



DG-GS4600SE2 Series GIGA LAYER 3 SWITCHES

Installation Guide

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Chapter 1 Introduction

1.1 Overview

DG-GS4600SE2 series of ethernet switches are that a series of three layer line speed Ethernet switch products by self-development in DIGISOL ,intelligent network management switch used by the network environment which needs the high performance, the bigger port density and the convenient installation,

DG-GS4600SE2 series switches include the types in the following:

Name	Туре	Description	
	DG-GS4628HPSE2	20 copper ports $+$ 4 Combo ports $+$ 4	
DG-GS4600SE2		10Gb optical ports	
Series	DG-GS4628SE2	24 copper ports+4 10Gb optical ports	
	DG-GS4652SE2	48 copper ports+4 10Gb optical ports	
	DG-GS4628FSE2	8 Combo ports + 16 1Gb optical	
		ports+4 10Gb optical ports	

Table 1-1 DG-GS4600SE2 series switches types

1.2 Introduction to Product

1.2.1 Product Overview

DG-GS4600SE2 series switches include DG-GS4628SE2 / DG-GS4628HPSE2 / DG-GS4652SE2/ DG-GS4628FSE2. DG-GS4628HPSE2 supplies 370W POE power supply, and the max output power of each port is 30W(12 ports per port support POE maximum power 30W,24 ports simultaneously access single port average per port support power of 15.4W).DG-GS4628HPSE2 supplies 20 copper ports+4 Combo ports+4 10Gb optical ports. DG-GS4652SE2 supplies 48 copper ports+4 10Gb optical ports, DG-GS4628SE2 supplies 24 copper ports + 4 10Gb optical ports. DG-GS4628FSE2 supplies 8 Combo ports+16 1Gb optical ports +4 10Gb optical ports



1.2.2 Features and Benefits

Various Interfaces

DG-GS4628HPSE2 provides 20 fixed 1000Mb copper ports, 4 1000Mb COMBO ports (1000Mb fiber SFP ports/1000Mb copper ports) and 4 10Gb optical ports. DG-GS4652SE2 provides 48 copper ports and 4 10Gb optical ports.DG-GS4652SE2 provides 48 copper ports + 4 10Gb optical ports. DG-GS4628FSE2 supplies 8 Combo ports+16 1Gb optical ports +4 10Gb optical ports

♦ Support 10Gb Ethernet

10Gb Ethernet which adopts full-duplex technology instead of low-speed, half-duplex CSMA/CD protocol, is a big leap in the evolution of Ethernet. 10Gb Ethernet can be deployed in star or ring topologies. DG-GS4600SE2 series switches provide broad bandwidth and powerful processing capacity. It is suitable for metropolitan networks and wide area networks. It can simplify network structures and reduce cost of network construction.

Networking Protocols

DG-GS4600SE2series switches support 802.1d/w/s, 802.1Q, 02.1p, 802.3ad, 802.3x, GVRP, DHCP and SNTP etc. The switches also support the multicast pr otocols such as IGMP, DVMRP and PIM. Moreover, DG-GS4600SE2 series switche s support RIPv1/2, OSPF, BGP and IPv6 protocols. All these protocols supported enable DG-GS4600SE2 series switches to meet the requirements of complex ne twork constructions.

DG-GS4600SE2 series switches support comprehensively ACL policies. The tr affic can be classified by source/destination IP addresses, source/destination MAC addresses, IP protocols, TCP/UDP, IP precedence, time ranges and ToS. And va rious policies can be conducted to forward the traffic. By implementing ACL polici es, users can filter the virus packets such as "Worm.Blaster", "Worm.Sasser" and "Red Code" etc. DG-GS4600SE2 series switch also support IEEE802.1x port ba sed access authentication, which can be deployed with RADIUS, to ensure the p ort level security and block illegal users.

DG-GS4600SE2 series switches fully support DiffServ Module. Each port provides 8 priority queues. Users can specify a queue bandwidth on each port. WRR/SP/SWRR scheduling is also supported. DG-GS4600SE2 series support the port trust. Users can configure trusted COS, DSCP, IP precedence and port priority. User can also modify

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packet's DSCP and COS values. The traffic can be classified by port, VLAN, DSCP, IP precedence and ACL table. User can also modify packet's DSCP and IP precedence values. Users can specify different bandwidths for voice/data/video to customize different qualities of service.

