不可用作机架或工作空间。导轨不适用于将设备滑出机架使用。仅限永久安装在最后安置区域时使用，不可用于维修和保养。
	WEEE 指令 根据 WEEE 指令 2002/96/EC，所有废弃的电气与电子设备 (EEE)，应分开集 中，而且不应与一般家庭废弃物一起弃置。请以负责和环保的方式弃置本产品及其所有零件。
	挪威国家电源限制 本设备仅限连接至挪威的 TN 电源系统和 IT 电源系统。

8.5.3.1 China CCC Warning Statement

在维修的时候一定要断开所有电源 (English translation “disconnect all power sources before service”)

汉文	仅适用于非热带气候条件下安全使用。
藏文	དང་གནས་ནི་གནས་སྐབས་ཀྱི་དབྱིངས་དང་མི་མཐུན་པའི་སྐབས་ནས་བདེ་སྤྱད་བྱ་དགོས།
壮文	Dan hab yungh youq gij dienheiq diuzgen mbouj dwg diegndat haenz ancienz sawjyungh.
维文	ئەينى تېخنىكىلىق تاماملانغان شەرتىدە بىخەتەر ئىشلىتىش كېرەك.

8.5.3.1.1 For altitude 2000 meter and below:

汉文	仅适用于海拔2000m以下地区安全使用。
藏文	མཐོ་ཚད་ 2000 མར་ཡིན་པའི་གནས་སྐབས་ཀྱི་དབྱིངས་དང་མི་མཐུན་པའི་སྐབས་ནས་བདེ་སྤྱད་བྱ་དགོས།
壮文	Dan hab yungh youq gij digih hajibaz 2000m doxrongz haenz ancienz sawjyungh.
维文	مېتىر يۇقىرى بولمىغان يېرىلدىدە بىخەتەر ئىشلىتىش كېرەك 2000.

8.5.3.1.2 Warning for Class A:

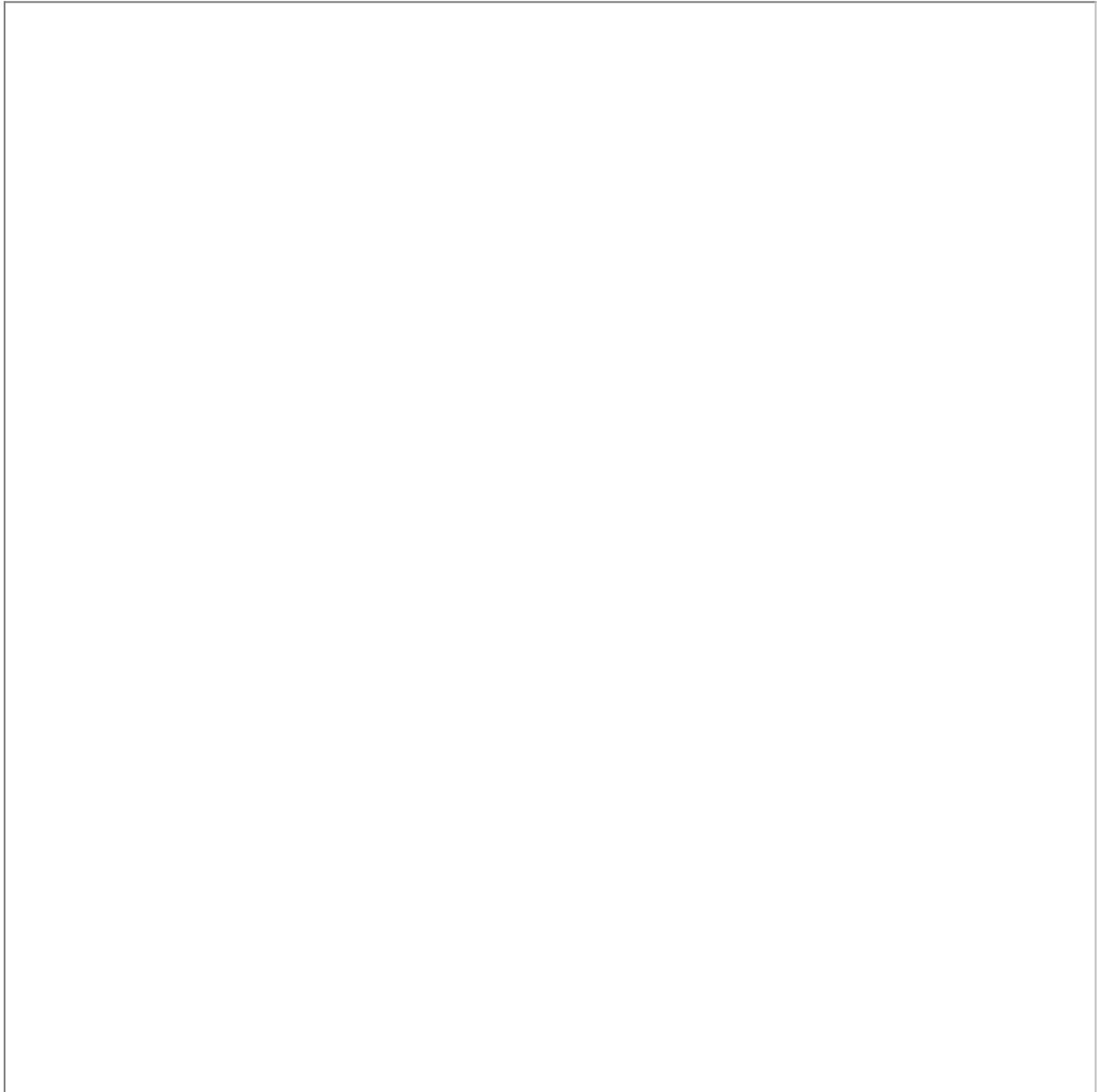
声明

此为 A 级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取切实可行的措施。

English translation of above statement

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

8.5.3.2 Taiwan RoHS Declaration



8.5.3.3 Taiwan BSMI Class A Statement - Warning to the User!

警告：為避免電磁干擾，本產品不應安裝或使用於住宅環境。

8.5.4 安裝安全性警告 (Traditional Chinese)



安裝指示
本設備附有備援電源供應器或在適當位置配有空白蓋板。

	因重量導致的人身受傷 為了安全起見，請安排足夠的人員以合力抬起本產品。 
	重設備 本設備極重，應使用機械式起重機來搬移，以避免人員受傷。
	有觸電的危險 有觸電的危險！拆除風扇模組後，即可接觸到機箱內模組空缺處的電源針腳。請勿將工具或機身零件放入機箱內風扇模組空缺處。
	溫度過高 本設備不應在超過所建議的最高環境溫度的區域中運作：45 °C (113 °F)。此外，為了保證氣流的流通正常，請在通風口旁保留至少 8 公分 (3 英吋) 的間距。
	堆疊機箱 機箱不應堆疊在任何其他設備上。如果機箱掉落，可能造成人員受傷與設備損壞。
	備用電源供應器連接時的電擊危險 本設備附有備援電源供應器或在適當位置配有空白蓋板。有關電源供應器，在空白蓋板已取下或未牢牢固定的情況下，請勿操作本產品
	雙極 / 中性保險絲 本系統具有雙極 / 中性保險絲。請拔掉所有電源線後，再打開本產品的蓋板或觸碰任何內部零件。
	多電源輸入座 電擊與能源危害的危險。所有 PSU 均各自獨立。請將所有電源供應器斷電，以確保交換器設備內部的電源為關閉狀態。
	銅纜線的連接與移除 銅電纜重且不易彎折，因此應仔細連接或從連接器端口分。請參閱電纜製造商了解特殊警告 / 說明。
	機架安裝與維修 此產品已安裝在機架中或在機架中維修時，必須採取特定預防措施以確保系統維持穩定。一般您應該將設備從底部到頂端放滿機架。
	設備安裝 本設備僅限由經訓練與 / 或合格的人員安裝、更換或維修。
	設備棄置 棄置本設備應遵照所有國內法規。
	當地與國家電氣法規 請遵照當地與國家電氣法規安裝本設備。
	安裝法規 請務必遵循最新版的國家電氣法規，安裝本設備。在北美地區，請務必遵循美國國家電工法規和加拿大電工法規中的適用規定，安裝本設備。

	更換電池 警告：只能以 UL 認可電池，且取得最大異常充電電流低於 4mA 認證的電池進行更換。若更換錯誤類型的電池，會有爆炸的危險。請依據指示棄置廢電池。
	UL 列名和 CSA 認證電源線 北美地區在接上電源時，請選用獲得 UL 列名和 CSA 認證 3- 導體 [16AWG] 附成型 插頭，額定值為 125V、[13 A]，長度至少 1.5 公尺 [六英尺]，但不超過 4.5 公尺的電源線。歐洲地區在接上電源時，請選用國際協調式且標示有 <HAR> -3 字樣、導體標示截面至少 1.0 平方公厘，額定值為 300 V，採用 PVC 絕緣的電源線。電源線須有成行插頭，額定值為 250V、10A。
	高漏電流 警告：高漏電流；必須執行地線連接，然後再連接電源供應器。
	安裝法規 請務必遵循最新版的國家電氣法規，安裝本設備。在北美地區，請務必遵循美國國家電工法規和加拿大電工法規中的適用規定，安裝本設備。
	互連設備 連接至 RS232 設備和乙太網路介面的纜線必須是 UL 認證類型 DP-1 或 DP-2。（請注意 – 若放置於無 LPS 電路時）。
	切換開關不可用作機架或工作空間 小心：滑軌/導軌安裝設備不可用作機架或工作空間。導軌不適用於將設備滑出機架使用。僅限永久安裝在最後安置區域時使用，不可用於維修和保養。
	WEEE 指令 根據 WEEE 指令 2002/96/EC，所有廢棄的電氣與電子設備 (EEE)，應分開集中，而且不應與一般家庭廢棄物一起棄置。請以負責和環保的方式棄置本產品及其所有零件。
	挪威國家電源限制 本設備僅限連接至挪威的 TN 電源系統和 IT 電源系統。

8.5.5 Avertissements de sécurité pour l'installation (French)

	Instructions d'installation Veuillez lire la totalité des instructions d'installation avant de relier l'équipement au secteur.
	Blessures à cause du poids Prévoyez assez de personnel pour soulever ce produit en toute sécurité.  <40 lbs <18 kgs 40 - 70 lbs 18 - 32 kgs 70 - 121 lbs 32 - 55 kgs > 121 lbs > 55 kgs
	Équipement lourd Cet équipement est lourd et doit être déplacé avec un système de levage mécanique pour éviter les blessures.

