

RackSwitch™ G8124

Installation Guide

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Contents

Preface ■ 5

Who Should Use This Book ■ 5

Related Documentation ■ 5

How to Get Help ■ 6

Chapter 1: RackSwitch G8124 Description and Specifications ■ 7

RackSwitch G8124 Features ■ 7

Performance ■ 7

Management Features ■ 7

Software Features ■ 8

Switch Components ■ 9

Hardware Options ■ 9

Switch Unit ■ 9

Switch Ports ■ 12

LEDs ■ 15

Technical Specifications ■ 17

Physical Characteristics ■ 17

Environmental Specifications ■ 17

Power Specifications ■ 18

Ordering Information ■ 19

Chapter 2: Installing the RackSwitch G8124 ■ 21

Required Tools ■ 21

Package Contents ■ 21

Environmental Requirements ■ 22

Preventing Electric Shock ■ 22

Preventing Electrostatic Discharge ■ 23

Installing the RackSwitch G8124 in a Standard Equipment Rack ■ 23

Installing the RackSwitch G8124 in an iDataPlex Rack ■ 26

Installing the RackSwitch G8124 in a 4-post Rack ■ 29

- Initializing the RackSwitch G8124 ■ 32
 - Default Configuration ■ 33
 - Configuring an IP Interface ■ 34
- Using the Boot Management Menu ■ 35
- Installing an SFP or SFP+ Transceiver ■ 36
 - SFP+ Optical Transceiver ■ 36
 - SFP Copper Transceiver ■ 37
- Troubleshooting ■ 38
 - System LEDs Do Not Light ■ 38
 - Port link LED Does Not Light ■ 38
 - Temperature Sensor Warning ■ 38
 - Switch Does Not Initialize (Boot) ■ 39

- Appendix A: Safety and Compliance Statements ■ 41**
 - Safety Messages ■ 41
 - Compliance Statements ■ 46

Preface

This *Installation Guide* provides information and instructions to install a BLADE Network Technologies RackSwitch G8124. For information about configuration and management of the switch, refer to the *Command Reference* and the product release notes.

Who Should Use This Book

This *Installation Guide* is intended for network installers and system administrators engaged in configuring and maintaining a network. It assumes that you are familiar with your RackSwitch G8124, your Web browser, Ethernet concepts, IP addressing, the IEEE 802.1D Spanning Tree Protocol, and SNMP configuration parameters.

Related Documentation

For documentation about configuring your switch, see the RackSwitch G8124 *Application Guide* and *Command Reference*.

For details about the switch information, statistics, and configuration parameters, see the RackSwitch G8124 *Command Reference*.

How to Get Help

If you need help, service, or technical assistance, call Blade Network Technologies Technical Support:

US toll free calls: 1-800-414-5268

International calls: 1-408-834-7871

You also can visit our web site at the following address:

<http://www.bladenetwork.net>

Click the **Support** tab.

The warranty card received with your product provides details for contacting a customer support representative. If you are unable to locate this information, please contact your reseller. Before you call, prepare the following information:

- Serial number of the switch unit
- Software release version number
- Brief description of the problem and the steps you have already taken
- Technical support dump information (`# show tech-support`)

Note – In case of any suspected hardware related defect, immediately call the BLADE support line to get the issue resolved. There are no field serviceable parts inside the enclosure and tampering with internal components in an attempt to diagnose hardware or fix defects will void the warranty and the product will be repaired at the customer's expense.

CHAPTER 1

RackSwitch G8124 Description and Specifications

The RackSwitch G8124 is an all 10Gb Ethernet rackable aggregation switch with unmatched line-rate Layer 2 performance. The G8124 uses a wire-speed, non-blocking switching fabric that provides simultaneous wire-speed transport of multiple packets at low latency on all ports.

The G8124 contains twenty-four 10Gb Small Form-factor, Pluggable (SFP+) slots and two 1Gb management ports. The 10Gb SFP+ slots can accept 1Gb copper transceivers, 10Gb optical transceivers, or Direct Attach Cables (DAC).

This 1U switch is rack mountable in either the horizontal or vertical direction, depending on your application.