Perfect Web Management.

DG-GS4600SE2 series support SNMP, In-band and Out-of band Manageme nt, CLI and WEB interface and RMON. It can mail the correlative sensitive infor mation to the administrator abide by SMTP protocol. DG-GS4600SE2 series supp ort SSH protocol, ensure the configuration management security of the switch.

♦ Flexible Power Ensure System

DG-GS4600SE2 series of switches support two AC power which have the b ackup function if one of them is fault. The power is hot swappable that improves the expansibility and flexibility of the power system.

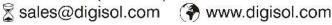
Abundant Management Ability of Device

DG-GS4600SE2 series have the network 1000Mb management port. It can upgrade the device through the common business electrical port or the network management port. It can also login the network management web page through t he common business electrical port or the network management port.

1.3 Physical Specifications

Item	DG-GS4628SE2	DG-GS4628HPSE2	
Dimension (W * H *	440 x 44 x 240	440 x 44 x 320	
D) (mm)			
Weight	<6kg	<6kg	
Fixed ports	24 100/1000Base-TX auto negotiation ethernet	20 100/1000Base-TX auto negotiation ethernet	
	ports	ports	
	4 10Gb optical ports	4 1000Mb Combo ports	
		4 10Gb optical ports	
Management ports	1 Console port, 1 network management port which supports 1000Mb rate		
System power	DG-GS4600SE2 series support AC power input:		
	AC input:		
	The rating voltage range: 100V~240V AC; 50/60HZ		
	The max voltage range: 90V~264V AC; 47HZ~63HZ		
Output power	Do not support	Support	

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supply of PoE		
The max Power	<30 W	<440W(370W POE is the maximum power
Consumption		supply)
Fan	Support automatic timing	Support automatic timing
Operating	0℃~50℃	0℃~50℃
Temperature		
Relative Humidity	10%~95%	10%~95%

Table 1-2 Physical Specifications

Item	DG-GS4652SE2
Dimension (W * H *	440 x 44 x 240
D) (mm)	
Weight	<6kg
Fixed ports	48 100/1000Base-TX auto negotiation ethernet ports
	4 10Gb optical ports
Management ports	1 Console port, 1 network management port which supports 1000Mb rate
System power	DG-GS4600SE2series support AC power input:
	AC input:
	The rating voltage range: 100V~240V AC; 50/60HZ
	The max voltage range: 90V~264V AC; 47HZ~63HZ
The max Power	<50 W
Consumption	
Fan	Support automatic timing
Operating	0℃~50℃
Temperature	
Relative Humidity	10%~95%

Table 1-3 Physical Specifications

Item	DG-GS4628FSE2
Dimension (W * H *	440×240×44
D) (mm)	
Weight	3.85kg
Fixed ports	8 1000Mb Combo ports, 16 1Gb optical ports , 4 10Gb optical ports
Management ports	1 Console port, 1 network management port which supports 1000Mb rate

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System power	DG-GS4628FSE2 series support AC power input:
	AC input:
	The rating voltage range: 100V~240V AC; 50/60HZ
	The max voltage range: 90V~264V AC; 47HZ∼63HZ
	DC input:
	voltage range: 11-13V
	current value: 4.5A
Output power	Do not support
supply of PoE	
The max Power	<40W
Consumption	
Fan	Support automatic timing
Operating	-5℃~50℃
Temperature	
Relative Humidity	5%~95%

Table 1-4 Physical Specifications

1.4 Description of Hardware

1.4.1 Front Panel

DG-GS4628SE2 ethernet switches provide 24 100/1000Base-TX auto negotiation ehternet ports, 4 10Gb optical ports, 4 function LEDs, 1 network management port, 1 USB interface, 1 reset button and 1 Console port. As shown:



Fig 1-1 Front Panel of CDG-GS4628SE2

DG-GS4628HPSE2 ethernet switches provide 20 100/1000Base-TX auto negotiation ehternet ports, 4 1000Mb Combo ports, 4 10Gb optical ports, 5 function LEDs, 1 network management port, 1 USB interface, 1 reset button and 1 Console port.