	Danger d'électrocution Danger d'électrocution ! Lorsque le module de ventilation est retiré, les broches d'alimentation sont exposées dans l'emplacement du module. NE PAS insérer d'outils ou la main dans l'emplacement du module.
	Surchauffe Cet équipement ne doit pas être en service dans un local dont la température dépasse le maximum recommandé de 45°C (113°F). En outre et pour garantir une circulation d'air correcte, laisser un espace d'au moins 8 cm (3") autour des orifices de ventilation.
	Châssis empilé sur d'autres équipements Le châssis ne doit pas être empilé sur d'autres équipements. S'il tombe, il peut endommager l'équipement ou entraîner des blessures.
	Connexion de l'alimentation redondante : danger d'électrocution Ce produit est équipé d'une alimentation redondante ou d'un cache si elle est absente. Dans ce dernier cas, ne pas faire fonctionner le produit si le cache est retiré ou mal fixé.
	Fusibles phase/neutre Ce système dispose de fusibles phase/neutre. Débranchez tous les cordons d'alimentation avant d'ouvrir le capot ou de toucher tout élément à l'intérieur.
	Plusieurs prises d'alimentation Risque et danger d'électrocution. Les alimentations sont toutes indépendantes. Pour s'assurer que le commutateur est bien hors tension, débranchez toutes les alimentations.
	En cas d'orage, danger d'électrocution Pendant un orage, ne pas travailler sur l'équipement ni brancher ou débrancher des câbles.
	Connexion et déconnexion du câble en cuivre Les câbles en cuivre sont lourds et peu flexibles. Par conséquent, il faut procéder avec soin pour les brancher ou les débrancher des connecteurs. Consulter le fabricant du câble pour obtenir des instructions ou des avertissements spécifiques.
	Montage en rack et maintenance Lors du montage ou de la maintenance de ce produit dans un rack, il faut faire spécialement attention pour s'assurer que l'ensemble reste stable. En règle générale, le rack doit être rempli en commençant par le bas.
	Installation de l'équipement Cet équipement ne doit être installé, remplacé et maintenu que par un personnel formé et qualifié.
	Mise au rebut de l'équipement La mise au rebut de cet équipement doit se faire conformément à toutes les lois et réglementations nationales.
	Codes électriques locaux et nationaux Cet équipement doit être installé conformément aux codes électriques locaux et nationaux.
	Codes d'installation Cet appareil doit être installé conformément à la version la plus récente des codes électrique nationaux. En Amérique du Nord, l'équipement doit être installé en respectant les exigences de l'US National Electrical Code et du Code canadien de l'électricité.
	Remplacement de la batterie Avertissement: ne remplacer qu'avec une batterie UL, certifiée pour accepter un courant de charge anormal maximal supérieur ou égal à 4 mA. Si la batterie n'est pas remplacée par un type correct, il y a un risque d'explosion. Les batteries usagées doivent être mises au rebut conformément aux instructions.

	Cordon d'alimentation UL Listed et certifié CSA Pour le branchement électrique en Amérique du Nord, utiliser un cordon d'alimentation UL Listed et CSA Certified, à 3 conducteurs [calibre 16 AWG], avec une prise moulée 125 V [13 A], faisant au moins 1,5 m de long [six pieds] et au plus 4,5 m. Pour le branchement électrique en Europe, utiliser un cordon d'alimentation au format international harmonisé (marqué <HAR>), à 3 conducteurs d'au moins 1 mm² de section, 300 V, avec une gaine isolante en PVC. Le cordon doit avoir une prise moulée 250 V 10 A.
	Courant de fuite élevé Avertissement: courant de fuite élevé, une connexion à la terre est indispensable avant de brancher l'alimentation.
	Codes d'installation Cet appareil doit être installé conformément à la version la plus récente des codes électrique nationaux. En Amérique du Nord, l'équipement doit être installé en respectant les exigences de l'US National Electrical Code et du Code canadien de l'électricité.
	Interconnexion des unités Les câbles de connexion aux interfaces RS232 et Ethernet de l'appareil doivent être certifié UL de type DP-1 ou DP-2. (Note : en cas d'installation sur un circuit dont la puissance n'est pas limitée) Protection contre les surintensités : le câblage de l'immeuble doit intégrer un dispositif certifié de protection contre les surintensités, calibré à 20 A et aisément accessible.
	Ne pas utiliser comme étagère ou plan de travail Attention: un équipement coulissant ou monté sur rail ne doit pas servir d'étagère ni de plan de travail. Les rails ne sont pas destinés à faire coulisser l'unité hors du rack. Ils sont destinés à une installation permanente à l'emplacement final, pas pour l'entretien ni la maintenance.
	Directive DEEE Selon la Directive 2002/96/CE (DEEE), tous les déchets d'équipements électriques et électroniques (EEE) doivent être collectés séparément et ne pas être mis au rebut avec les déchets ménagers habituels. Ce produit et toutes ses pièces doivent être mis au rebut d'une manière responsable, respectant l'environnement.
	Restrictions concernant l'alimentation pour la Norvège Cet appareil est prévu pour être relié à un système d'alimentation TN et un système d'alimentation informatique de Norvège uniquement.

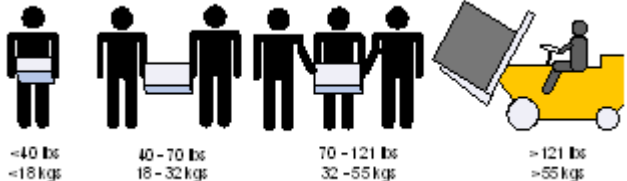
8.5.6 Installation Sicherheitshinweise (German)

	Installationsanleitungen Lesen Sie alle Installationsanleitungen, bevor Sie das Gerät an die Stromversorgung anschließen.
	Verletzungsgefahr wegen des Gewichts Um das Produkt sicher anzuheben, genügend Personen einsetzen.
	Schweres Gerät Dieses Gerät ist schwer und muss mit einem mechanischen Hebegerät verschoben werden, um Verletzungen zu vermeiden.
	Stromschlagrisiko Stromschlagrisiko! Bei abgenommenem Ventilatormodul sind die Stromkontakte in der Modulvertiefung zugänglich. Es dürfen KEINE Werkzeuge oder Körperteile in die Vertiefung des Ventilatormoduls gelangen.
	Übertemperatur Dieses Gerät sollte nicht in einem Bereich mit einer Umgebungstemperatur über der maximal empfohlenen Temperatur von 45°C (113°F) betrieben werden. Es ist ein Luftstrom von 200 LFM bei maximaler Umgebungstemperatur erforderlich. Außerdem sollten mindestens 8 cm (3 in.) Freiraum um die Belüftungsöffnungen sein, um einen einwandfreien Luftstrom zu gewährleisten.

