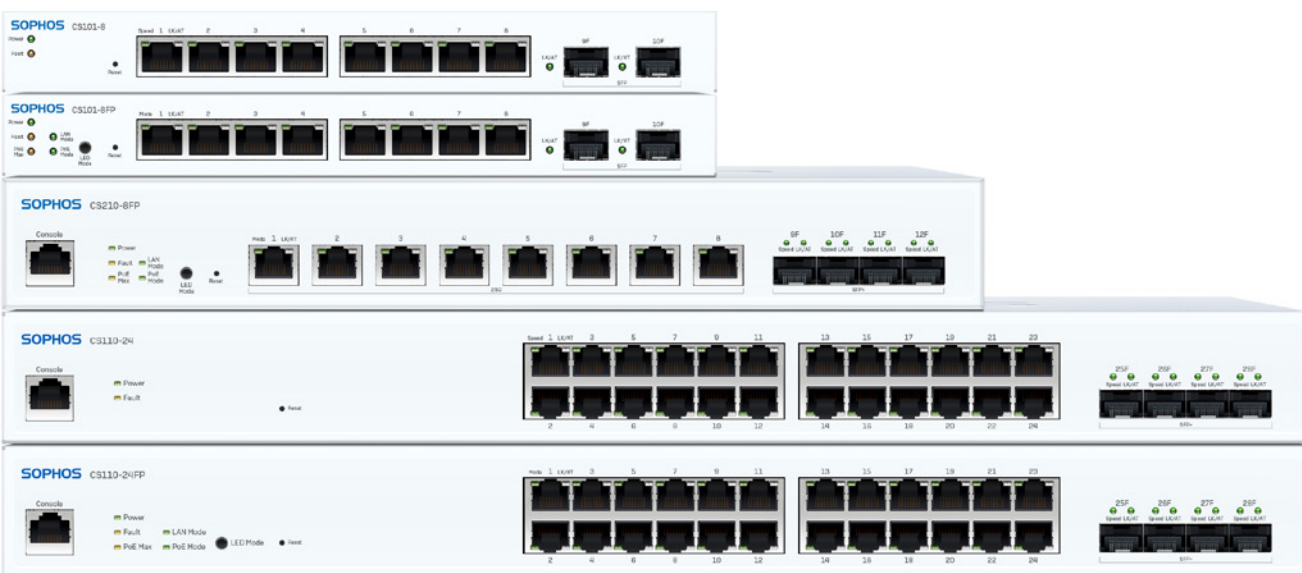# SOPHOS

Operating Instructions

Sophos Switch Series

Foreword

We are pleased to welcome you as a new customer of our Sophos Switch Series.

To install and configure your switch you can use the following documents:

‣ **Sophos Switch Quick Start Guide:** Connection to the system peripherals in a few steps

‣ **Operating Instructions:** this document

‣ **Sophos How-To Library:** Installing and configuring your switch

The Quick Start Guide and the Safety Instructions are also delivered in printed form together with the switch. The instructions must be read carefully prior to using the switch and should be kept in a safe place.

You may download all user manuals and additional documentation from the support webpage at: sophos.com/support

Security Symbols

The following symbol and its meaning appears in the Hardware Quick Start Guide, Safety Instructions and in these Operating Instructions.

Caution and Important note. If these notes are not correctly observed:

‣ This is dangerous to life and the environment

‣ The switch may be damaged

‣ The functions of the switch will be no longer guaranteed

‣ Sophos shall not be liable for damages arising from a failure to comply with the Safety Instructions

Designed Use

The Sophos switches are developed for use in networks and may be operated as a standalone switches. They can be used in commercial, industrial and residential environments.

The CS110-24,CS110-24FP, CS110-48, CS110-48P, CS110-48FP, CS210-8FP, CS210-24FP, CS210-48FP models are EMC Class A devices. The CS101-8 and CS101-8FP models are EMC Class B devices.