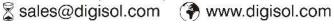
Fig 1-2 Front Panel of DG-GS4628HPSE2

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1800-209-3444 (Toll Free)

helpdesk@digisol.com







DG-GS4652SE2 Ethernet switches provide provide 48 100/1000Base-TX auto negotiation ehternet ports, 4 10Gb optical ports, 1 network management port, 1 USB interface, 1 reset button and 1 Console port.



Fig 1-3 Front Panel of DG-GS4652SE2

DG-GS4628FSE2 switch provide 8 1000Mb Combo ports, 16 1Gb optical ports, 4 10Gb optical ports ,4 function LEDs, 1 network management port, 1 USB interface, 1 reset button, 1 Console port, 1 ground screw hole, 1 AC plug-in interface and 1 DC plug-in interface.



Fig 1-4 Front Panel of DG-GS4628FSE2

1.4.2 Back Panel

DG-GS4600SE2 supplies 1 ground screw hole and 1 power plug-in interfaces.

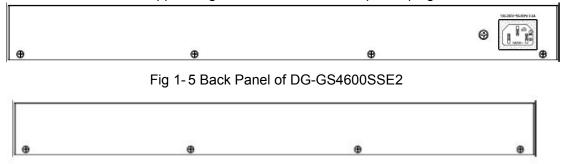


Fig 1-6 Back Panel of DG-GS4628FSE2

1.4.3 Status LEDs

LEDs of DG-GS4600SE2 series switch show the corresponding state. Mainboard LEDs include two parts, one is 24 1000M interface LEDs (including 4 combo ports), 4 SFP (combo optical port) interface LEDs and 4 SFP+ interface LEDs. They show each port state at RJ45 plug-in, each port corresponds a LED with double colors.

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Table 1-5 Port LEDs

LED	Status	Description
	On	On means ports are in the link state of 10G, 1000M, 100M, 10M
Green	Off	Off means ports are not in the link state of 10G, 1000M, 100M, 10M
	Blink	Send or receive the data

The other is system LEDs, they are used to show the work status of the system at the right of front panel.

Table 1-6 DG-GS4600SE2 System LEDs

Panel Symbol	Status	Description
PWR1	On (Green)	Power1 is operating normally
	Off	Power1 is not operating
On (Green, blink) System is loading		System is loading
DIAG	On (Green)	System is operating normally
PWR2 On (Green)		Power2 is operating normally
	Off	Power2 is not operating

1.4.4 Interface Description of Front Panel

DG-GS4600SE2 series switches provide RJ-45 1000Mb copper port, interface of SFP+ 10Gb fiber transceivers and combo interface.

Table 1-7 interface descriptions

Interface mode	Spec	
RJ-45 port	10/100/1000Mbps auto negotiation	
	MDI/MDI-X cable mode auto negotiation	
	5 kinds of UTP: 100 m	



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SFP+	•	SFP+-LR transceiver	
		10GBase-LR SFP+ (1310nm, SMF, 10km) SFP+-SR transceiver	
		10GBase-SR SFP+ (850nm, 62.5μm MMF 32m, 50μm 500MHz/km MMF 85m, 50μm 2000MHz/km MMF 300m)	
SFP-GT	•	SFP-GT Module: 1000Base-T SFP interface card module, RJ-45 interface	





Chapter 2 Hardware Installation

2.1 Installation Notice

To ensure the proper operation for DG-GS4600SE2 series and your physical security, please read carefully the following installation guide.

2.1.1 Environmental Requirements

- The switch must be installed in a clean area. Otherwise, the switch may be damaged by electrostatic adherence.
- Maintain the temperature within 0 to 50 °C and the humidity within 10% to 90%, non-condensing.
- The switch must be put in a dry and cool place. Leave sufficient spacing around the switch for good air circulation.
- The switch must work in the right range of power input (AC power: 90 ~ 264V (50Hz), DC power: -40 ~ -60V)
- The RPS input of the switch must be in the range of $+11.5 \sim +13$ VDC.
- The switch must be well grounded in order to avoid ESD damage and physical injury of people.
- The switch should avoid the sunlight perpendicular incidence. Keep the switch away from heat sources and strong electromagnetic interference sources.
- The switch must be mounted to a standard 19" rack or placed on a clean level desktop.