	Stapeln des Chassis Das Chassis sollte nicht auf andere Geräte gestapelt werden. Wenn das Chassis herunterfällt, kann es zu Verletzungen und Beschädigungen an Geräten führen.
	Zweipolig/Neutrale Sicherung Achtung: Zweipolige bzw. Neutralleiter-Sicherung im Netzteil. Netzstecker ziehen, um sicherzustellen, daß keine Spannung am Gerät anliegt. Entfernen Sie alle Netzkabel vor dem Öffnen der Abdeckung dieses Produkts oder dem Berühren der Innenteile.
	Mehrere Stromeingänge Risiko eines Stromschlags und Stomgefahr. Alle Stromversorgungseinheiten sind unabhängig. Trennen Sie alle Stromversorgungen, um einen abgeschalteten Zustand im Inneren der Switch-Plattform sicherzustellen.
	Bei Gewitter - Elektrische Gefahr Arbeiten Sie während eines Gewitters und Blitzschlag nicht am Gerät, schließen Sie keine Kabel an oder ab.
	Anschließen/Trennen von Kupferkabel Kupferkabel sind schwer und nicht flexible. Deshalb müssen sie vorsichtig an die Anschlüsse angebracht bzw. davon getrennt werden. Lesen Sie die speziellen Warnungen und Anleitungen des Kabelherstellers.
	Rack-Montage und Wartung Wenn dieses Produkt in einem Rack montiert oder gewartet wird, sind besondere Vorsichtsmaßnahmen zu ergreifen, um die Stabilität des Systems zu gewährleisten. Im Allgemeinen sollten Sie das Gestell von unten nach oben mit Geräten füllen.
	Geräteinstallation Diese Gerät sollte nur von geschultem und qualifiziertem Personal installiert, ausgetauscht oder gewartet werden.
	Geräteentsorgung Die Entsorgung dieses Geräts sollte unter Beachtung aller nationalen Gesetze Bestimmungen erfolgen.
	Regionale und nationale elektrische Bestimmungen Dieses Gerät sollte unter Beachtung der regionalen und nationalen elektrischen Bestimmungen installiert werden.
	Installationscodes Dieses Gerät muss entsprechend der aktuellsten Version des National Electrical Code installiert werden. In Nordamerika muss das Gerät gemäß den geltenden Anforderungen des US National Electrical Code und des Canadian Electrical Code installiert werden.
	Akkuaustausch Warnung: Nur durch von UL anerkannten Akkus ersetzen, die für maximalen anormalen Ladestrom von nicht weniger als 4mA zertifiziert sind. Es besteht Explosiionsgefahr, wenn der Akku durch einen Akku eines falschen Typs ersetzt wird. Akkus gemäß den Anweisungen entsorgen.
	UL- und CSA-zertifiziertes Netzkabel Für Nordamerika Stromanschluss, wählen Sie ein Netzkabel, das UL-und CSA Certified 3 - Leiter, [18 AWG], mit einem angespritztem Stecker bewertet bei 125 V, [15], mit einer Mindestlänge von 1,5 m [Six Feet] aber nicht mehr als 4,5 m. Für die europäischen Zusammenhang, wählen Sie ein Netzkabel, das international harmonisiert und der Aufschrift "<HAR>", 3 - Leiter, mindestens 0,75 mm ² Draht, bewertet mit 300 V, mit einem PVC-Mantel isoliert. Das Kabel muss eine angespritztem Stecker bewertet bei 250 V, 10 A.
	Hoher Ableitstrom WARNUNG: Hohe Ableitstrom; Earth Verbindung, bevor Sie die Verbindung von wesentlicher Bedeutung werden

	Installationscodes Dieses Gerät muss installiert sein, entsprechend auf die neueste Version des Landes National Electrical Code. Für Nordamerika, müssen in Übereinstimmung mit den geltenden Vorschriften in der US-amerikanischen National Electrical Code und dem Canadian Electrical Code.
	Verbindung der Geräte untereinander Kabel für den Anschluss an das Gerät RS232-und Ethernet-Schnittstellen müssen UL zertifiziert Typ DP-1 oder DP-2. (Hinweis-, wenn nicht mit Wohnsitz in LPS-Schaltung) Überstromschutz: Eine leicht zugängliche Auflistung Abzwegleitung Überstrom-Schutzeinrichtung 20 A bewertet werden müssen in dem Gebäude Verkabelung.
	Switch nicht als Regal oder Arbeitsplatz nutzen Achtung: Auf Schieber/Schienen montiertes Gerät ist nicht als Regal oder Arbeitsbereich zu nutzen. Die Schienen sind nicht dafür bestimmt, die Einheit aus dem Gestell weg zu ziehen. Sie sind nur für die permanente Installation an einem endgültigen Standort gedacht, nicht für Instandhaltung und Wartung.
	WEEE-Direktive Gemäß WEEE Directive 2002/96/EC müssen alle elektrischen und elektronischen Abfallgeräte (EEE) separat gesammelt und nicht mit normalem Haushaltsmüll entsorgt werden. Dieses Produkt und alle seine Teile in verantwortungsvoller und umweltfreundlicher Art und Weise entsorgen.

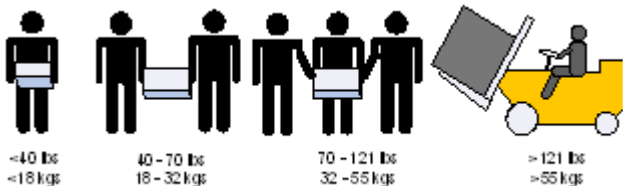
8.5.7 Advertencias de seguridad de instalación (Spanish)

	Instrucciones de instalación Antes de conectar el equipo a la fuente de alimentación, leer todas las instrucciones de instalación.
	Lesión corporal a causa de peso Recurra a suficientes personas para levantar este producto sin. 
	Equipos pesados Dado que el equipo es pesado, se debe mover únicamente mediante un elevador mecánico, para evitar lesiones.
	Riesgo de descarga eléctrica Con el módulo del ventilador quitado, se obtiene acceso a las clavijas de alimentación desde dentro de la cavidad del módulo. NO introducir herramientas ni partes del cuerpo en la cavidad del módulo del ventilador.
	Sobrettemperatura No se debe utilizar el equipo en un área con una temperatura ambiente superior a la máxima recomendada: 45°C. Además, para garantizar una circulación de aire adecuada, se debe dejar como mínimo un espacio de 8 cm (3 pulgadas) alrededor de las aberturas de ventilación.
	Apilamiento del chasis Los chasis no se deben apilar sobre otros equipos. La caída del chasis podría causar lesiones corporales, así como daños al equipo.
	Conexión redundante de fuente de alimentación: peligro de descarga Este producto incluye una fuente de alimentación redundante o, en su lugar, una vacía. Si se dispone de una fuente de alimentación vacía, no utilizar el producto si su tapa está quitada o no está bien cerrada.

	Fusible neutro o de polo doble Dos fusibles, uno en el polo y otro en el neutro. Quitar los cables de corriente antes de abrir la tapa de este producto o tocar cualquier componente interno.
	Tomas de alimentación múltiples Riesgo de descarga eléctrica y peligro de corriente. Todas las fuentes de alimentación son independientes. Desconecte todas las fuentes de alimentación, para asegurar que no haya corriente alguna dentro de la plataforma de conmutación.
	Al haber rayos: peligro de descarga No utilizar el equipo ni conectar o desconectar cables durante periodos de actividad de rayos.
	La conexión y desconexión de cables de cobre Dado que los cables de cobre son pesados y no son flexibles, su conexión a los conectores y su desconexión se deben efectuar con mucho cuidado. Para ver advertencias o instrucciones especiales, consultar al fabricante del cable.
	Montaje y mantenimiento del bastidor Al instalar o realizar el mantenimiento de este aparato en un bastidor, es preciso adoptar precauciones especiales para garantizar que el sistema se mantenga estable. En general, en un bastidor, los equipos se deben instalar comenzando desde abajo hacia arriba.
	Instalación del equipo La instalación, el reemplazo y el mantenimiento de este equipo estarán a cargo únicamente de personal capacitado y competente.
	Eliminación del equipo La eliminación definitiva de este equipo se debe efectuar conforme a todas las leyes y reglamentaciones nacionales.
	Códigos eléctricos locales y nacionales Este equipo se debe instalar conforme a los códigos eléctricos locales y nacionales.
	Códigos de instalación Este dispositivo se debe instalar conforme a la versión más reciente de los códigos eléctricos nacionales del país en cuestión. En América del Norte, el equipo se debe instalar de acuerdo con las disposiciones vigentes del Código Eléctrico Nacional de los EE.UU. y del Código Eléctrico de Canadá.
	Cambio de batería Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.
	Cable de alimentación homologado por UL y con certificación CSA En conexiones de América del Norte, seleccionar un cable de alimentación homologado por UL y con certificación CSA de tres conductores, [16 AWG], terminado en un enchufe moldeado con capuchón de 125 voltios nominal, [13 A], con una longitud mínima de 1,5 metros, pero no más de 4,5 metros. En conexiones europeas, seleccionar un cable de alimentación armonizado internacionalmente y marcado "<HAR>", de tres conductores, hilo de 1,0 mm ² como mínimo, 300 voltios nominal, con cobertura protectora aislante de PVC. El cable debe tener un enchufe moldeado con capuchón de 250 voltios nominal, 10 A.
	Alta corriente de fuga ADVERTENCIA: Alta corriente de fuga. Es esencial efectuar la conexión a tierra antes de conectar la alimentación.
	Códigos de instalación Este dispositivo se debe instalar conforme a la versión más reciente de los códigos eléctricos nacionales del país en cuestión. En América del Norte, el equipo se debe instalar de acuerdo con las disposiciones vigentes del Código Eléctrico Nacional de los EE.UU. y del Código Eléctrico de Canadá.

	Interconexión de unidades Los cables para la conexión con las interfaces RS232 y Ethernet de la unidad deben estar homologados por UL tipo DP-1 o DP-2. (Nota: cuando residen en circuito no de tipo LPS) Protección contra sobrecargas: Al cableado del edificio se debe incorporar un dispositivo de protección contra sobrecargas de circuito derivado, de fácil acceso, con una corriente nominal de 20 A.
	No utilizar el conmutador como estante ni como espacio de trabajo Cuidado: Equipos montados en deslizadores o rieles no se deben utilizar como estantes ni como espacio de trabajo. La finalidad de los rieles no es deslizar la unidad hacia afuera del bastidor. Sirven solo para la instalación permanente en el lugar de destino final, no para fines de servicio o mantenimiento
	Directiva WEEE Conforme a la Directiva 2002/96/CE sobre RAEE, todos los residuos de equipos eléctricos y electrónicos (EEE) se deben recolectar por separado y no se deben eliminar junto con residuos domésticos. Al deshacerse de este producto y de todas sus partes, hágalo de una manera responsable y respetuosa con el medio ambiente.