The switch must be installed pursuant to the current installation notes. Otherwise failure-free and safe operation cannot be guaranteed. The EU declaration of conformity is available at the following address:

Sophos Technology GmbH
Gustav-Stresemann-Ring 1
65189 Wiesbaden
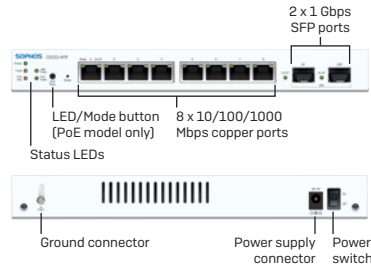**Germany**

CE Labeling, FCC and Approvals

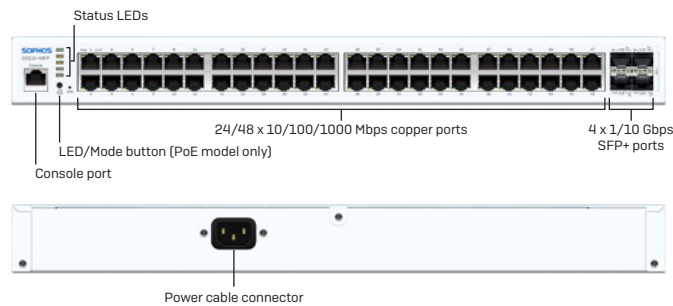The Sophso switches comply with CB, UL, CE, FCC, ISED, RCM, VCCI, BSMI, NOM, Anatel[†], KC[†].

Important note: For computer systems to remain CE and FCC compliant, only CE and FCC compliant parts may be used. Maintaining CE and FCC compliance also requires proper cable and cabling techniques.
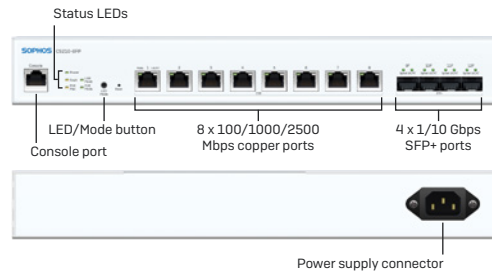
Operating Elements and Connections

CS101-8x[*]
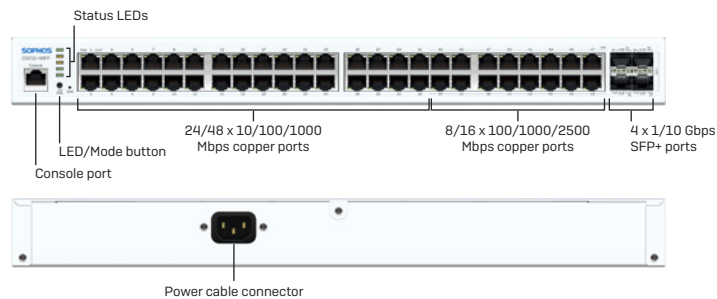
2 x 1 Gbps SFP ports

LED/Mode button (PoE model only)   8 x 10/100/1000 Mbps copper ports

Status LEDs

Ground connector   Power supply connector   Power switch

CS110-xx[**]

Status LEDs

24/48 x 10/100/1000 Mbps copper ports   4 x 1/10 Gbps SFP+ ports

LED/Mode button (PoE model only)

Console port

Power cable connector

CS210-8FP

Status LEDs

LED/Mode button   8 x 100/1000/2500 Mbps copper ports   4 x 1/10 Gbps SFP+ ports

Console port

Power supply connector

CS210-24/48FP[***]

Status LEDs

24/48 x 10/100/1000 Mbps copper ports   8/16 x 100/1000/2500 Mbps copper ports   4 x 1/10 Gbps SFP+ ports

LED/Mode button

Console port

Power cable connector

Interfaces (front)

