Rackmount

SE0116 / SS0116
16-Port Fast Ethernet Switch

User's Guide

FCC Warning

The 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 when the equipment is operated in a commercial environment. This equipment generate, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this user's guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE Mark Warning

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1. Introduction

1.1. Product Overview

This user's manual describes and illustrates the installation method and usage of the 16-port Fast Ethernet Switch. The rack-mount switch (SS0116/SE0116) introduced here provides sixteen 10/100Mbps Fast Ethernet ports to segment traffic, extend Fast Ethernet connection distance, and convert data packets between different transmission speeds. This Fast Ethernet Switch provides shielded RJ-45 ports both with 10Base-T and 100Base-TX Auto-negotiation capability and MDI/MDI-X auto crossover. All ports in this switch support Full-Duplex and Half-Duplex operation modes.

Addressing the demand for fiber, the switch (SS0116/SE0116) provides an optional multi-mode or single-mode fiber module supporting SC, ST, MT-RJ, or VF-45 connector.

Furthermore, this powerful Fast Ethernet Switch utilizes stored-and-forward switching architecture that filters and forwards data after the complete data packet is received and examined to be free of errors. With one set of status LEDs for each individual port, the switch operation status can be easily monitored. The switch is rack-mount design that can be mounted on the industrial standard 19 inches rack in the enterprise wiring center.

For SS0116 only, the switch offers advanced software configurable features, including individual port setting, port-based Virtual Local Area Networking (VLAN) and MAC-based trunking.

1.2. Features & Specifications

1.2.1. Features

- 16-port 10/100Base-TX, RJ-45 connector.
- 1 optional 100Base-FX fiber module, supports multi-mode or single-mode optic fiber .
- SS0016 supports port-based VLAN.
- SS0016 supports MAC-based trunking.
- Auto-negotiation for speed and half/full duplex on TX ports.
- Complies with IEEE802.3 and IEEE802.3u Standards.
- Auto-MDI/MDIX detection.
- Support "True non-blocking architecture."
- Full wire speed forwarding.
- Operating at maximum packet filtering and forwarding rate.
- Support for Store-and-forward of packet switching.
- Flow Control.
- Broadcast storm control.
- Standard 19" Rack-mount size.

1.2.2. Technical Specifications

• Ethernet Standards	IEEE 802.3 10Base-T, 802.3u 100Base-TX, 100Base-FX.
• Protocol	CSMA/CD
• 10/100Mbps Ports	RJ-45 x 16
• Modure ports	Optional one slot for 100Base-FX multi-mode or single-mode fiber module optic fiber
• MAC address	8k
• Buffer Memory	512K Bytes
• VLAN	Port-based up to 16 groups
• Trunking	MAC-based 2 groups, up to 6 ports per group
• LED report	per unit: Power Status (1 LED); per port: 10/100M; LNK/ACT; FDX/COL (3 LEDs); per module: Exist, LNK/ACT, FDX/COL (3 LEDs).
• Transmission Method	Store-and-forward
• Forwarding Rate	14,880pps for 10Mbps; 148,800pps for 100Mbps

1.2.3. Physical Specifications

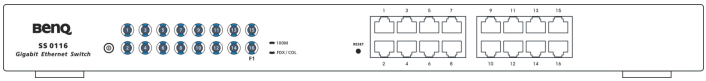
• Power	90VAC~240VAC 47Hz~60Hz
• Operating Temperature	0°C ~ 50°C
• Storage Temperature	-20°C ~ 70°C
• Operating Humidity	10% ~ 90% RH
• Storage Humidity	5% ~ 90% RH
• Emission Compliance	FCC part 15 Class A, CE Mark, VCCI, C-tick
• Safety	UL/CSA
• Dimension	W 435 mm x D 221 mm x H 44mm (17.1"x 8.7"x1.8"). Standard 19" rack-mountable size, one-unit-height.
• Net Weight	2.9kg (6.41b)

1.3. Product outlook and LED Display

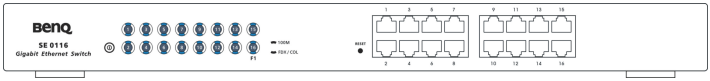
1.3.1. Product outlook

Front View

SS0116 Front Panel:

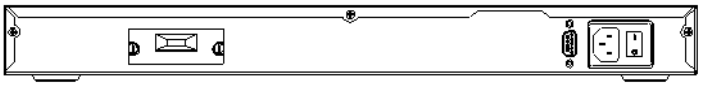


SE0116 Front Panel:

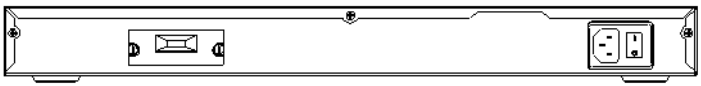


Rear View

SS0116 Rear Panel:



SE0116 Rear Panel:



1.3.2. LED Display

LEDs	Status	Indication
Power	Steady	Power on
	Off	Power off
100M (Green)	On	100M mode
	Off	10M mode
Port Number (Green)	Steady	A valid network connection established LNK stands for LINK
	Flashing	Transmitting, TX stands for Transmitting
	Off	Neither valid network connection nor transmitting established
FDX/COL (Yellow)	Steady	Connection in full duplex mode FDX stands for FULL-DUPLEX
	Flashing	Collision occurred
	Off	Connection in half-duplex mode
F1	On	Fiber Module connected
	Off	No Fiber Module connected

1.4. Package contents

Packing List
SE0116/SS0116 x 1
AC power cord x 1
This User's Guide
Rack-mount ears with screws
RS232 CABLE (SS0116 only)

IF any item is found missing or damaged, please contact your local Benq reseller for replacement.

2. Installation

2.1. Operating Environment

This switch must be installed and operated within the limits of specified operating temperature and humidity (see previous section under Specifications).

- Do not place objects on top of the unit.
- Do not obstruct any vents at the sides of the unit.
- Do not position the unit near any heating source such as heater, radiator, or direct exposure to sun.
- Prevent entering of water and moisture into the unit.
- If necessary, use dehumidifier to reduce humidity.
- Always avoid dust and dirt.
- Allow some space between the product and the surroundings to facilitate dissipation of heat generated inside the switch.

2.2. Connecting to network devices

The RJ-45 ports on the switch are designed as MDI/MDI-X auto crossover ports which allow using straight-through cables to connect any port on this switch to network device.

Connect one end of the network cable to the RJ-45 port on the front panel, and connect the other end of the network cable to the RJ-45 port on the network device. Follow the same procedure to connect all the RJ-45 ports of the switch. The UTP network cables must comply with EIA/TIA 568 specifications and Category 5 standard for 100Mbps data transmission and Category 3, 4, 5 for 10Mbps connection. Maximum length, using UTP cable, between the switch and connected device is 100 meters (328ft). Once the network cable is connected to both ends and the attached network device is powered on, the LEDs should be lit.

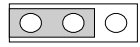
2.3. Connecting the power

Connect the output end of the power cord to the power connector on the rear panel of the unit. Then connect the power cord to the power outlet. The green Power LED on the front panel should be lit.

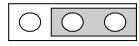
2.4. Fiber Module Installation (Optional)

The fiber module is not included in the package, it's optional. You can choose to purchase the fiber module for your switch. The fiber module shall be inserted into the expansion slot located at the rear of the switch.

- Remove the module from the static free container
- Set Full Duplex or Half Duplex operation mode by using J2 jumper



Full Duplex



Half Duplex

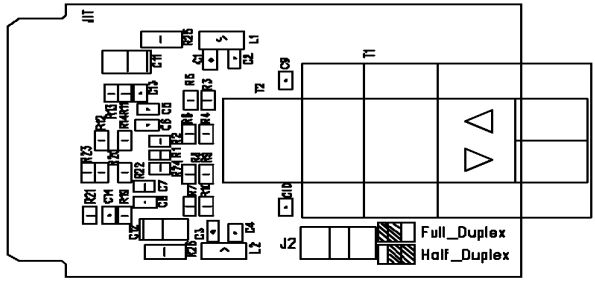


Figure 1. Full Duplex or Half Duplex setting

- Unscrew the cover plate of the expansion slot.
- Remove the plate and keep it for future use when you decide to remove the module
- With the power off, slide the module into the slot
- Once it is slid in fully, snap in the module to make a proper connection and fasten the screws
- Then connect the module to the fiber optical cable
- Turn on the power

Remarks: 1. Port 16 will be disabled while F1 fiber module is connected.

2. For SS0116, port 16 is defaulted to autonegociation enabled. If you use fiber module for 100 Base-FX, please force Port 16 to 100M and full duplex.

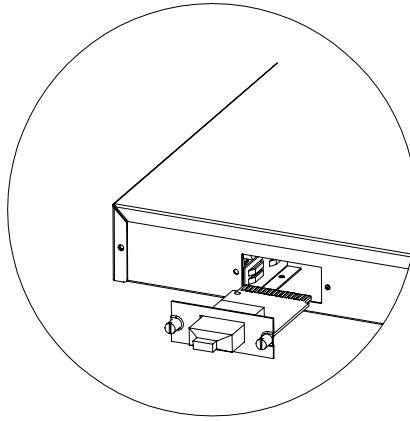


Figure 2. Fiber module being installed

3. Configuration (SS0116 only)

This section explains the configuration of VLAN, Trunking, and port speed and duplex mode settings.