2.1.1.1 Dust and Particles

Dust is harmful to the safe operation of DG-GS4600SE2 series. Dust can lead to electrostatic adherence, especially likely under low relative humidity, causing poor contact of metal connectors or contacts. Electrostatic adherence will result in not only reduced product lifespan, but also increased chance of communication failures. The recommended value for dust content and particle diameter in the site is shown below:

Max Diameter (µm)	0.5	1	3	5
Max Density	1.4×10 ⁵	7×10 ⁵	2.4×10 ⁵	4.2405
(particles/m³)	1.4×10°	/*10	2.4×10°	1.3×10 ⁵

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Table 2-1 Environmental Requirements: Dust

In addition, salt, acid and sulfide in the air are also harmful to the switch. Such harmful gases will aggravate metal corrosion and the aging of some parts. The site should avoid harmful gases, such as SO₂, H₂S, NO₂, NH₃ and Cl₂, etc. The table below details the threshold value.

Gas	Average (mg/m³)	Max (mg/m³)
SO ₂	0.2	1.5
H ₂ S	0.006	0.03
NO ₂	0.04	0.15
NH ₃	0.05	0.15
Cl ₂	0.01	0.3

Table 2-2 Environmental Requirements: Particles

2.1.1.2 Temperature and Humidity

Although the switch is designed to use 4 fans, the site should still maintain a desirable temperature and humidity. High-humidity conditions can cause electrical resistance degradation or even electric leakage, degradation of mechanical properties and corrosion of internal components. Extreme low relative humidity may cause the insulation spacer to contract, making the fastening screw insecure. Furthermore, in dry environments, static electricity is liable to be produced and cause harm to internal circuits. Temperature extremes can cause reduced reliability and premature aging of insulation materials, thus reducing the switch's working lifespan. In the hot summer, it is recommended to use air-conditioners to cool down the site. And the cold winter, it is recommenced to use heaters.

The recommended temperature and humidity are shown below:

Temperature:		Relative humidity		
Long term condition	Short term condition	Long term condition	Short	term
			condition	
15 ~ 30°C	0 ~ 50°C	40 ~ 65%	10 ~ 90%	

Table 2-3 Environmental Requirements: Temperature and Humidity



Caution!

A sample of ambient temperature and humidity should be taken at 1.5m above the floor and 0.4m in front of the switch rack, with no protective panel covering the front and rear of the rack. Short term working conditions refer to a maximum of 48 hours of continued operation and an annual cumulative total of less than 15 days. Formidable operation conditions refers to the ambient temperature and relative humidity value that may occur during an air-conditioning system failure, and normal operation conditions should be recovered within 5 hours.

2.1.1.3 Power Supply

Before powering on the power supply, please check the power input to ensure proper grounding of the power supply system. The input source for the switch should be reliable and secure; a voltage adaptor can be used if necessary. The building's circuit protection system should include in the circuit a fuse or circuit-breaker of no greater than 240 V, 10 A. It is recommended to use a UPS for more reliable power supplying. .

Caution!

Improper power supply system grounding, extreme fluctuation of the input power, and transients (or spikes) can result in larger error rate, or even hardware damage!

2.1.1.4 Preventing Electrostatic Discharge Damage

Static electric discharges can cause damage to internal circuits, even the entire switch. Follow these guidelines for avoiding ESD damage:

- Ensure proper earth grounding of the device;
- Perform regular cleaning to reduce dust;
- Maintain proper temperature and humidity;
- Always wear an ESD wrist strap and antistatic uniform when in contact with circuit boards.

2.1.1.5 Anti-interference

All sources of interference, whether from the device/system itself or the outside environment, will affect operations in various ways, such as capacitive coupling, inductive coupling, electromagnetic radiation, common impedance (including the grounding system) and cables/lines (power cables, signal lines, and output lines). The following should be noted:



- Precautions should be taken to prevent power source interruptions;
- Provide the system with a dedicated grounding, rather than sharing the grounding with the electronic equipment or lightning protection devices;
- Keep away from high power radio transmitters, radar transmitters, and high frequency strong circuit devices;
- Provide electromagnetic shielding if necessary.