You can manage the switch through the console port, or through a network connection using Telnet, a Web browser-based interface, or SNMP-based network management software.

RackSwitch G8124 Features

This section provides an overview of RackSwitch G8124 features.

Performance

- 240 Gbps throughput (full duplex), non-blocking switching architecture
- 100% line rate
- Deterministic port-to-port latency under 300 nanoseconds with 64B packets

Management Features

- Clients
 - Industry standard command-line interface (ISCLI)
 - Browser-based Interface (BBI)
 - BladeHarmony Manager

- Protocols
 - SNMP v1, v2, v3
 - Secondary NTP support
 - DHCP
- Software upgrades
 - Dual software images
 - Upgrade via serial, browser, or FTP/TFTP

Software Features

- Security
 - Secure interface login & password
 - RADIUS and TACACS+
 - SSH v1, v2
 - HTTPS Secure Browser-based interface
 - Wire-speed filtering with Access Control Lists (ACLs)
- Layer 2
 - 1024 VLANs (802.1Q), including Private VLANs
 - Multi-link trunking, compatible with Cisco EtherChannel
 - LACP (IEEE 802.3ad)
 - Spanning Tree (802.1D), Multiple Spanning Tree (802.1s), Rapid Spanning Tree (802.1w), with Fast Uplink Convergence
 - 16K forwarding database entries
- Layer 3
 - 128 configurable interfaces (static or DHCP)
 - IP forwarding
 - IGMP Snooping v1, v2, v3
 - 4K ARP entries
 - RIP v1, v2
 - OSPF
- Quality of Service
 - 802.1p priority queues
 - Differentiated Services Code Point (DSCP) support
- Availability
 - Layer 2 Failover
 - VRRP

Switch Components

This section describes the RackSwitch G8124 hardware components.

Hardware Options

The following list provides an overview of G8124 hardware:

- Switch unit
- Mounting hardware
 - Standard rack mounting brackets and screws
 - iDataPlex rack mounting brackets and screws
 - 4-post rack mounting brackets and screws

Switch Unit

The RackSwitch G8124 switch unit is a 1U rack-mountable 10 Gigabit Ethernet switch. You can mount the G8124 in either the horizontal or vertical direction.

The RackSwitch G8124 allows for flexible mounting of the switch, as follows:

- RackSwitch G8124F provides front-to-rear airflow.
- RackSwitch G8124R provides rear-to-front airflow.
- DC powered RackSwitch G8124R provides front-to-rear airflow.

Ports

The switch unit contains twenty-four 10Gb SFP+ slots, plus two management ports, and one serial console port:

- 24 SFP+ slots
- 2 RJ-45 management ports
- 1 RS-232 console port (mini-USB)

Figure 1 RackSwitch G8124 Front Panel

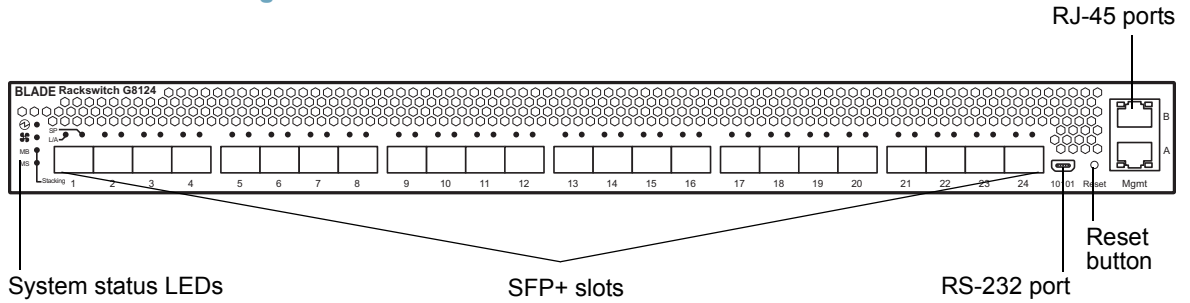


Figure 2 RackSwitch G8124 Rear Panel (AC)

