



LevelOne

User Manual

GSW-2650

**24-Port Fast Ethernet TP + 2-Port Gigabit
Ethernet TP Switch**

Ver. 1.0.0-0712

FCC Warning

This Equipment has been tested and found to comply with the limits for a Class-A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. It may cause harmful interference to radio communications if the equipment is not installed and used in accordance with the instructions. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CE Mark Warning

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.



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Introduction



LevelOne GSW-2650 is a multi-port Switch that can be used to build high-performance switched workgroup networks. This switch is a store-and-forward device that offers low latency for high-speed networking. The switch is targeted at workgroup, department or backbone computing environment.

LevelOne GSW-2650 Switch has 24 auto-sensing 10/100Base-TX RJ-45 ports and 2 auto-detect Giga port for higher connection speed. LevelOne GSW-2650 Switch features a store-and-forward switching scheme. This allows the switch to auto-learn and store source address in a 4K-entry MAC address table.

Features

- Conforms to IEEE802.3 10Base-T, IEEE802.3u 100Base-TX, IEEE802.3ab 1000Base-T, IEEE802.3x Flow control.
- 24 10/100 TX plus 2 10/100/1000 TP
- Automatic MDI/MDIX supported
- High Switch Fabric up to 8.8Gbps
- N-way Auto-Negotiation supported
- Store-and-Forwarding Switching Architecture
- 4K-entry MAC address table
- Non-Blocking full wire speed architecture
- IEEE 802.3x Flow control:

- Pause-frame for full duplex mode
- Back-pressure for half duplex mode
- Fan free design

Package Contents

Unpack the contents of the GSW-2650 Switch and verify them against the checklist below:

- GSW-2650
- Power Cord
- Rack-mounted Kit
- Four Rubber Pads
- User Manual

Compare the contents of the GSW-2650 Switch package with the standard checklist above. If any item is missing or damaged, please contact the local dealer for exchanging.

Hardware Description

This section mainly describes the hardware of the GSW-2650 Switch and gives a physical and functional overview on the certain switch.

Physical Dimensions

The GSW-2650 Switch physical dimensions is **440mm x 120mm x 44mm (W x D x H)**.

Front Panel

The front panel of GSW-2650 Switch consists of 24 x 10/100Base-TX RJ-45 ports (Auto MDI/MDIX) and 2 auto-detect Giga ports which could be Copper Gigabit port. The LED Indicators are also located on the front panel of the switch.



The Front panel of GSW-2650

- **RJ-45 Ports (Auto MDI/MDIX):** 24 x 10/100 N-way auto-sensing for 10Base-T or 100Base-TX connections.

In general, **MDI** means connecting to another Hub or Switch while **MDIX** means connecting to a workstation or PC. Therefore, **Auto MDI/MDIX** would allow connecting to another Switch or workstation without changing non-crossover or crossover cabling.

- **2 Giga port:** 2 auto-detect Giga ports (2 x 1000Base-T ports).

LED Indicators

The LED Indicators display real-time information of systematic operation status. The following table provides descriptions of LED status and their meaning.

LED	Status	Description
Power	Green	Power On
	Off	Power is not connected
Act/Duplex	Green	The port works in 10/100 Full-duplex mode
	Blinks (continuously)	Networking is active
	Blinks (off for about 2 seconds and on alternatively)	The port works in 10/100 Half-duplex mode
	Off	No device attached
Speed	Yellow	The port works at speed of 100Mbps
	Blinks	The port works at speed of 10Mbps

Gigabit Port LED Indicator

The following table provides descriptions of Gigabit ports' LEDs status and their meaning.

LED	Status	Description
Act/Duplex	Green	The port works in 10/100 Full-duplex or gigabit mode
	Blinks (continuously)	Networking is active
	Blinks (off for about 2 seconds and on alternatively)	The port works in 10/100 Half-duplex mode
	Off	No device attached
Speed	Green	The port works at speed of 1000Mbps
	Blinks	The port works at speed of 100Mbps

Rear Panel

The 3-pronged power plug is located at the rear panel of GSW-2650 as shown in Figure. The switch will work with AC in the voltage range of AC 100-240V and Frequency of 50-60Hz.



The Rear Panel of GSW-2650

Desktop Installation

Set the switch on a sufficiently large flat space with a power outlet nearby. The surface where the user put the switch should be clean, smooth, level and sturdy. Make sure there is enough clearance around the switch to allow attachment of cables, power cord and allow air circulation.

Attaching Rubber Pads

- A. Make sure mounting surface on the bottom of the switch is grease and dust free.
- B. Remove adhesive backing from your Rubber Pads.
- C. Apply the Rubber Pads to each corner on the bottom of the switch. These footpads can prevent the switch from shock/vibration.

Rack-mounted Installation

The GSW-2650 comes with a rack-mounted kit and can be mounted in an EIA standard size, 19-inch Rack. The switch can be placed in a wiring closet with other equipment.

Perform the following steps to rack mount the switch:

- A. Position one bracket to align with the holes on one side of the switch and secure it with the smaller bracket screws. Then attach the remaining bracket to the other side of the switch.
- B. After having attached mounting brackets, position the GSW-2650 Switch in the rack by lining up the holes in the brackets with the appropriate holes on the rack. Secure the switch to the rack with a screwdriver and the rack-mounting screws.



For proper ventilation, it allows about at least 4 inches (10 cm) of clearance on the front and 3.4 inches (8 cm) on the back of the Switch. This is especially important for enclosed rack installation.