Model	1G LAN Ports	2.5G LAN ports	SFP/SFP+ Fiber ports	Max. PoE Capacity	Max. 15W/30W/60W PoE Devices
CS101-8	8	0	2 SFP	N/A	N/A
CS101-8FP	8	0	2 SFP	110W	7/3/-
CS110-24	24	0	4 SFP+	N/A	N/A
CS110-24FP	24	0	4 SFP+	410W	24/13/-
CS110-48	48	0	4 SFP+	N/A	N/A
CS110-48P	48	0	4 SFP+	410W	26/13/-
CS110-48FP	48	0	4 SFP+	740W	48/24/-
CS210-8FP	0	8	4 SFP+	240W	8/8/4
CS210-24FP	16	8	4 SFP+	410W	24/13/-
CS210-48FP	32	16	4 SFP+	740W	48/24/-

Note: All ports on a PoE model are PoE capable according to 802.3af/at standard, CS210-8FP also supports the 802.3bt standard

Other Interfaces	Type	Comment
COM	RJ45	You can connect a serial console to the RJ45 COM port to access the Command Line Interface (CLI). The required connection settings are: ‣ Bits per second: 115,200 ‣ Data bits: 8 ‣ Parity: N (none) ‣ Stop bits: 1
Reset	Button	Press and hold the reset button for 7 seconds to reset the switch to the factory default settings. All configuration including the login password will be reset.
LED Mode (PoE models only)	Button	Press to switch the meaning of the left LED on each RJ45 port (labeled with 'LED Mode') between LAN Mode and PoE Mode.

Technical Specifications

	CS101-8	CS101-8FP	CS110-24	CS110-24FP
Physical Specification				
Form factor	Desktop	Desktop	1U	1U
#10/100/1000 Base-T (RJ45) Ports	8	8	24	24
#10/100/1000/2500 Base-T (RJ45) Ports	0	0	0	0
#SFP 1G Ports	2	2	0	0
#SFP+ 10G Ports	0	0	4	4
RJ-45 Console port	0	0	1	1
Switching Capacity Duplex (Gbps)	20	20	128	128
MAC Address Table	8K	8K	16K	16K
Memory (MB)	256MB	256MB	512MB	512MB
Flash (MB)	NOR 32MB	NOR 32MB	NOR 2MB NAND 128MB	NOR 2MB NAND 128MB
Packet Buffer Memory	512K	512K	1.5M	1.5M
VLANs	Support for up to 256 VLANs simultaneously (out of 4096 VLAN IDs)	Support for up to 256 VLANs simultaneously (out of 4096 VLAN IDs)	Support for up to 256 VLANs simultaneously (out of 4096 VLAN IDs)	Support for up to 256 VLANs simultaneously (out of 4096 VLAN IDs)
PoE Power Budget	n/a	110W	n/a	410W
PoE capable Ports	n/a	1 to 8	n/a	1 to 24
PoE Standard	n/a	802.3af/802.3at	n/a	802.3af/802.3at