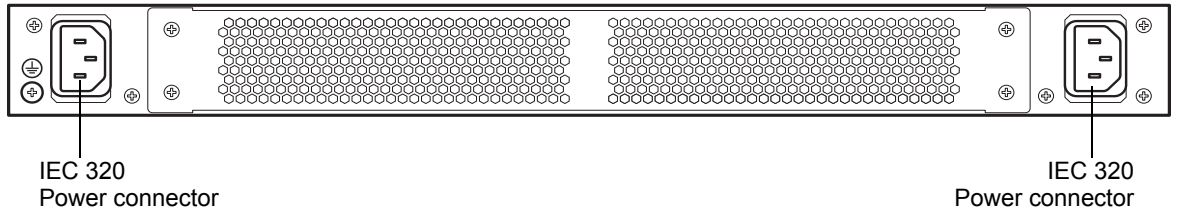
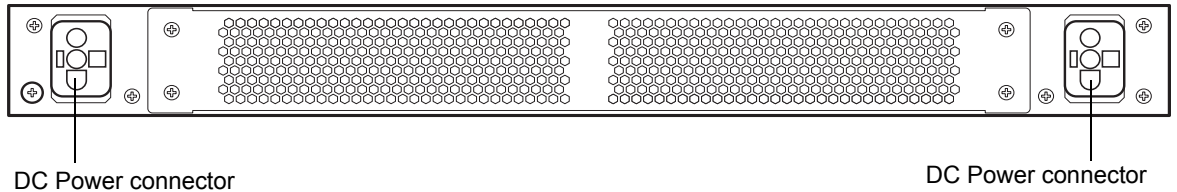


Figure 3 RackSwitch G8124 Rear Panel (DC)



Reset Button

The Reset button is recessed within a hole on the front panel. Use a straightened paper clip or similar object to press the Reset button. The Reset button allows technicians to reset the switch, as follows:

- Press **Reset**: The switch resets and reloads the configuration files.
- Press and hold **Reset** for five seconds: The switch resets and configures all settings to factory defaults.

Fans

Six internal fans cool the switch unit. If an individual fan fails, the other fans continue to run, and the switch unit continues to operate normally. Fans are not customer replaceable.

Fan operation and internal temperatures are monitored. If the air temperature exceeds a desired threshold, the environmental monitor displays warning messages.

Note – If a fan fails, the maximum operating temperature drops from +40°C to +35°C.

The Fan LED blinks if there is a failure of one or more fans.

AC Power Supply

The G8124 has two redundant 275W AC power supplies. Each internal power supply has an individual IEC 320 power connector on the rear panel. The power cord attaches to a universal grounded AC power source.



Caution—To reduce the risk of electric shock, use only power cords that have a grounding path, and always connect the power cord to a properly grounded power outlet.

Each power supply can be connected to a separate AC circuit to mitigate the risk of down time during a power failure. When used in a redundant configuration, the dual power supplies have a load-sharing capability that allows each supply to operate at approximately 50 percent of full load. Using redundant power can minimize the power disruption during a power supply failure and extend the expected lifetime of each supply by operating normally in a conservative power mode.

There is no power switch on the G8124; the switch unit powers up when power is supplied through the power cord(s).

The Power Supply LED indicates the status of the power supplies. The LED blinks when only one power cord is connected or if one power supply fails. The LED lights steady when both power cords are connected and operating.

DC Power Supply

The DC Powered G8124 has two redundant 250W DC-DC power supplies, operating from 42V to 60V. Each internal power supply has a DC filter input on the rear panel. The DC power sources are connected to the G8124 via the mating connector cable assemblies provided. One end of the cable is connected to the G8124 and the three DC-input leads connect the DC-input power supply to the site power source. The pigtail end of the cable is color coded, as follows:

- Black: Negative (-48V)
- Red: Positive (return)
- Green: Ground



Warning—Only trained and qualified personnel can connect this equipment to the site power source.

Each power supply can be connected to a separate DC power source to mitigate the risk of down time during a power failure. When used in a redundant configuration, the dual power supplies have a load-sharing capability that allows each supply to operate at approximately 50 percent of full load. Using redundant power can minimize the power disruption during a power supply failure and extend the expected lifetime of each supply by operating normally in a conservative power mode.