Power On

Connect the power cord to the power socket on the rear panel of the Switch. The other side of power cord connects to the power outlet. The internal power supply of the Switch works with voltage in the range of 100-240V_{AC} and Frequency of 50~60Hz. Check the power indicator on the front panel to see if power is properly supplied.

Network Application

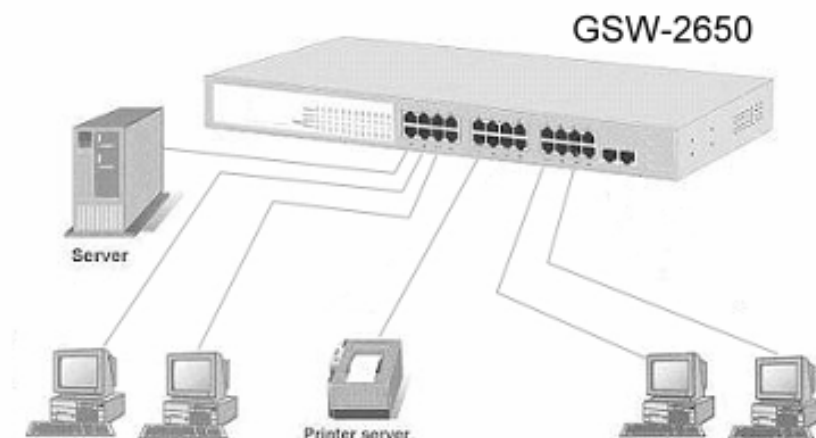
This section provides you a few samples of network topology in which the switch is used. In general, LevelOne GSW-2650 is designed as a segment switch which with its large address table (4k MAC address) and high performance, it is ideal for interconnecting networking segments.

PC, workstations, and servers can communicate each other by directly connecting with GSW-2650. The switch automatically learns nodes address, which are subsequently used to filter and forward all traffic based on the destination address.

By using Uplink port, the switch can connect with another switch or hub to interconnect other small-switched workgroups to form a larger switched network.

Small Workgroup

The GSW-2650 Switch can be used as a standalone switch to which personal computers, server, printer server, are directly connected to form a small workgroup.



Segment Uplink

For enterprise networks where large data broadcasts are constantly processed, this switch is an ideal solution for department users to connect to the corporate backbone.

For example, two Ethernet switches (with PCs, print server, and local server attached) are connected via 10/100/1000Base-TX cable. All the devices in this network can communicate with each other through the switches. Connecting servers to the switch allows other users to access the data on server.

Troubleshooting

This section is intended to help the user solve the most common problems on the GSW-2650.

Incorrect connections

The switch port can auto-detect straight or crossover cable when the user links switch with other Ethernet device. The RJ-45 connector should use correct UTP or STP cable; 10/100Mbps ports use 2 pairs twisted cable and Gigabit 1000T ports use 4 pairs twisted cable. If the RJ-45 connector is not correctly pinned on right position then the link will fail.

■ Faulty or loose cables

Look for loose or obviously faulty connections. If they appear to be OK, make sure the connections are snug. If that does not correct the problem, try a different cable.

■ Non-standard cables

Non-standard and miss-wired cables may cause numerous network collisions and other network problem, and can seriously impair network performance. A category 5-cable tester is a recommended tool for every 100Base-T network installation.

■ Improper Network Topologies

It is important to make sure that users have a valid network topology. Common topology faults include excessive cable length and too many repeaters (hubs) between end nodes. In addition, the user should make sure that the network topology contains no data path loops. Between any two ends nodes, there should be only one active cabling path at any time. Data path loops will cause broadcast storms that will severely impact the network performance.

Diagnosing LED Indicators

To assist in identifying problems, the switch can be easily monitored through panel indicators, which describe common problems the user may encounter and where the user can find possible solutions.

If the power indicator does not turn on when the power cord is plugged in, the user may have a problem with power outlet, or power cord. However, if the switch powers off after running for a while check for loose power connections, power losses or surges at power outlet. If the problem still cannot be resolved, please contact the local dealer for assistance.

■ Cabling

RJ-45 ports: Use unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cable for RJ-45 connections: 100 Ω Category 3, 4 or 5 cable for 10Mbps connections or 100 Ω Category 5 cable for 100Mbps connections. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet). Gigabit port should use Cat-5 or cat-5e cable for 1000Mbps connections. The length does not exceed 100 meters.

Technical Specification

This section provides the specifications of GSW-2650.

Standard	IEEE802.3 10BASE-T IEEE802.3u 100BASE-TX IEEE802.3ab 1000BASE-T IEEE802.3x Flow control and Back pressure
LED Indicators	System power (Green) Activity/Duplex (Green) Speed (Yellow)
Connector	10/100TX: 24 x RJ-45 with Auto MDI/MDI-X function 10/100/1000TP: 2 x RJ-45 with Auto MDI/MDI-X
Switch architecture	Store and Forward
Back-plane	8.8Gbps with full wire speed
MAC address	4K Mac with Auto Learning
Power Supply	100~240V _{AC} , 50/60Hz
Power Consumption	20Watts (Maximum)
Operation Temp.	0°C ~ 45°C

Operation Humidity	10% ~ 90% (Non-condensing)
Storage Temp.	-40°C ~ 70°C
Dimensions	440mm x 120mm x 44mm (W x D x H)
EMI & Safety	FCC Class A CE, CE/EN60950