Max. PoE Devices	n/a	7 (15.4W)/3 (30W)	n/a	24 (15.4W)/13 (30W)
Power Supply Rating	12W	150W	25W	480W
Power Supply Type	External DC Adapter	External AC/DC Adapter	Internal PSU	Internal PSU
AC Input	100-240VAC, 0.3A max@50-60Hz	100-240VAC, 2.0A@50/60Hz	100-240VAC, 0.7A@50/60Hz,	100-240VAC, 7A@50/60Hz
DC Output	+12V 1.0A 12W	150W 54V/2.78A	25W 12V/2.09A	480W 12V/5A, 54V/7.8A
Power Adapter Efficiency	100VAC/0.13A (80.45%) 240VAC/0.08A (81.66%)	100VAC/1.48A (94.5%) 240VAC/0.64A (95.9%)	100VAC/0.5405A (88.26%) 240VAC/0.2875A (88.55%)	100VAC/9.03A (86.81%) 240VAC/3.78A (91.55%)
Power Consumption Idle Power (typical)	3.76W/12.82 BTU/hr	4.86W/16.57 BTU/hr	10.67W/36.3847 BTU/hr	20.41W/69.5981 BTU/hr
Power Consumption Max. Power (typical)	6.96W/23.733 BTU/hr	147.1W/501.6 BTU/hr	24.41W/83.2381 BTU/hr	500.46W/1706.5686 BTU/hr
Dimensions Width x Height x Depth	240 x 27 x 105 mm	240 x 27 x 105 mm	440 x 44 x 193.3 mm	440 x 44 x 257.3 mm
Weight (unpacked)	0.636 kg	0.636 kg	2.3 kg	3.99 kg
Weight (packed)	0.99 kg	1.45 kg	3.06 kg	4.7 kg
Mounting	Wall mount (screws incl.)	Wall mount (screws incl.)	Rackmount (ears and screws incl.)	Rackmount (ears and screws incl.)
Environmental				
Fans	fanless	fanless	fanless	2
Noise level (avg.) (typical/max operation)	fanless	fanless	fanless	45-56 dBA
Temperature (operating)	0°C to 40°C	0°C to 40°C	0°C to 40°C	0°C to 40°C
Temperature (storage)	-20°C to 70°C	-20°C to 70°C	-20°C to 70°C	-20°C to 70°C
Humidity (operating)	10% to 90% RH (non-condensing)	10% to 90% RH (non-condensing)	10% to 90% RH (non-condensing)	10% to 90% RH (non-condensing)
Humidity (storage)	5% to 90% RH (non-condensing)	5% to 90% RH (non-condensing)	5% to 90% RH (non-condensing)	5% to 90% RH (non-condensing)
MTBF (hours) (Telcordia SR-332 Issue 3)	3,403,414 Hrs	866,197 Hrs	1,202,125 Hrs	674,102 Hrs
Certifications				
Safety, EMC, ...	CB, UL, CE, FCC, ISED, RCM, VCCI, BSMI, NOM, Anatel*, KC*	CB, UL, CE, FCC, ISED, RCM, VCCI, BSMI, NOM, Anatel*, KC*	CB, UL, CE, FCC, ISED, RCM, VCCI, BSMI, NOM, Anatel*, KC*	CB, UL, CE, FCC, ISED, RCM, VCCI, BSMI, NOM, Anatel*, KC*