There is no power switch on the G8124; the switch unit powers up when power is supplied through the DC power source.

The Power Supply LED indicates the status of the power supplies. The LED blinks when only one DC power source is connected, and lights steady when both DC power sources are connected.

Switch Ports

The RackSwitch G8124 switch ports and port options are described below.

SFP+ Slots

24 Small Form-factor Pluggable (SFP+) slots are located on the front panel. These slots accept approved copper SFP transceivers, optical SFP+ transceivers, or Direct Attach Cables (DAC).

Transceivers are not included with the G8124 switch unit. The following transceivers are available from Blade Network Technologies:

Table 1 Recommended SFP+ Transceiver

Part number	Description
BN-CKM-SP-SR	SFP+ 10GBase-SR Short Range Optical Fiber Transceiver
BN-CKM-SP-LR	SFP+ 10GBase-LR Long Range Optical Fiber Transceiver
BN-CKM-S-T	SFP 1000BASE-T Copper Transceiver
BN-CKM-S-SX	SFP 1000BASE-T-SX Short Range Optical Transceiver
BN-CKM-S-LX	SFP 1000BASE-LX Long Range Fiber Transceiver

The RackSwitch G8124 accepts any SFP+ Direct Attach Cable that complies to the MSA specification.

10/100/1000Base-T Ports

Two 10/100/1000BaseT ports (RJ-45) are located on the front panel. These management ports support in-line management and Control Plane Stacking.

The following table describes the RJ-45 connector pin assignments.

Table 2 RJ-45 Port pin assignments

Pin number	Signal	Description
1	BI DA+	Bi-directional data pair A positive
2	BI DA-	Bi-directional data pair A negative
3	BI DB+	Bi-directional data pair B positive
4	BI DC+	Bi-directional data pair C positive
5	BI DC-	Bi-directional data pair C negative
6	BI DB-	Bi-directional data pair B negative
7	BI DD+	Bi-directional data pair D positive
8	BI DD-	Bi-directional data pair D negative

Console Port

The RS-232 (mini-USB) serial console port is located on the front panel. An external cable is required to convert to a D9 connector. The following table describes the pinouts for the mini-USB port:

Table 3 Console Port pin assignments

Pin number	Function
Pin 1	No connect
Pin 2	RS232_SIN
Pin 3	RS232_SOUT
Pin 4	No connect
Pin 5	Ground



The following table describes the wiring of the console cable:

Table 4 Console Cable pin assignments

D9 Pin number	Wire	Mini-USB Pin number
Pin 2	Black	Pin 3
Pin 3	White	Pin 2
Pin 5	Green	Pin 5
Pin 1	D9 Pins 1, 4, and 6 are connected	
Pin 4		
Pin 6		
Pin 7	D9 pin 7 is connected to D9 pin 8	
Pin 8		
Shell	Braid	Shell

LEDs

Two LED stacks provide system status and port link status. The system LEDs are described in the following table:

	Power supplies and AC power input status
	Fans status
MB	Stacking master indicator
MS	Stacking member indicator

The following table describes the system LED indications:

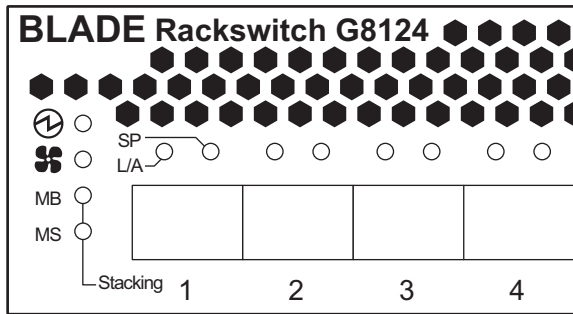
Table 5 System LEDs Status

Function	Power	Fan	Master	Member
Total Power Failure	Off	Off	Off	Off
Service Required	Blink Green	Blink Green	Blink Green	Blink Green
Power Supplies OK	Solid Green	N/A	N/A	N/A
Power Supply Failure	Blink Green	N/A	N/A	N/A
Fans OK	N/A	Solid Green	N/A	N/A
Fan Failure	N/A	Blink Green	N/A	N/A
Stack Master	N/A	N/A	On	Off
Stack Backup/Member	N/A	N/A	Off	On
Stack Error	N/A	N/A	On	N/A
Non-Stack Member	N/A	N/A	Off	Off

XGE Port LEDs

Figure 4 highlights the system LEDs and SFP+ port LEDs.