8.5.8 Предупреждения по технике безопасности при установке (Russian)

	Инструкция по установке Перед подключением оборудования к источнику питания следует ознакомиться с инструкцией по установке.
	Травмы при переносе тяжелых предметов Для поднятия этого изделия следует задействовать достаточное количество людей. 
	Тяжелое оборудование Это тяжелое оборудование, поэтому его следует перемещать с помощью механического подъемника во избежание травм.
	Опасность поражения электрическим током Опасность поражения электрическим током! Когда снят вентиляторный модуль, существует возможность повреждения контактов питания в его углублении. НЕ вставлять инструменты или части тела в углубление вентиляторного модуля.
	Перегрев Не эксплуатировать это оборудование в помещении с температурой окружающей среды, превышающей максимально рекомендуемое значение: 45 °C (113 °F). Более того, для надлежащей вентиляции следует обеспечить зазор вокруг вентиляционных отверстий не менее 8 см (3 дюйма).
	Установка шасси поверх другого оборудования Не устанавливать шасси поверх другого оборудования. Падение шасси может привести к травмам и повреждению оборудования.
	Опасность поражения электрическим током резервного источника питания В этом изделии установлен резервный источник питания или модуль-заглушка. Если установлен модуль-заглушка, не эксплуатировать изделие со снятой или ненадежно закрепленной крышкой модуля-заглушки.

	Двухполюсный предохранитель на фазном и нейтральном проводах В этой системе установлен двухполюсный предохранитель на фазном и нейтральном проводах. Открывать кожух этого изделия или касаться внутренних деталей можно только после отсоединения всех шнуров питания.
	Несколько источников питания Опасность поражения электрическим током и опасные энергетические воздействия. Блоки питания независимы друг от друга. Чтобы обесточить все компоненты внутри платформы коммутации, следует отсоединить все блоки питания.
	Опасность поражения электрическим током во время грозы Во время грозы запрещается работать с оборудованием и подключать или отключать кабели.
	Подсоединение и отсоединение медных кабелей Медные кабели тяжелые и негибкие, поэтому следует осторожно их подсоединять и отсоединять. За особыми предупреждениями и указаниями следует обратиться к производителю кабеля.
	Установка или обслуживание в стойке При установке или обслуживании этого изделия в стойке следует обеспечить устойчивость системы. Как правило, стойка заполняется оборудованием снизу вверх.
	Установка оборудования Устанавливать, заменять и/или обслуживать это оборудование должен только подготовленный и квалифицированный персонал.
	Утилизация оборудования Это оборудование утилизируется в соответствии с национальными законами и постановлениями.
	Местные и национальные правила установки электрооборудования Это оборудование устанавливается в соответствии с местными и национальными правилами установки электрооборудования.
	Правила установки электрооборудования Это устройство устанавливается в соответствии с последним изданием национальных правил установки электрооборудования. В Северной Америке оборудование устанавливается в соответствии с действующими требованиями Национальных правил эксплуатации и обслуживания электрических установок США и Канады.
	Замена аккумулятора Осторожно! Заменять только аккумулятором, одобренным организацией UL и рассчитанным на максимальный аномальный зарядный ток не менее 4 мА. Существует риск взрыва при замене аккумулятора другим аккумулятором неправильного типа. Отработавшие аккумуляторы утилизируются в соответствии с указаниями.
	Шнур питания, включенный в номенклатуру UL и сертифицированный Канадской ассоциацией стандартизации (CSA) Подключение к электропитанию в Северной Америке выполняется с помощью шнура питания, включенного в номенклатуру UL и сертифицированного Канадской ассоциацией стандартизации (CSA), 3-жильного, [16 AWG], длиной от 1,5 м [6 футов] до 4,5 м, с литой вилкой, рассчитанной на 125 В [13 А]. Подключение к электропитанию в Европе выполняется с помощью гармонизированного шнура питания с маркировкой <HAR>, 3-жильного, с сечением жилы не менее 1,0 мм², рассчитанного на номинальное напряжение 300 В, с ПВХ оболочкой. Шнур должен иметь литую вилку, рассчитанную на 250 В, 10 А.
	Высокий ток утечки Осторожно! Высокий ток утечки. Заземлить перед подключением к электропитанию.
	Правила установки электрооборудования Это устройство устанавливается в соответствии с последним изданием национальных правил установки электрооборудования. В Северной Америке оборудование устанавливается в соответствии с действующими требованиями Национальных правил эксплуатации и обслуживания электрических установок США и Канады.

	Защита от перегрузки по току Цепь подвода питания должна быть оборудована устройством защитного отключения от сети на ток 20А, которое находится в легкодоступном месте.
	Подсоединение устройств Для подключения к разъемам RS232 и Ethernet используются кабели типа DP-1 или DP-2, сертифицированные организацией UL. (Примечание. При подключении к сети без ограниченного источника электропитания) Максимальная токовая защита. В проводку здания в легкодоступном месте следует включить устройство защиты от перегрузки по току номиналом 20 А.
	Не использовать коммутатор как полку или рабочую поверхность Внимание! Оборудование, установленное на направляющих, не должно использоваться как полка или рабочая поверхность. Направляющие не предназначены для удерживания устройства, выдвинутого из стойки. Они предназначены для стационарной установки только в конечном положении и не используются для обслуживания устройства.
	Директива WEEE В соответствии с Директивой 2002/96/EC (WEEE) отходы электрического и электронного оборудования должны собираться и утилизироваться отдельно от обычных бытовых отходов. Следует утилизировать это изделие и все его части ответственным и экологически безопасным способом.

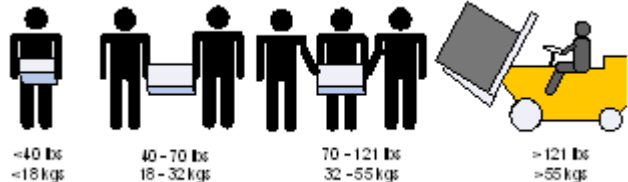
8.5.9 Avertismente privind siguranța la instalare (Romanian)

	Instrucțiuni de instalare Citiți toate instrucțiunile de instalare înainte de a conecta.
	Accidentare cauzată de greutate Apelați la un număr suficient de persoane pentru a ridica în siguranță acest produs. 
	Echipament greu Acest echipament este greu și trebuie să fie mutat folosind un dispozitiv mecanic de ridicare pentru a evita producerea de leziuni.
	Risc de șoc electric Odată ce modulul ventilator este îndepărtat, pinii electrici sunt accesibili în cavitatea modului. NU introduceți instrumente sau părți din corp în cavitatea modului ventilator.
	Temperatură în exces Acest echipament nu trebuie să fie acționat într-o zonă unde temperatura ambiantă depășește valoarea maximă recomandată: 45°C (113°F). În plus, pentru a asigura un flux de aer adecvat, lăsați un spațiu liber de cel puțin 8 cm (3 inch) în jurul fantelor de ventilare.
	Suprapunerea cadrului Cadrul nu trebuie să fie suprapus peste niciun alt echipament. În cazul în care cadrul cade, poate cauza leziuni corporale și deteriorări ale echipamentului.
	Conexiunea la o sursă de alimentare electrică suplimentară - pericol electric Acest produs include o sursă de alimentare suplimentară sau un spațiu gol în locul acesteia. În cazul în care spațiul pentru sursa de alimentare este gol, nu operați produsul când capacul orb este îndepărtat sau nu este fixat în mod sigur.

	Siguranță fuzibilă bipolară/neutră Acest sistem este prevăzut cu siguranță fuzibilă bipolară/neutră. Îndepărtați toate cordonalele de alimentare înainte de a deschide capacul acestui produs sau înainte de a atinge orice componente interne.
	Multiple mufe electrice Risc de șoc electric și pericol electric. Toate aparatele cu alimentare de la rețea sunt independente. Deconectați toate sursele de alimentare cu energie pentru a asigura decuplarea în interiorul platformei de comutare.
	În timpul descărcărilor electrice - pericol electric În timpul perioadelor cu descărcări electrice luminoase, nu lucrați cu echipamentul sau nu conectați sau deconectați cablurile.
	Conectarea/deconectarea cablului din cupru Cablurile din cupru sunt grele și inflexibile, de aceea trebuie să fie atașate sau detașate de conectori cu grijă. Consultați producătorul de cabluri pentru avertismente/instrucțiuni speciale.
	Montarea sau depanarea într-un rack Când acest produs este montat sau depanat într-un rack, trebuie să fie luate măsuri de precauție speciale pentru a se asigura că sistemul rămâne stabil. În general, trebuie să umpleți rack-ul cu echipamente începând de jos în sus.
	Instalarea echipamentului Acest echipament trebuie să fie instalat, înlocuit și/sau depanat numai de către personal instruit și calificat.
	Eliminarea echipamentului Eliminarea acestui echipament trebuie să se realizeze în conformitate cu toate legile și regulamentele naționale.
	Codurile electrice locale și naționale Acest echipament trebuie să fie instalat conform codurilor electrice locale și naționale.
	Codurile de instalare Acest dispozitiv trebuie să fie instalat în conformitate cu ultima versiune a codurilor electrice naționale ale țării în cauză. Pentru America de Nord, echipamentul trebuie să fie instalat conform cerințelor aplicabile din Codul electric național al SUA și Codul electric canadian.
	Înlocuirea bateriei Avertisment: Înlocuiți numai cu o baterie recunoscută UL, certificată pentru curent de încărcare anormal maxim de minimum 4 mA Există risc de explozie în cazul în care bateria este înlocuită cu o baterie necorespunzătoare. Eliminați bateriile folosite în conformitate cu instrucțiunile.
	Cordon de alimentare electrică înregistrat UL și certificat CSA Pentru conectarea la o sursă de alimentare pentru America de Nord, selectați un cordon de alimentare care este înregistrat UL și certificat CSA, cu 3 conductoare, [16 AWG], terminat cu o fișă turnată, cu putere nominală egală cu 125 V, [13 A], cu o lungime de minimum 1,5 m [șase picioare], dar nu mai lung de 4,5 m. Pentru conectarea la o sursă de alimentare în Europa, selectați un cordon de alimentare care este armonizat la nivel internațional și marcat „<HAR>”, cu 3 conductoare, cu minimum 2 fire de 1,0 mm, cu putere nominală egală cu 300 V și cu o manta izolantă din PVC. Cordonul de alimentare trebuie să fie prevăzut cu o fișă turnată cu putere nominală egală cu 250 V, 10 A.
	Curent de scurgere de înaltă frecvență Avertisment: Curent de scurgere de înaltă frecvență; Împământarea este esențială înainte de a conecta sursa de alimentare.
	Codurile de instalare Acest dispozitiv trebuie să fie instalat în conformitate cu ultima versiune a codurilor electrice naționale ale țării în cauză. Pentru America de Nord, echipamentul trebuie să fie instalat conform cerințelor aplicabile din Codul electric național al SUA și Codul electric canadian