* Certification may not be available from launch

	CS110-48	CS110-48P	CS110-48FP	CS210-8FP
Physical Specification				
Form factor	1U	1U	1U	1U
#10/100/1000 Base-T (RJ45) Ports	48	48	48	0
#10/100/1000/2500 Base-T (RJ45) Ports	0	0	0	8
#SFP 1G Ports	0	0	0	0
#SFP+ 10G Ports	4	4	4	4
RJ-45 Console port	1	1	1	1
Switching Capacity Duplex (Gbps)	176	176	176	60
MAC Address Table	32K	32K	32K	8K
Memory (MB)	512MB	512MB	512MB	512MB
Flash (MB)	NOR 2MB NAND 128MB	NOR 2MB NAND 128MB	NOR 2MB NAND 128MB	NOR 16MB NAND 128MB
Packet Buffer Memory	2M	2M	2M	512K
VLANs	Support for up to 256 VLANs simultaneously (out of 4096 VLAN IDs)	Support for up to 256 VLANs simultaneously (out of 4096 VLAN IDs)	Support for up to 256 VLANs simultaneously (out of 4096 VLAN IDs)	Support for up to 256 VLANs simultaneously (out of 4096 VLAN IDs)
PoE Power Budget	n/a	410W	740W	240W
PoE capable Ports	n/a	1 to 48	1 to 48	1 to 8
PoE Standard	n/a	802.3af/802.3at	802.3af/802.3at	802.3af/802.3at/802.3bt
Max. PoE Devices	n/a	26 (15.4W)/13 (30W)	48 (15.4W)/24 (30W)	8 (15.4W)/8 (30W)/4 (60W)
Power Supply Rating	60W	480W	900W	300W
Power Supply Type	Internal PSU	Internal PSU	Internal PSU	Internal PSU
AC Input	100-240VAC, 1.5A@50/60Hz	100-240VAC, 7A@50/60Hz	100-240VAC, 12A@50/60Hz	100-240VAC, 4A@50/60Hz
DC Output	60W 12V/5A	12V/5A;-54V/7.8A	12V/8.3A;-54V/14.8A	12V/5.83A;-54V/4.63A
Power Adapter Efficiency	100VAC/0.8535A (91.00%) 240VAC/ 0.4756A (91.96%)	100VAC/4.823A (86.67%) 240VAC/1.956A (91.15%)	100VAC/9.03A (93.01%) 240VAC/3.78A (96.61%)	100VAC/2.99A (84.84%) 240VAC/1.20A (88.08%)
Power Consumption Idle Power (typical)	17.28W/58.9248 BTU/hr	29.8W/101.618 BTU/hr	32.00/109 BTU/hr	31.2W/106.392 BTU/hr
Power Consumption Max. Power (typical)	43.92W/149.7672 BTU/hr	476.3W/1624.183 BTU/hr	885.00W/3018 BTU/hr	299W/1019.59 BTU/hr
Dimensions Width x Height x Depth	440 x 44 x 257.3 mm	440 x 44 x 310 mm	440 x 44 x 310 mm	330 x 44 x 230 mm
Weight (unpacked)	3.6 kg	4.85 kg	4.85 kg	2.34 kg
Weight (packed)	4.33 kg	5.94 kg	5.94 kg	3.11 kg
Mounting	Rackmount (ears and screws incl.)	Rackmount (ears and screws incl.)	Rackmount (ears and screws incl.)	Rackmount (ears and screws incl.)
Environmental				
Fans	1	3	3	2x Smart fan
Noise level (avg.) (typical/max operation)	45-56 dBA	48-60 dBA	48-60 dBA	45-46 dBA
Temperature (operating)	0°C to 40°C	0°C to 40°C	0°C to 40°C	0°C to 40°C
Temperature (storage)	-20°C to 70°C	-20°C to 70°C	-20°C to 70°C	-20°C to 70°C
Humidity (operating)	10% to 90% RH (Non-Condensing)	10% to 90% RH (Non-Condensing)	10% to 90% RH (Non-Condensing)	10% to 90% RH (Non-Condensing)
Humidity (storage)	5% to 90% RH (non-condensing)	5% to 90% RH (non-condensing)	5% to 90% RH (non-condensing)	5% to 90% RH (non-condensing)
MTBF (hours) (Telcordia SR-332 Issue 3)	358,658 Hrs	375,779 Hrs	376,912 Hrs	391388 Hrs
Certifications				
Safety, EMC, ...	CB, UL, CE, FCC, ISED, RCM, VCCI, BSMI, NOM, Anatel*, KC*	CB, UL, CE, FCC, ISED, RCM, VCCI, BSMI, NOM, Anatel*, KC*	CB, UL, CE, FCC, ISED, RCM, VCCI, BSMI, NOM, Anatel*, KC*	CB, CSA, CE, FCC, ISED, RCM, VCCI, BSMI, NOM, Anatel*, KC*

* Certification may not be available from launch

LED Status

Status LEDs			
Power	Green	Solid	Power On
		Off	Power Off
Fault	Amber	Solid	Error
		Off	Normal Behavior
PoE Max	Amber	Solid	The power requested by PoE devices exceeds total PoE limit of the switch. No additional devices can be powered.
		Off	Additional PoE devices may still be powered
LAN Mode*	Green	Solid	The left LED on RJ45 ports indicates Speed
PoE Mode*	Green	Solid	The left LED on RJ45 ports indicates PoE status

* By pressing the "LED mode" button you can switch the meaning of the left LED on each RJ45 port (labeled with "mode") between LAN Mode and PoE Mode.