VLAN

Virtual Local Area Networking (VLAN) enables efficient traffic separation, provides better bandwidth utilization, and alleviates scaling issues by logically segmenting the physical LAN so that packets are switched only between ports within the same VLAN.

This also creates secure segments within the existing network. Nodes residing in different VLAN segments cannot communicate with each other although they are connected to the same switch. The resulting security is yet another reason to use VLANs.

Trunking

Trunking is also called link aggregation, which serves as a shortcut to increase the bandwidth on your network. Trunking is a method of physically linking together several ports to act as a single port with higher bandwith. This functionality allows scaling of bandwith.

The 16-Port Switch supports two trunk groups. Each trunking group allows 2-port, 4-port, or even up to 6-port trunking. For a 100BASE-TX/FX network, you will gain 400Mbps bandwith when you trunk two ports, each of 200Mbps. Therefore, the 2-port trunking provides bandwith of 400Mbps; 4-port trunking of 800Mbps, and 6-port trunking provides bandwith of 1200Mbps. As illustrated above, the more ports you trunk, the more bandwith you gain.

3.1. Setting up Console Port Connection

To configure your switch through the console port, it is necessary to first configure a terminal emulation program. The HyperTerminal for Windows 95,98, 2000, and NT is suggested.

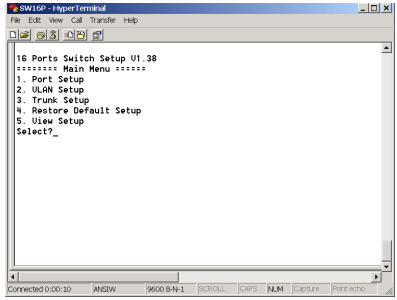
- First, check the switch, cables, and computers for proper installation before configuration.
- Connect a PC or any VT100 compatible terminal to the console port on the back of the unit using the serial cable shipped with the switch. Turn on both end devices.
- Configure the baud rate and character format of the terminal or PC to match the default settings shown as following.

Console Port Settings

Terminal type	VT100
Port type	(COM 1~4)
Communication Mode	8 data bits, 1 stop bit, no parity baud rate of 9600bps(for initial configuration)
Flow Control	None
Hardware Compression	N/A

3.2. Main Menu

- Press any key to view the main menu shown below.



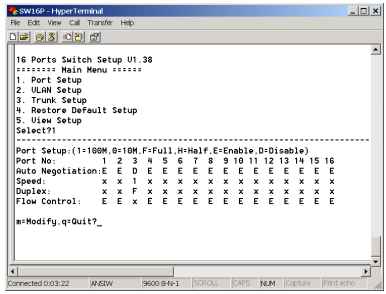
3.3. Port Settings

The duplex mode and speed can be altered and the flow control can be turned off to accommodate special needs.

Follow these steps to change the speed/duplex mode setting or to toggle flow control ON/OFF:

- Enter 1 (ENTER)
- Enter "m" to modify
- Select a port by entering the port number. Then select a desired mode from the list that appears on the screen.
- After finishing all the desired change, press "q" to quit and save the change.

Note: Only one port can be changed at a time.



3.4. VLAN settings

Virtual Local Area Networks (VLANs) can be seen as a group of end stations or PCs which can communicate as if they were on a common LAN, even though they are on multiple physical LAN segments. Basically, the implementation of VLANs brings a limited broadcast domain, meaning that all members of a VLAN receive every broadcast packet sent by members of the same VLAN but not packets sent by members of a different VLAN. All the members of a VLAN are grouped logically into the same broadcast domain independent of their physical location.

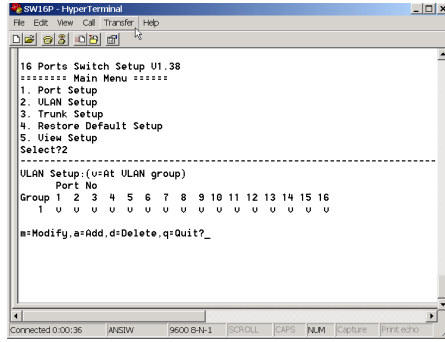
There are several types of VLAN, and port-based VLAN is the most common method of defining VLAN membership. However, only SS0116 supports port-based VLAN technology. The deployment of port-based VLAN will help efficiently confine the broadcast traffic to the switch ports.

Adds, moves, and changes of nodes on a LAN are achieved within a VLAN via software such as a configuration program. Some end stations or PCs need to be connected to more than one VLAN. For example, a network manager creates a VLAN for every department in a company, and each department manager may need to connect to an executive VLAN as well as a VLAN for their respective departments.