	Interconectarea unităților Cablurile pentru conectarea la unitatea RS232 și la interfețele Ethernet trebuie să fie de tipul DP-1 sau DP-2 certificate UL. (Notă- când se regăsesc într-un circuit non-LPS) Protecție la supracurent: Un dispozitiv de protecție la supracurent, înregistrat în circuitul de ramificare, ușor accesibil și cu o putere nominală egală cu 20 A trebuie să fie integrat în cablajul clădirii.
	Nu utilizați comutatorul ca raft sau spațiu de lucru Atenție: Echipamentul montat pe o linie de alunecare/șină nu va fi utilizat ca raft sau spațiu de lucru. Scopul șinelor nu este de a glisa unitatea de pe rack. Acestea sunt destinate instalării permanente numai la punctul final de oprire și nu vor fi folosite pentru depanare și întreținere
	Directiva DEEE În conformitate cu Directiva DEEE 2002/96/CE, toate deșeurile de echipamente electrice și electronice (EEE) trebuie colectate separat și nu trebuie eliminate împreună cu deșeurile menajere obișnuite. Eliminați acest produs și toate componentele sale în mod responsabil și ecologic.
	Restricții electrice pentru Norvegia This unit is intended for connection to a TN power system and an IT power system of Norway only.

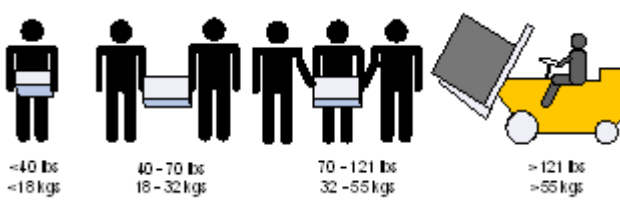
8.5.10 Sigurnosna upozorenja za instaliranje (Croatian)

	Upute za instaliranje Pažljivo pročitajte upute za instaliranje prije spajanja opreme na izvor električne energije.
	Tjelesne ozljede uslijed težine Kako biste sigurno podignuli ovaj proizvod, koristite dovoljan broj ljudi. 
	Teška oprema Ova oprema je vrlo teška i treba se premještati pomoću mehaničkog dizala kako bi se izbjegle ozljede.
	Rizik od strujnog udara! Rizik od strujnog udara! S uklonjenim modulom ventilatora, perima napajanja se može pristupiti u otvoru modula. NEMOJTE umetati alat ili dijelove tijela u otvor modula ventilatora.
	Pregrijavanje Ovom se opremom ne bi trebalo rukovati u područjima s temperaturom okoline koja premašuje najviše preporučene vrijednosti: 45°C (113°F). Osim toga, kako bi se osigurao odgovarajući protok zraka, omogućite najmanje 8 cm (3 inča) razmaka oko otvora ventilatora.
	Slaganje kućišta Kućište se ne bi trebalo slagati na drugu opremu. Ako kućište padne, može izazvati tjelesne ozljede i oštećenje opreme.
	Redundantno napajanje - Opasnost od električne energije Ovaj proizvod uključuje redundantno napajanje ili prazan prostor na njegovu mjestu. U slučaju praznog prostora za napajanje, nemojte rukovati proizvodom ako je poklopac uklonjen ili ako nije dobro pričvršćen.
	Dvopolni/neutralni osigurači Ovaj sustav raspolaže dvopolnim/neutralnim osiguračima. Uklonite sve kabele napajanja prije otvaranja poklopca proizvoda ili dodirivanja unutarnjih dijelova.

	Višestruki ulazi za napajanje Rizik od strujnog udara i opasnost od električne energije. PSU jedinice su neovisne. Odspojite sva napajanja kako biste osigurali stanje bez napajanja unutar platforme preklopnika.
	Tijekom udara munje - Opasnost od električne energije Tijekom djelovanja munja, nemojte raditi na opremi ili spajati ili odspajati kabele.
	Spajanje/Odspajanje bakrenog kabela Bakreni kabele su teški i nesavjetljivi i kao takvi se moraju pažljivo priključiti na ili isključiti iz konektora. Obratite se proizvođaču kabela za posebna upozorenja/upute.
	Montaža ormarića i servisiranje Kad se proizvod montira ili se servisira u ormariću, moraju se poduzeti posebne mjere opreza kako bi se osiguralo da sustav ostane stabilan. Općenito, trebali biste ispunjavati ormarić s opremom počevši od dna prema vrhu.
	Instaliranje opreme Ovu bi opremu trebalo instalirati, zamjenjivati i/ili servisirati samo obučeno i kvalificirano osoblje.
	Odlaganje opreme Odlaganje opreme trebalo bi se vršiti sukladno nacionalnim zakonima i propisima.
	Lokalni i nacionalni električni kodovi Ova oprema trebala bi se instalirati u skladu s lokalnim i nacionalnim električnim kodovima.
	Instalacijski kodovi Ovaj se uređaj mora instalirati sukladno najnovijoj verziji nacionalnih električnih kodova države. U Sjevernoj Americi oprema se mora instalirati sukladno važećim zahtjevima navedenim u US National Electrical Code i Canadian Electrical Code.
	Zamjena baterije Upozorenje: Bateriju zamijenite samo baterijom iz serije UL koja je certificirana za maksimalnu nepravilnu struju punjenja ne manju od 4 mA Postoji rizik od eksplozije ako se baterija zamijeni neodgovarajućom vrstom. Odložite prazne baterije sukladno uputama.
	UL CSA kabel napajanja Za sjevernoameričku mrežu odaberite kabel napajanja koji je na UL listi i sa CSA certifikatom, 3 - žilni, [16 AWG] (16 AWG) koji završava lijevanim utikačem nazivnog napona od 125 V, [13 A], minimalne duljine od 1,5 m [six feet] (šest stopa), ali ne dulji od 4,5 m. Za europsku mrežu odaberite kabel napajanja koji je međunarodno usklađen i označen "<HAR>", 3 - žilni, s najmanje 1,0 mm² žice, nazivnog napona od 300 V, s PVC izolacijom. Kabel mora imati lijevani utikač nazivnog napona od 250 V, nazivne struje od 10 A.
	Veliko curenje struje Upozorenje: Veliko curenje struje; Prije spajanja napajanja nužno je spojiti uzemljenje.
	Instalacijski kodovi Ovaj se uređaj mora instalirati sukladno najnovijoj verziji nacionalnih električnih kodova države. U Sjevernoj Americi oprema se mora instalirati sukladno važećim zahtjevima navedenim u US National Electrical Code i Canadian Electrical Code.
	Interkonekcija uređaja Kabele za spajanje na jedinicu RS232 i Ethernet sučelja moraju biti s UL certifikatom vrste DP-1 ili DP-2. (Napomena - kad se nalazi u krugu bez LPS vodiča) Zaštita od strujnog preopterećenja: Uvijek dostupni odobreni zaštitni uređaji od strujnog preopterećenja nazivne struje od 20 A moraju se ugraditi u ožičenje zgrade.
	Nemojte koristiti preklopnik kao policu ili radnu površinu Pozor: Oprema montirana na klizače/vodilice ne bi se trebala koristiti kao polica ili radna površina. Vodilice nisu namijenjene za povlačenje uređaja iz ormarića. Služe samo za trajnu instalaciju na konačnom položaju, a ne za servisiranje i održavanje.

	WEEE direttiva Sukladno WEEE direktivi 2002/96/EZ, sav električni i elektronički otpad (EEE) trebao bi se prikupljati zasebno i ne bi se trebao odlagati kao običan kućanski otpad. Odlaganje ovog proizvoda i svih njegovih dijelova vršite na odgovoran i ekološki način
	Električna ograničenja države Norveške Ovaj je uređaj namijenjen samo za spajanje na električni sustav s TN uzemljenjem i na električni sustav s IT uzemljenjem države Norveške.