Figure 4 System Status LEDs and Port LEDs



Status and link LEDs for the data port slots are described in the following table.

Table 6 SFP+ LEDs Status

LED	Solid Green	Blink Green	Off
SP: Speed	10Gbps	N/A	1Gbps
L/A: Link/Activity	Valid Link/ No Activity	Activity	No Link

RJ-45 LEDs

Status LEDs for the RJ-45 ports are described in the following table.

Table 7 RJ-45 LEDs Status

LED	Solid Green	Blink Green	Off
Link	Valid Link	Activity	No Link
Speed	100/1000Mbps	N/A	10Mbps

Technical Specifications

This section provides specifications for the RackSwitch G8124.

Physical Characteristics

Physical characteristics of the RackSwitch G8124F/G81240R switch unit are listed in the following table.

Table 8 Physical Characteristics

Specification	G8124F	G8124R
Dimensions (H x W x D)	1.73 x 17.3 x 15.0 in.	1.73 x 17.3 x 15.0 in.
	4.4 x 43.9 x 38.1 cm.	4.4 x 43.9 x 38.1 cm.
Weight	6.4 kg.	6.4 kg.
Airflow	Front-to-rear	Rear-to-front

Environmental Specifications

Environmental specifications for the RackSwitch G8124F/G8124R switch unit are listed in the following table.

Table 9 Environmental Specifications

Specification	Measurement
Temperature, ambient operating	0°C to +40°C
Temperature (fan failure or power supply failure), operating	0°C to +35°C
Temperature, storage	-20°C to +70°C
Relative humidity (non-condensing), operating	10 to 90%
Relative humidity (non-condensing), storage	10 to 95%
Altitude, operating	3,050 m (10,000 feet)
Altitude, storage	4,573 m (15,000 feet)

Table 9 Environmental Specifications

Specification	Measurement
Acoustic noise	less than 65dB
Heat dissipation	1100 BTU/hour (maximum)

Power Specifications

Power specifications for the RackSwitch G8124F/G8124R switch unit are listed in [Table 10](#) and [Table 11](#).

Table 10 AC Power Specifications

Specification	Measurement
Number of power supplies	2 (1+1 redundant)
AC-input frequency (universal)	50-60 Hz
AC-input voltage (universal)	100-240 VAC
AC-input current	2.75A (RMS) @ 100VAC 1.15A (RMS) @ 240VAC
AC-input fuse	5A (internal)
Power supply output power	275W each
System power dissipation	200W typical
DC-Output voltage	12V nominal
DC-Output current	15A (typical)

Table 11 DC Power Specifications

Specification	Measurement
Number of power supplies	2 (1+1 redundant)
Input Voltage	42VDC-60VDC 48VDC Nominal
Input Current	5.2 A Maximum
Power supply output power	250W

Ordering Information

The following table lists the parts that you can order for the RackSwitch G8124 product family.