LEDs on each RJ45 Ethernet Connector			
LK/AT (Link/Activity) (Right LED)	Green	Solid	1. Ethernet port has established link. 2. Good connection between the ethernet port and connected device.
		Flashing	The port is sending or receiving network data.
		Off	1. The adapter and switch are not receiving power. 2. No connection between both ends of network. 3. Network drivers have not been loaded or do not function correctly.
CS101-xx Models			
Speed (Left LED) [on PoE models: LED Mode button not pressed]	Green	Solid	Ethernet port is operating at 1000 Mbps.
		Off	Ethernet port is operating at 100 Or 10 Mbps (if LK/AT LED is active).
1G Ports on CS110-xx and CS210-xx Models			
Speed (Left LED) [on PoE models: LED Mode button not pressed]	Green	Solid	Ethernet port is operating at 1000 Mbps.
	Amber	Solid	Ethernet port is operating at 100 Mbps.
		Off	Ethernet port is operating at 10 Mbps (if LK/AT LED is active).
2.5G Ports on CS210-xx Models			
Speed (Left LED) [on PoE models: LED Mode button not pressed]	Green	Solid	Ethernet port is operating at 2500 Mbps.
	Amber	Solid	Ethernet port is operating at 1000 or 100 Mbps.
		Off	Ethernet port has no link
CS101-8FP (PoE) Models only			
Mode (Left LED) [LED Mode button pressed]	Green	Solid	PoE switch provides power to the port
		Off	No power is provided to the port
CS110/210 P/FP (PoE) Models only			
Mode (Left LED) [LED Mode button pressed]	Green	Solid	PoE switch provides power to the port
	Amber	Solid	Error
		Off	No power is provided to the port

LEDs on each SFP/SFP+ Ethernet Connector			
LK/AT (Link/Activity)	Green	Solid	1. Ethernet port has established link. 2. Good connection between the ethernet port and connected device.
		Flashing	The port is sending or receiving network data.
		Off	1. The adapter and switch are not receiving power. 2. No connection between both ends of network. 3. Network drivers have not been loaded or do not function correctly.
CS110/CS210-xx Models			
Speed (Left LED)	Green	Solid	Ethernet port is operating at 10 Gbps.
	Amber	Solid	Ethernet port is operating at 1 Gbps.

Please note: Additional LED blinking sequences not listed above indicate specific maintenance processes such as firmware updates. For more information, please check additional Sophos documentation resources.

Putting into Operation

Caution: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Scope of Supply

The supplied parts are indicated in the Quick Start Guide.

Mounting Instructions

All models except CS101-8x are designed for use in racks. Please consider the following security tips:

Important note: Functional reliability outside of a rack cannot be guaranteed.

Warnings and Precautions

The switch can be operated safely if you observe the following notes and the notes on the switch itself.

Rack Precautions

‣ Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.

‣ In single rack installation, stabilizers should be attached to the rack.

‣ In multiple rack installations, the racks should be coupled together.

‣ Always make sure the rack is stable before extending a component from the rack.

‣ You should extend only one component at a time—extending two or more simultaneously may cause the rack to become unstable.

General Server Precautions

‣ Installation must be performed by qualified personnel

‣ Review the electrical and general safety precautions that came with the components you are adding to your switch.

‣ Determine the placement of each component in the rack before you install the rackmount ears.

‣ Install the heaviest server components on the bottom of the rack first, and then work up.

‣ Allow the hot plug power supply modules to cool before touching them.

‣ Always keep the rack's front door, all panels and server components closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

‣ **Ambient operating temperature:** If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, you should install the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature.

‣ **Reduced airflow:** Equipment should be mounted into a rack with sufficient airflow to allow cooling.

‣ **Mechanical loading:** Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

‣ **Circuit overloading:** Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

‣ **Reliable ground:** Reliable grounding must be maintained at all times. To ensure this, the rack itself should be grounded. Grounding screws for the switch are on the rear of the chassis. Chassis Grounding is required. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e., the use of power strips, etc.).

Rack Mounting Instructions

To mount the switch to the rack you need the delivered rack-mount kits. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using. Please observe the mounting instructions for your rack.

Important note: Make sure you use the screws supplied with the rack-mount brackets. Using the wrong screws could damage the hardware switch and would invalidate your warranty.