8.5.11 Avvertenze di sicurezza per l'installazione (Italian)

	Istruzioni di installazione Leggere tutte le istruzioni di installazione prima di collegare l'apparecchiatura all'alimentazione.
	Lesioni a causa del peso Usare un numero di persone sufficiente per sollevare in sicurezza questo prodotto. 
	Apparecchiatura pesante Questa apparecchiatura è molto pesante e va spostata mediante un sollevatore meccanico, per evitare lesioni.
	Rischio di scosse elettriche! Con il modulo ventola rimosso, i pin di alimentazione sono accessibili all'interno della cavità del modulo. NON inserire strumenti o parti del corpo nella cavità del modulo della ventola.
	Temperatura eccessiva Questa apparecchiatura non va utilizzata in un'area con una temperatura ambiente superiore a quella massima consigliata: 45 °C (113 °F). Inoltre, per assicurare un flusso d'aria adeguato, lasciare almeno 8 cm (3 pollici) di spazio attorno alle aperture di ventilazione.
	Impilare lo chassis Kućište se ne bi trebalo slagati na drugu opremu. Ako kućište padne, može izazvati tjelesne ozljede i oštećenje opreme.
	Collegamento di alimentazione ridondante - Pericoli elettrici Questo prodotto è dotato di un alimentatore ridondante o, qualora esso non sia installato, di uno spazio vuoto. Qualora l'alimentatore non sia installato, non utilizzare il prodotto con il coperchio rimosso o non fissato correttamente.
	Fusibili fase/neutro Questo sistema dispone di fusibili fase/neutro. Rimuovere tutti i cavi di alimentazione prima di aprire il coperchio di questo prodotto o di toccare parti interne.
	Prese di alimentazione multiple Rischio e pericolo di scosse elettriche. Gli alimentatori sono tutti indipendenti. Scollegare tutti gli alimentatori per assicurarsi che il commutatore non sia sotto tensione
	Durante i temporali, pericolo di scosse elettriche Durante i temporali, non effettuare interventi sull'apparecchiatura e non collegare o scollegare i cavi.
	Collegamento/scollegamento del cavo di rame I cavi di rame sono pesanti e non flessibili. Di conseguenza, vanno collegati o scollegati con cura dai connettori. Per avvertenze/istruzioni speciali, rivolgersi al produttore di cavi.

	Montaggio su rack e manutenzione Quando questo prodotto viene montato o sottoposto a manutenzione su un rack, è necessario adottare delle precauzioni speciali per assicurarsi che il sistema resti stabile. In generale, il rack va riempito con apparecchiature, procedendo dal basso verso l'alto.
	Installazione dell'apparecchiatura Questa apparecchiatura va installata, sostituita e/o sottoposta a manutenzione solo da personale addestrato e qualificato.
	Smaltimento dell'apparecchiatura Lo smaltimento di questa apparecchiatura va effettuato in conformità con tutte le leggi e le normative nazionali.
	Codici elettrici locali e nazionali Questa apparecchiatura va installata in conformità con le norme elettriche locali e nazionali.
	Codici di installazione Questo dispositivo va installato in conformità con l'ultima versione dei codici elettrici nazionali del Paese. Per il Nord America, l'apparecchiatura va installata in conformità con i requisiti applicabili del "codice elettrico nazionale USA" e del "codice elettrico canadese".
	Sostituzione della batteria Avvertenza: Sostituire solo con una batteria UL, certificata per accettare una corrente di ricarica anomala massima non inferiore a 4 mA. Se la batteria non viene sostituita con una batteria di tipo corretto, vi è il rischio di esplosione. Smaltire le batterie usate in conformità con le istruzioni.
	Cavo di alimentazione UL e munito di certificazione CSA Per una connessione di alimentazione nordamericana, selezionare un cavo di alimentazione di tipo UL e munito di certificazione CSA, a 3 conduttori, [16 AWG], terminato con una spina stampata con tensione nominale pari a 125 V, [13 A], di lunghezza minima pari a 1,5 m [sei piedi] ma non più lunga di 4,5 m. Per una connessione europea, selezionare un cavo di alimentazione armonizzato a livello internazionale e contrassegnato da "<HAR>", a 3 conduttori, minimo 1,0 mm² fili, con guaina isolante in PVC. Il cavo deve disporre di una spina stampata di potenza nominale pari a 250 V, 10 A.
	Corrente di dispersione elevata Avvertenza: corrente di dispersione elevata; il collegamento a terra è essenziale prima di collegare l'alimentazione.
	Codici di installazione Questo dispositivo va installato in conformità con l'ultima versione dei codici elettrici nazionali del Paese. Per il Nord America, l'apparecchiatura va installata in conformità con i requisiti applicabili del "codice elettrico nazionale USA" e del "codice elettrico canadese".
	Interconnessione delle unità I cavi per il collegamento all'unità RS232 e alle interfacce Ethernet devono disporre della certificazione UL ed essere del tipo DP-1 o DP-2. (Nota: in caso di installazione su un circuito la cui potenza non è limitata) Protezione contro le sovracorrenti: la cablatrice dell'edificio deve integrare un dispositivo di protezione contro le sovracorrenti di potenza nominale pari a 20.
	Non utilizzare lo switch come scaffale o piano di lavoro Attenzione: un'apparecchiatura scorrevole o montata su binari non va utilizzata come scaffale o piano di lavoro. I binari non sono progettati per far scorrere e allontanare l'unità dal rack. Essi sono destinati all'installazione permanente solo nel luogo di lavoro e non vengono utilizzati per assistenza e manutenzione
	Direttiva RAEE Secondo la direttiva RAEE 2002/96/EC, tutti i rifiuti da apparecchiature elettriche ed elettroniche (RAEE) vanno raccolti separatamente e non smaltiti nei normali rifiuti domestici. Smaltire questo prodotto e tutte le sue parti in modo responsabile e rispettoso dell'ambiente
	Limitazioni relative all'alimentazione per la Norvegia Questa apparecchiatura è progettata esclusivamente per il collegamento a un sistema di alimentazione TN e a un sistema di alimentazione IT.

8.5.12 Montaj Güvenlik Uyarıları (Turkish)

	Montaj Talimatları Ekipmanı güç kaynağına bağlamadan önce tüm montaj talimatlarını okuyun.
	Ağırlık Nedeniyle Fiziksel Yaralanma Bu ürünü güvenli bir şekilde kaldırmak için yeterli sayıda insandan yardım alın. 
	Ağır Ekipman Bu ekipman çok ağırdır ve yaralanmaları önlemek için ekipmanın mekanik asansör kullanılarak taşınması gerekir.
	Elektrik Çarpması Riski! Fan modülüyle çıkarılan güç pimlerine modül boşluğu içinde erişilebilir. Fan modülü boşluğuna alet veya gövde parçaları yerleştirmeyin.
	Aşırı Isınma Bu ekipman, önerilen maksimum ortam sıcaklığını aşan alanlarda çalıştırılmamalıdır: 45 °C (113 °F). Ayrıca, düzgün hava akışı sağlamak için havalandırma deliklerinin etrafında en az 8 cm (3 inç) açıklık bırakılmalıdır.
	Şasi İstif Şasinin diğer herhangi bir ekipmanın üzerine istiflenmemesi gerekir. Şasi düşerse, fiziksel yaralanmalara ve ekipmanda hasara neden olabilir.
	Yedekli Güç Kaynağı Bağlantısı -Elektrik Çarpma Tehlikesi Bu ürün, yedekli güç kaynağı veya onun yerine boş elektrik kutusu içerir. Güç kaynağı için boş elektrik kutusu varsa, kutunun kapağı açıkken veya tam olarak kapatılmamışken ürünü çalıştırmayın.
	Çift Kutuplu/Nötr Kesmeli Sigorta Bu sistemde çift kutuplu/nötr kesmeli sigorta kullanılmaktadır. Ürünün kapağını açmadan veya herhangi bir iç parçaya dokunmadan önce bütün güç kablolarını çıkartın.
	Çoklu Güç Girişleri Elektrik çarpması riski ve enerji tehlikesi. Bütün PSU'lar (Güç Kaynağı Üniteleri) ayrıdır. Anahtar platformundaki gücü kapatmak için tüm güç kaynaklarının bağlantılarını kesin.
	Şimşek - Elektrik Çarpma Tehlikesi Gökyüzünde şimşek çaktığı zamanlarda, ekipman üzerinde çalışmayın veya kablo bağlamayın ya da kablo bağlantısı kesmeyin.
	İskele Montajı ve Bakım Bu ürün bir iskelede monte edildiyse veya bir iskele ile sunulduysa, sistemin sabit kalması için özel önlemler alınmalıdır. Genelde, ekipmanları iskeleye aşağıdan yukarı doğru doldurmanız gerekir.
	Ekipman Montajı Ekipmanın yalnızca eğitimli ve nitelikli personel tarafından monte edilmesi, değiştirilmesi ve/veya bakımının yapılması gerekir.
	Ekipmanın Atılması Bu ekipmanın imhasında tüm ulusal yasalara ve düzenlemelere uyulması gerekir.
	Yerel ve Ulusal Elektrik Kodları Bu ekipmanın montajında yerel ve ulusal elektrik kodlarına uyulması gerekir.