2.1.1.6 Rack Configuration

The dimensions of the DG-GS4600SE2 series is designed to be mounted on a standard 19" rack, please ensure good ventilation for the rack.

- Every device in the rack will generate heat during operation, therefore vent and fans must be provided for an enclosed rack, and devices should not be stacked closely.
- When mounting devices in an open rack, care should be taken to prevent the rack frame from obstructing the switch ventilation openings. Be sure to check the positioning of the switch after installation to avoid the aforementioned.

Caution!

If a standard 19" rack is not available, the DG-GS4600SE2 series can be placed on a clean level desktop, leave a clearance of 100mm around the switch for ventilation, and do not place anything on top of the switch.

2.1.2 Installation Notice

- Read through the installation instruction carefully before operating on the system. Make sure the installation materials and tools are prepared. And make sure the installation site is well prepared.
- During the installation, users must use the brackets and screws provided in the accessory kit. Users should use the proper tools to perform the installation. Users should always wear antistatic uniform and ESD wrist straps. Users should use standard cables and connecters.
- After the installation, users should clean the site. Before powering on the switch, users should ensure the switch is well grounded. Users should maintain the switch regularly to extend the lifespan of the switch.

2.1.3 Security Warnings

When using SFP transceiver, do not stare directly at the fiber bore when the switch is





in operation. Otherwise the laser may hurt your eyes.

- Do not attempt to conduct the operations which can damage the switch or which can cause physical injury.
- Do not install, move or disclose the switch and its modules when the switch is in operation.
- Do not open the switch shell.
- Do not drop metals into the switch. It can cause short-circuit.
- Do not touch the power plug and power socket.
- Do not place the tinder near the switch.
- Do not configure the switch alone in a dangerous situation,
- Use standard power sockets which have overload and leakage protection.
- Inspect and maintain the site and the switch regularly.
- Have the emergence power switch on the site. In case of emergence, switch off the power immediately.

Caution!

Potential risk include: Electric leakage, Power supply arcing, Power line breakage, Imperfect earth, Overload circuit and Electrical short circuit. If electric shock, fire, electrical short circuit occurs, please cut off the electricity supply and alarm rapidly. Rescue the injured person in the contingency under inherently safe, give the injured person proper fireset aid treatment according to the injury state, and seek help from the Medical Emergency using various ways.

2.2 Installation Preparation

2.2.1 Verify the Package Contents

Please unpack the shipping package and verify carefully the contents inside.

2.2.2 Required Tools and Utilities

The required tools and utilities are shown below:

- Cross screwdrivers
- Flat-blade screwdriver
- ESD wrist strap
- Antistatic uniform



Caution!

Users should prepare the required tools by themselves.

2.3 Installation Guide

2.3.1 Installing Switch



Fig 2-1 Install sketch map on the rack

Please mount DG-GS4600SE2 series on the 19" rack as below:

- 1. Attach the 2 brackets on the DG-GS4600SE2 series with screws provided in the accessory kit.
- 2. Put the bracket-mounted switch smoothly into a standard 19" rack. Fasten the DG-GS4600SE2 series to the rack with the screws provided. Leave enough space around the switch for good air circulation.

Caution!

The brackets are used to fix the switch on the rack. They can't serve as a bearing. Please place a rack shelf under the switch. Do not place anything on top of the switch. Do not block the blowholes on the switch to ensure the proper operation of the switch.

2.3.2 Connecting Console



DG-GS4600SE2series provides a Mini-USB serial console port.

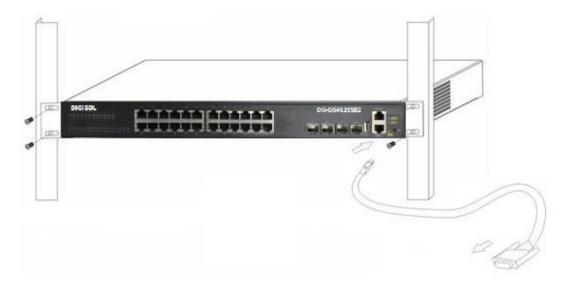


Fig 2-2 Connecting Console to switch

The connection procedure is shown below:

- Find the console cable provided in the accessory kit. Attach the Mini-USB end to console port of the switch.
- 2. Connect the other side of the console cable to a character terminal (PC).
- 3. Power on the switch and the character terminal. Configure the switch through the character terminal.