1. **Attach the rack-mount ears to the switch:**

‣ Place the switch on a hard flat surface with the front panel facing you.

   Please Note: There are two types of mounting brackets supplied with your switch. Use the short brackets if you intend to also use sliding rails which are available as an optional accessory from your Sophos partner. Use the long mounting brackets if you don't want to use additional sliding rails or any other fixation for the switch.

‣ Attach the rack–mount brackets to the left and right side of the switch with the supplied screws.

‣ Make sure the brackets are properly attached to the switch.

Important note: Please check the technical specs above for the min. and max. rack depth.

2. **Choose the rack location:**

‣ Leave enough clearance in front of the rack so that you can open the front door completely (~60 cm/25 inches).

‣ Leave approximately 80 cm/30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.

‣ This product is for installation only in a restricted access location (dedicated equipment rooms, service closets and the like).

3. **Install the sliding rails (optional):**

‣ Please refer to the dedicated Sliding Rails Mounting Instructions shipped with the switch.

   Please note: If you are using the optional external Power Supply which will be mounted to the rear of your switch, we strongly recommend using the optional sliding rails.

4. In order to prevent the unit from unintentionally sliding out of the rack we strongly recommend fixing the rack-mount brackets to the front rack-mount posts by using screws and nuts supplied with your rack.

Connection and Configuration

How to connect the switch is described in the Hardware Quick Start Guide. For configuration you can follow the initial setup wizard described in the WebAdmin Quick Start Guide or cancel it and perform a manual setup (see the Sophos Firewall How-To Library).

SFP/SFP+ Ports

Sophos switches models offer a variety of SFP/SFP+ ports allowing you to plugin various GBICs (transceivers) to connect to fiber or copper networks. The abbreviation SFP GBIC stands for small form-factore plugable GigaBit interface converter, a flexible interface which changes electronic signals into optical signals. The converters used with the switch are often also called Mini-GBIC or New GBIC.

To use SFP/SFP+ ports, you will need the appropriate transceivers or DAC cables (combining transceivers and cables into one). These are not delivered with the switch but available through your Sophos partner. There are different module types, and the required type is determined by the existing network.

Caution: The SFP and SFP+ ports use lasers to transmit signals over fiber optic cable. The lasers are compliant with the requirements of a Class 1 Laser equipment and are inherently eye-safe in normal operation. However, you should never look directly at a transmit port when it is powered on. Always install appropriate and UL approved Laser Class I Transceivers, rated 3.3Vdc, max. 1W, in the fiber ports before using the fiber ports.
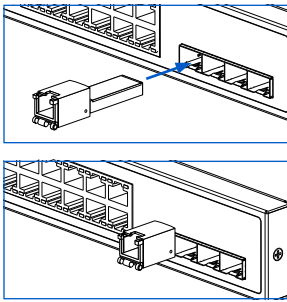
Installing a SFP/SFP+ module

Please read the operation manual for the module. Carefully insert the module into the port until it engages. The interface is immediately ready for use.

Removing a SFP/SFP+ module

1. Remove the optical cable from the module which you wish to remove.

2. Remove the module carefully from the port.

   Depending on when you purchased your module, it may have any of three different release mechanisms: a plastic tab on the bottom of the module, a wire bail, or a plastic collar around the module.

Please read the operation manual to the module.

Serial Console

You can connect a serial console to the RJ45 port to access the CLI. To connect a serial DB9-port of your PC to the RJ45 COM port please use the supplied RJ45 to DB9 Adapter cable. If you want to connect to a USB port of your PC you will need an additional USB Type-A to DB9 Adapter cable.

To log on to the console you can use, for instance, the Hyperterminal terminal program which is included with most versions of Microsoft Windows, or PuTTy. The required connection settings are:

‣ **Bits per second:** 115,200

‣ **Data bits:** 8

‣ **Parity:** N (none)

‣ **Stop bits:** 1

‣ **Flow Control:** None

After connecting, press Enter on your keyboard to connect to the CLI. Sign in using the username "admin" and the unique password for this switch.

Operating Instructions

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