	Montaj Kodları Bu cihazın, ülke ulusal elektrik kodlarının son sürümüne göre monte edilmesi gerekir. Kuzey Amerika için, ekipmanın ABD Ulusal Elektrik Kodu ve Kanada Elektrik Kodu'nun uygulama koşullarına göre monte edilmesi gerekir.
	Pilin Değiştirilmesi Uyarı: Yalnızca, maksimum düzgünsüz şarj akımı 4mA'dan az olmayan, UL Onaylı pillerle değiştirin. Yanlış pil türü ile değiştirildiğinde patlama tehlikesi bulunmaktadır. Kullanılmış pillerden talimatlara uygun bir şekilde kurtulun.
	UL Kayıtlı ve CSA Onaylı Güç Kaynağı Kablosu Kuzey Amerika'da güç bağlantısı için, UL Kayıtlı ve CSA Onaylı bir güç kaynağı kablosu seçin, 3 - iletken, [16 AWG], 125 V değerinde, kalıplanmış bir fişle biten, [13 A], en az 1,5 m (altı fit) uzunluğunda fakat 4,5 m'den uzun olmayan bir kablo. Avrupa'da güç bağlantısı için, uluslararası uyumlu ve "<HAR>" işaretli, 3 - iletken, en az 1,0 mm ² tel, 300 V değerinde ve PVC yalıtımlı bir güç kaynağı kablosu seçin. Kablonun 250 V, 10 A değerinde bir kalıplanmış fişi olması gerekmektedir.
	Yüksek Kaçak Akım Yüksek kaçak akım varsa; güç kaynağına bağlanmadan önce mutlaka topraklama bağlantısı yapılmalıdır.
	Montaj Kodları Bu cihazın, ülke ulusal elektrik kodlarının son sürümüne göre monte edilmesi gerekir. Kuzey Amerika için, ekipmanın ABD Ulusal Elektrik Kodu ve Kanada Elektrik Kodu'nun uygulama koşullarına göre monte edilmesi gerekir.
	Ünitelerin Ara Bağlantısı RS232 ünitesini ve Ethernet Arabirimlerini bağlayacak olan kabloların UL onaylı DP-1 veya DP-2 tipi olması gerekir. (Not- LPS olmayan devreye aitse) Aşırı Akım Koruması: Kolayca erişilebilecek 20 V Kayıtlı devre parçası aşırı akım koruma cihazının bina elektrik şebekesinde kurulu olması gerekir.
	Anahtar Raf veya Çalışma Alanı olarak kullanmayınız Dikkat: Sürgülü/raylı ekipman raf veya çalışma alanı olarak kullanılamaz. Raylar üniteyi iskeleden uzağa kaydırmak için yapılmamıştır. Sadece, ekipmanın son olarak duracağı yerdeki kalıcı montaj içindir, servis veya bakım için kullanılamaz.
	WEEE Yönergesi WEEE Yönergesi 2002/96/EC uyarınca, tüm elektrikli ve elektronik ekipman atıkları (EEE) ayrı olarak toplanmalı ve evsel atıklarla birlikte çöpe atılmamalıdır. Bu ürün ve tüm parçaları çevreye dost ve sorumlu bir şekilde imha edilmelidir.
	Norveç Güç Kısıtlamaları Bu ünite, bir TN güç sistemine ve sadece Norveç'in IT güç sistemine bağlanmak içindir.

8.5.13 Japan VCCI Statement

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI-A

	הוראות התקנה קרא היטב את כל הוראות ההתקנה לפני חיבור המוצר לחשמל.
	תקן ישראלי יש להתקין את המוצר תוך הקפדה על תקנות החשמל הנהוגות בישראל, ולעשות שימוש ביחידת חלוקת כוח העומדת בתקן ישראלי (תי" 32).
	חבלת גוף כתוצאה מנשיאת משקל יתר נדרשת נוכחותם של מספר מתקינים כדי להרים את המוצר בבטחה.
	ציוד כבד המוצר כבד, ויש לשנעו באמצעות מעלית מכאנית כדי למנוע חבלה.
	סכנת התחשמלות בעת שיחידת המאוורר מפורקת, רכיבי חשמל נחשפים בחלל הריק. אין להחדיר כלים או איברי גוף לחלל המיועד להרכבת היחידה.
	התחממות יתר אין להפעיל את המוצר באזור שבו טמפרטורת החדר עולה על הטמפרטורה המקסימלית המומלצת: 45°C (113°F). בנוסף, כדי להבטיח כניסת אוויר תקינה, יש לוודא כי קיים שטח פנוי של לפחות 8 ס"מ (3 אינץ') סביב פתחי האוורור.
	ערימת המערכת אין לערום את המערכת על גבי ציוד אחר. במקרה של נפילה עשויים להיגרם נזקי גוף ורכוש.
	חיבור ספק כוח נוסף – סכנת התחשמלות המערכת מכילה ספק כוח נוסף לגיבוי או חלל ריק המאפשר הרכבת ספק כזה. אין להשתמש במערכת כאשר המכסה החוסם את החלל הריק אינו סגור כהלכה.
	מספר שקעים חשמליים כל אחד מספקי הכוח פועל באופן עצמאי. יש לנתק את כל ספקי הכוח כדי להבטיח ניתוק מוחלט של המערכת מזרם חשמלי.
	בעת סופות ברקים בעת סופות ברקים אין להפעיל את המערכת או לחבר/לנתק כבלים.
	חיבור או ניתוק של כבלי נחושת כבלי נחושת הם כבדים וקשיחים. יש לחברם ולנתקם מהמחברים בהירות רבה. לאזהרות נוספות יש לעיין בעלון לצרכן מטעם יצרן הכבלים.
	הרכבה על גבי מדף בארון בעת התקנת המוצר על מדף בארון יש לנקוט באמצעי זהירות מיוחדים כדי להבטיח יציבות. יש להתחיל למלא את הארון מהמדף התחתון ולהתקדם כלפי מעלה.
	התקנת המוצר כל התקנה, החלפה או טיפול במוצר חייבים להתבצע על ידי איש צוות מיומן ומוסמך בלבד.
	השלכה לאשפה בתום השימוש השלכת המוצר בתום השימוש חייבת להיעשות בהתאם לכל התקנות והחוקים המקומיים.
	תקנות חשמל מקומיות יש להתקין מערכת זו בהתאם לתקנות החשמל המקומיות.

	כבל אספקת חשמל – צפון אמריקה יש לבחור כבל חשמלי בעל הסמכת CSA עם 3 מוליכים [16 AWG] ובקצהו תקע מובנה 125V, 13A. אורך מינימלי 1.5 מ' ואורך מקסימלי 4.5 מ'.
	כבל אספקת חשמל – אירופה יש לבחור כבל חשמלי בעל התאמה בינלאומית וסימון עם 3 מוליכים ושטח חתך מינימלי של 1.0 מ"מ ² . בידוד PVC למתח 300V ותקע מובנה 250V, 10A.
	תקנות התקנה יש להתקין מערכת זו על פי הגרסה האחרונה של תקנות החשמל המקומיות. בצפון אמריקה יש לפעול בהתאם לתקנות החשמל הלאומיות של ארה"ב וקנדה.
	חיבור בין מערכות על כבלים לחיבור היחידה לממשקי RS232 ו-Ethernet מסוג DP-1 או DP-2 להיות בעלי הסמכת UL כאשר הם נמצאים במעגל שאינו מקור כוח מוגבל.
	הגנה מפני מתח גבוה יש להקפיד על הימצאותם וזמינותם של אמצעים להגנה מפני מתח גבוה בתקן 20A בבניין.
	אין להשתמש במערכת כמדף או כשטח עבודה המסילות אינן מיועדות לשליפת המערכת מהארון אלא להתקנתה במיקומה הקבוע.
	תקנת WEEE בהתאם לתקנות WEEE 2002/96/EC יש להשליך פסולת ציוד חשמלי ואלקטרוני בנפרד מפסולת ביתית. בתום השימוש יש להשליך מוצר זה ואת חלקיו באופן אחראי וידידותי לסביבה.
	מגבלות חשמליות בנוברגיה בנוברגיה בלבד, יחידה זו מיועדת לחיבור למערכת אספקת חשמל מסוג TN ולמערכת אספקת חשמל מסוג IT.