2.3.3 SFP Transceiver Installation

DG-GS4600SE2 series provide multiple 1000Mb SFP transceiver slots.

The procedure for installing SFP transceiver is shown below:

Step 1: Put on a ESD wrist strap (or antistatic gloves).

Step 2: Insert SFP transceiver to the guide rail inside the fiber interface line card. Do not put the SFP transceiver up-side-down.

Step 3: Push SFP transceiver along the guide rail gently until you feel the transceiver snap into place at the bottom of the line card.

Note: SFP transceiver supports the hot swap.

Caution!

Do not stare directly at the 2 fiber bores in the SFP transceiver when the switch is in operation, otherwise the laser may hurt your eyes.



2.3.4 SFP+ extended module Installation

DG-GS4600SE2 series provide 10Gb slots. The procedure for installing the SFP+ 10Gb fiber transceiver is shown below:

Step 1: Put on an ESD wrist strap (or antistatic gloves).

Step 2: Insert the SFP+ transceiver to the 10G optical port. Do not put the SFP+ transceiver up-side-down.

Step 3: Push the SFP+ transceiver gently until the optical module is mixed with the optical

Note: the SFP+ 10Gb fiber transceiver is hot swappable.

Caution!

Do not stare directly at the 2 fiber bores in the fiber transceiver when the switch is in operation, otherwise the laser may hurt your eyes.

2.3.5 Copper Cable/Fiber Cable Connection

Copper cables should be connected as below:

Step 1: Insert one end of the Ethernet cable to the RJ-45 Ethernet port in the copper cable line card of the switch:

Step 2: Insert the other end of the Ethernet cable to the RJ-45 Ethernet port of other device:

Step 3: Check all status indicators for the corresponding ports; a lighted LED indicates that the link has been established, otherwise the link is not ready and the cable should be examined.

Caution!

Please verify the sign above the port to ensure the right port used. Connecting to wrong ports might damage the switch.

Fiber cables should be connected as below:

Step 1: Remove the protective plug from the SFP/SFP+ fiber transceiver bore; Remove the protective cap from one end of the fiber cable. Keep the fiber end clean and neat.

Step 2: Attach one end of the fiber cable to the SFP/SFP+ transceiver, and attach the other end to the transceiver of the corresponding devices. Note: The SFP/SFP+



transceiver's TX port should be connected to the RX port of the corresponding device, and vice versa.

Step 3: Check the fiber port status indicator, a lighted LED indicates that the link has been established; otherwise the link is not ready and should be examined.

Caution!

Please verify the sign above the port to ensure using the other ports. Connecting to wrong ports might damage the transceiver or the other ports. When connecting other devices through a fiber cable to the switch, the output power of the fiber cable must not exceed the maximum received power of the corresponding modules. Otherwise, it will damage the fiber transceiver. Do not stare at the fiber bore when the switch is in operation. That may hurt your eyes.

2.3.6 AC Power Supply Connection

DG-GS4600SE2 series switches use 220V AC power supply by default. Please read the power input specification for the detailed information.

AC Power supply connection procedure is described as below:

- 1. Insert one end of the power cable provided in the accessory kit into the power source socket (with overload and leakage protection), and the other end to the power socket in the back panel of the switch.
- 2. Check the power status indicator in the front panel of the switch. The corresponding power indicator should light. DG-GS4600SE2 series is self-adjustable for the input voltage. As soon as the input voltage is in the range printed on the switch surface, the switch can operate correctly.
- 3. When the switch is powered on, it executes self-test procedure and startups.

Caution!

The input voltage must be within the required range, otherwise the switch can be damaged or malfunction. Do not open the switch shell without permission. It can cause physical injury.



This product comes with lifetime warranty. For further details about warranty policy and product registration, please visit support section of www.digisol.com