Table 12 RackSwitch G8124 Ordering Information

Part number	Description
Switch	
BN-8124F-BDL	G8124F 24-port GbE Switch (front-to-rear airflow)
BN-8124R-BDL	G8124R 24-port GbE Switch (rear-to-front airflow)
BN-8124F-DC-BDL	DC powered G8124R 24-port GbE Switch (front-to-rear airflow)
Pluggable Optics	
BN-CKM-SP-SR	SFP+ 10GBase-SR Short Range Optical Fiber Transceiver
BN-CKM-SP-LR	SFP+ 10GBase-LR Long Range Optical Fiber Transceiver
BN-CKM-S-T	SFP 1000BASE-T Copper Transceiver
BN-CKM-S-SX	SFP 1000BASE-T-SX Short Range Optical Transceiver
BN-CKM-S-LX	SFP 1000BASE-LX Long Range Fiber Transceiver
Rack Mounting Kits	
BN-MNT-EARS	RackSwitch 19" EIA 2-Post Rack Mounting Kit
BN-4POST-RLS	RackSwitch 19" EIA 4-Post Rack Mounting Kit
BN-MNT-HZ-RLS	RackSwitch 19" EIA 4-Post Rack Mounting Kit for e1350
BN-MNT-DPX-RLS	RackSwitch iDataPlex Rack Mounting Kit

CHAPTER 2

Installing the RackSwitch G8124

This chapter describes how to install and initialize the RackSwitch G8124.

Required Tools

You need the following tools or equipment to successfully accomplish the installation procedures in this document:

- Standard flat-blade screwdriver
- #2 Phillips screwdriver
- Electrostatic discharge wrist strap

Package Contents

The basic RackSwitch G8124 package contains the following items:

- G8124 switch unit (one of the following):
 - G8124F (front-to-rear airflow)
 - G8124R (rear-to-front airflow)
- Standard rack mount kit
 - Two brackets
 - Screws to attach brackets to the switch unit
 - Screws to attach the switch unit to the equipment rack
- Mini-USB serial cable
- Two AC or DC power cords

Environmental Requirements

This section describes the basic environmental requirements for the RackSwitch G8124. Make sure the location where you install the switch meets the following requirements:

- Install the switch unit in a dry, clean, well-ventilated area.
- Provide adequate space on all sides of the switch unit, to ensure proper air flow.
- Make sure that an adequate grounded power supply is within reach of the switch unit.
- Make sure that twisted-pair cable is routed away from power lines, fluorescent lighting fixtures and other sources of electrical interference.

Preventing Electric Shock

This product does not contain any user-serviceable parts. Do not remove the cover of this device.

The AC G8124 is designed to work with single-phase power systems that have a grounded neutral conductor. To reduce the risk of electric shock, always plug the power cord into a grounded power outlet.



Warning—Electrical current from power, telephone, and communication cables is hazardous. To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
 - Connect the power supply only to a properly wired and grounded power source.
 - Connect to properly wired outlets any equipment that will be attached to this product.
 - When possible, use one hand only to connect or disconnect signal cables.
 - Never turn on any equipment when there is evidence of fire, water, or structural damage.
 - Disconnect the power supply, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
 - Disconnect the power supply before installing, uninstalling, or moving this product.
-

Preventing Electrostatic Discharge

Electrostatic discharge (ESD) is a discharge of stored static electricity that can damage equipment and impair electrical circuitry. ESD can cause intermittent or complete equipment failures.

Use the following guidelines to prevent ESD damage while you install and work with the G8124 and optional equipment:

- Use anti-static wrist straps. Adjust the strap to provide good skin contact.
- Properly ground work surfaces and equipment racks for protection against electrostatic discharge.
- Avoid contact between equipment and clothing. An anti-static wrist or ankle strap protects the equipment from ESD voltages on the body; ESD voltages on clothing also can cause damage.
- Do not touch connector pins.

Installing the RackSwitch G8124 in a Standard Equipment Rack

This section describes how to install the RackSwitch G8124 in a standard 19-inch equipment rack. For information about mounting the G8124 in other rack types, refer to the following sections:

- [“Installing the RackSwitch G8124 in an iDataPlex Rack” on page 26](#)
- [“Installing the RackSwitch G8124 in a 4-post Rack” on page 29](#)

The following table lists the parts included in the standard mounting kit.

Table 13 BN-MNT-EARS 2-Post Rack Mount Kit

Item number	Part number	Description	Quantity
1	BMM-00056-00	Bracket	2
2	BMC-00049-00	M4 screws	8
3	BMC-00056-00	M6 screws	4
4	BMC-00015-01	M6 locking washers	4
5	BMC-00069-00	M6 clip nuts	4
6	BMC-00084-00	M6 cage nuts	4