8.5.15

تعليمات التركيب والسلامة

	تعليمات عامة يجب قراءة جميع تعليمات التركيب بعناية قبل توصيل الجهاز بمصدر الطاقة الكهربائية. يجب تنفيذ جميع أعمال التركيب والصيانة من قبل فنيين مؤهلين ومدربين فقط. ملاحظة: التعليمات مكتوبة بصيغة المذكر لكنها صالحة للجنسين.
	إصابات محتملة نتيجة الوزن هذا المنتج ثقيل الوزن. ينبغي أن يقوم عدة أشخاص برفعه لضمان رفعه بطريقة آمنة. يوصى باستخدام رافعة ميكانيكية مناسبة أثناء النقل لتجنب الإصابات.
	خطر الصعق الكهربائي عند إزالة المروحة، تصبح أطراف التوصيل الكهربائية مكشوفة داخل الجهاز. يُمنع إدخال أدوات أو أجزاء من الجسم داخل تجويف المروحة. في الأنظمة التي تعمل بتيار متردد (AC): - فصل مزود طاقة واحد لا يعزل الجهاز بالكامل. - لعزل الجهاز بشكل كامل، يجب فصل جميع مزودات الطاقة المتصلة.
	ارتفاع درجة الحرارة لا يجوز تشغيل هذا الجهاز في بيئة تتجاوز فيها درجة الحرارة المحيطة الحد الأقصى المحدد في مواصفات المنتج. ولضمان التهوية المناسبة، يجب ترك مسافة لا تقل عن 8 سم (3 بوصات) حول فتحات التهوية.
	تكديس الهيكل (الشاسيه) لا يجوز تكديس الهيكل فوق أي معدات أخرى. في حال سقوطه، قد يتسبب ذلك في إصابات جسدية وأضرار بالمعدات.
	توصيل مزود طاقة احتياطي (اختياري) - خطر كهربائي يضمن هذا المنتج مزود طاقة احتياطيًا أو غطاءً بديلاً في مكانه. في حال وجود غطاء بديل، يُمنع تشغيل المنتج إذا كان الغطاء مُزالاً أو غير مثبت.
	مصدر نهائي القطب/المعايد يحتوي هذا النظام على مصدر ثنائي القطب/المعايد. يجب فصل جميع كابلات الطاقة قبل فتح غطاء هذا المنتج أو لمس أي مكونات داخلية.
	مدخل طاقة متعددة هناك خطر الصعق الكهربائي وخطر طاقة. تعمل جميع وحدات تزويد الطاقة (PSUs) بشكل مستقل. يجب فصل جميع مزودات الطاقة لضمان إيقاف التشغيل الكامل داخل منصة المحول.
	أثناء العواصف الرعدية — خطر كهربائي أثناء نشاط البرق، يُمنع تشغيل الجهاز. توصيل أو فصل الكابلات.
	توصيل وفصل كابلات النحاس كابلات النحاس ثقيلة وغير مرنة. لذلك يجب توصيلها وفصلها من الموصلات بحذر. يُرجى قراءة تعليمات الشركة المصنعة للحصول على التحذيرات والإرشادات الخاصة بالكابلات.
	التركيب والصيانة داخل الرف (Rack) عند تركيب هذا المنتج أو صيانته داخل رف، يجب اتخاذ احتياطات خاصة لضمان استقرار النظام. بشكل عام، يجب تعبئة الرف بالمعدات بدءًا من الأسفل إلى الأعلى.
	تركيب الجهاز يجب أن يتم تركيب هذا الجهاز أو استبداله و/أو صيانته فقط بواسطة أفراد مدربين ومؤهلين.
	التخلص من الجهاز يجب التخلص من هذا الجهاز وفقًا لجميع القوانين واللوائح الوطنية المعمول بها.
	القوانين الكهربائية المحلية والوطنية يجب تركيب هذا الجهاز بما يتوافق مع القوانين الكهربائية المحلية والوطنية.
	معايير التركيب يجب تركيب هذا الجهاز وفقًا لأحدث إصدار من القوانين الكهربائية الوطنية في البلد. في أمريكا الشمالية، يجب تركيب الجهاز وفقًا لمتطلبات القانون الكهربائي الوطني الأمريكي (NEC) والقانون الكهربائي الكندي (CEC) المعمول بهما.

	استبدال البطارية تحذير: يجب الاستبدال فقط ببطارية معترف بها من UL ومصنّعة لتحمل تيار شحن غير طبيعي لا يقل عن mA4. تحذير: يجب الاستبدال فقط ببطارية معترف بها من ومصنّعة لتحمل تيار شحن غير طبيعي لا يقل عن. هناك خطر حدوث انفجار في حال استبدال البطارية بنوع غير صحيح. يجب التخلص من البطاريات المستعملة وفقًا للتعليمات.
	كابل طاقة معتمد من UL ومصديق من CSA للتوصيل في أمريكا الشمالية: يجب اختيار كابل طاقة معتمد من UL ومصديق من CSA، بثلاثة موصلات (AWG 16)، مزود بقياس مصبوب بقوة 125 فولت / 13 أمبير، بطول لا يقل عن 1.5 متر (6 أقدام) ولا يزيد عن 4.5 متر. للتوصيل الأوروبي: يجب اختيار كابل طاقة متوافق دوليًا وموسوم بعلامة "HAR"، بثلاثة موصلات، له مساحة مقطع لا تقل عن 1.0 مم²، بجهد مقنن 300 فولت، مع غلاف عازل PVC. يجب أن يحتوي الكابل على قابس مصبوب بقوة 250 فولت / 10 أمبير.
	معايير التركيب يجب تركيب هذا الجهاز وفقًا لأحدث إصدار من القوانين الكهربائية الوطنية في الدولة. في أمريكا الشمالية، يجب الامتثال لمتطلبات القانون الكهربائي الوطني الأمريكي (NEC) والقانون الكهربائي الكندي (CEC).
	الربط بين الوحدات يجب أن تكون الكابلات المستخدمة للاتصال بواجهات الوحدة RS232 وEthernet من نوع DP-1 أو DP-2 ومعتمدة من-UL. ملاحظة: عند وجودها في دائرة غير (LPS).
	الحماية من التيار الرائد يجب تضمين جهاز حماية من التيار الرائد بقوة 20 أمبير، معتمد وسهل الوصول إليه، ضمن التمديدات الكهربائية للمبنى.
	تحذير مستوى الضوضاء يشير مستوى الضوضاء المذكور في قسم المواصفات إلى ضوضاء المنتج المقاسة وفقًا لمعيار ISO 7779 تحت الظروف الاسمية. قد يختلف مستوى الضوضاء الفعلي حسب ظروف التركيب، بما في ذلك، على سبيل المثال لا الحصر: عدد الرفوف في التركيب، حجم التركيب الكلي، مادة الرفوف والمعدات الأخرى ومستويات الضوضاء الخاصة بها، أعطال المروحة، درجة حرارة الغرفة، تكوين الغرفة، وموقع الموظفين بالنسبة للمعدات. يجب على مالك مركز البيانات إدارة إجراءات فعالة للحفاظ على السمع وفقًا لمعيار OSHA لحماية الموظفين من التعرض المفرط والمطول للضوضاء.
	عدم استخدام المحول كرف أو مساحة عمل تحذير: لا يجوز استخدام المحول المثبت كرف أو مساحة عمل. الشرائح غير مخصصة لتحريك الوحدة بعيدًا عن الرف؛ فهي مخصصة للتركيب الدائم في مكانها النهائي فقط، وليست للاستخدام أثناء الصيانة والخدمة.
	توجيه WEEE وفقًا لتوجيه WEEE 2002/96/EC، يجب جمع جميع المعدات الكهربائية والإلكترونية النافثة (EEE) بشكل منفصل، وعدم التخلص منها مع النفايات المنزلية العادية. يجب التخلص من هذا المنتج وجميع أجزائه بطريقة مسؤولة وصديقة للبيئة.
	قيود الطاقة في التوزيع هذه الوحدة مخصصة للتوصيل بنظام طاقة من نوع TN ونظام IT في التوزيع فقط.

9 Document Revision History

Date	Revision	Description
March 2026	4.2	Updated Safety Warnings
October 2025	4.1	Removed the SN2201 systems from the document. These systems are now part of the SN2201 and SN2201_M 1G Management Switch Systems User Manual. See Ethernet Switches Documentation .
	4.0	Updated SN2740 systems product lifecycle - End of Support.
December 2024	3.9	Updated obsolete cross-references
September 2024	3.8	Updated Ordering Information section with status of part numbers.
July 2022	3.7	Updated OPNs in: - Ordering Information - Installation - Accessory and Replacement Parts Updated Interface Specifications
June 2022	3.6	Updated: - LED Notifications - Interfaces - Interface Specifications - Maximum altitude updated to 5000m in SN2201 table under Specifications
January 2022	3.5	Added the SNN2201 system. Updated: - Installation - Interfaces - Specifications
November 2021	3.4	Updated Global Power Consumption in Specifications.
June 2021	3.3	Updated Ordering Information.
November 2020	3.2	Updated Accessory and Replacement Parts.
May 2020	3.1	Added MSN2010-CB2F3C to the SN2100 Ordering Part Numbers (OPNs) table under Ordering Information.
May 2020	3.0	Updated: Cable Installation
March 2020	2.9	Updated Thermal Threshold Definitions.
December 2019	2.8	Updated: - Ordering Information - Installation

Date	Revision	Description
August 2019	2.7	Updated: • Ordering Information • Interfaces • Specifications • Interface Specifications • Mellanox Spectrum is a registered trademark; logo updated.
March 2019	2.6	Updated: • Interfaces • Management
December 2018	2.5	Migrated to online format; minor reorganization
October 2018	2.4	Updated High Power/LR4 Transceivers Support in the Interfaces chapter.
August 2018	2.3	Added Static Single Switch Rail Kit for SN2100/SN2010
July 2018	2.2	Updated “Data Interfaces” and its sub-sections.
March 2018	2.1	Added SN2010 Updated “MLNX-OS” to “Onyx (MLNX-OS)” throughout the document
December 2017	2.0	Minor format updates Updated “High Power/LR4 Transceivers Support”
October 2017	1.9	Added SN2740 Updated: • “Installation Kit” • “System Installation and Initialization” • “SN2410 Splitting Options”
February 2017	1.8	Updated “Unit Identification LED”
	1.7	Updated: • “Data Interfaces” • “Specifications” • “RJ45 to DB9 Harness Pinout”
November 2016	1.6	Updated “Specifications”
September 2016	1.5	Added “Noise Level” to “Specifications” Updated: • “Reset Button” • “Status and Port LEDs”
June 2016	1.4	Updated: • “Introduction to Mellanox SN2000 Spectrum™ Ethernet Switch Systems” • “Ordering Information” • “Side by Side Mounting for SN2100/SN2010 Rail Kit”

Date	Revision	Description
May 2016	1.3	Added SX1012 to the following sections: • “Introduction to Mellanox SN2000 Spectrum™ Ethernet Switch Systems” • “Installation” • “Interfaces” • “Specifications” • “Accessory and Replacement Parts”
March 2016	1.2	Added “Taiwan BSMI Class A Statement in Safety Warnings” Updated: • “Introduction to Mellanox SN2000 Spectrum™ Ethernet Switch Systems” • “Software Management” • “Troubleshooting Instructions” • “Specifications” • “Accessory and Replacement Parts”
December 2015	1.1	Added SN2410
August 2015	1.0	First revision

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.