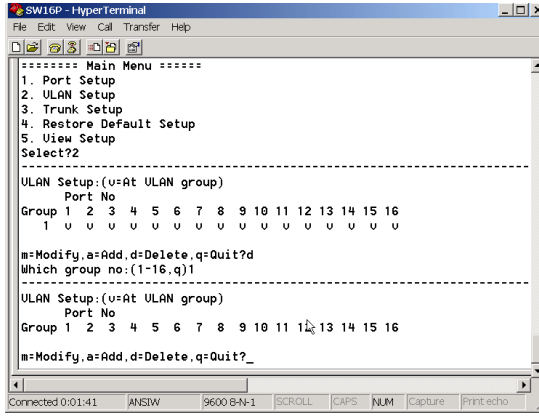
SS0116 supports up to sixteen port-based VLAN domains. Assign each port to a VLAN group or a couple of VLAN groups according to accessibility needs.

Follow these steps to delete, add and assign ports to a VLAN group.

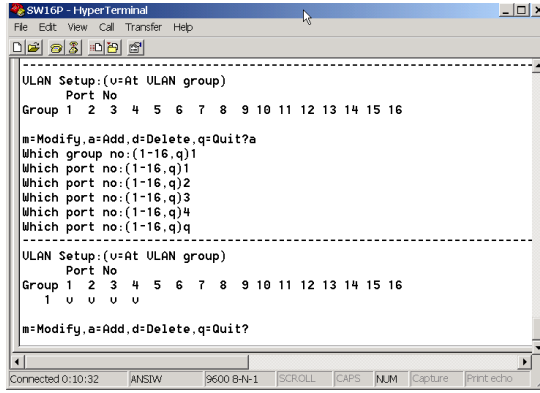
- Enter 2 to display VLAN setup menu.



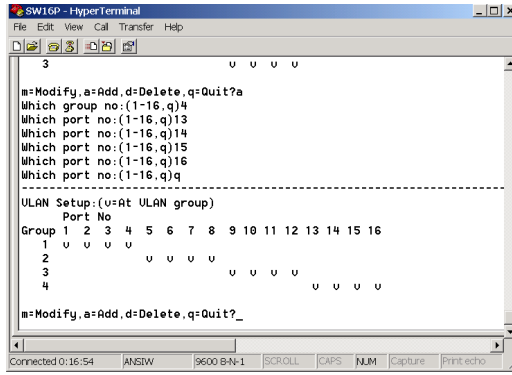
- For demonstration purpose, let us delete the Group 1 by selecting "d" and choosing "1".



- Then add a new VLAN group by choosing "a" and "1".
- Assign ports to the group by entering the corresponding port number.



• Repeat the steps to create four groups as following.

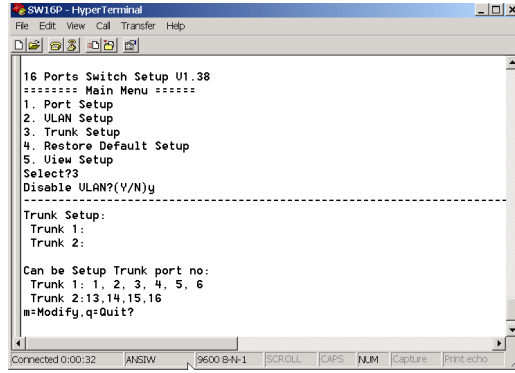


3.5. Trunking Settings

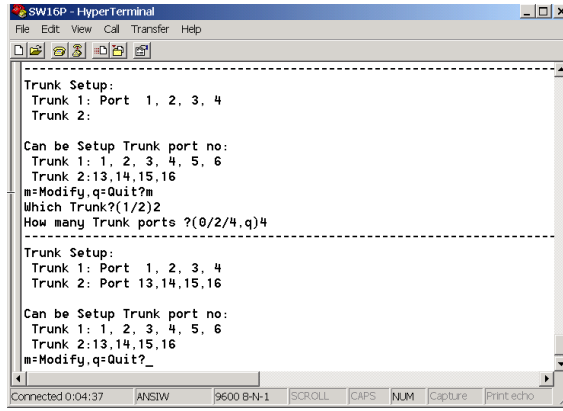
For the function of MAC-based trunking, the switch supports two trunk groups. Each trunking group allows 2-port, 4-port, or up to 6-port trunking. The 2-port trunking provides bandwidth of 400 Mbps; 4-port trunking of 800 Mbps, and 6-port trunking provides bandwidth of 1200 Mbps.

Please follow these steps to configure the desired trunking group:

• Enter 3 to display the trunking menu.



- Select which trunk you want to modify.
  As in the example, Trunk 1 is selected.
- Select how many ports desired for trunking.
  As in the example, choose 4 ports for trunking.
- Select which trunk you want to modify.
  As in the example, Trunk 2 is selected.
- Select how many ports desired for trunking.
  As in the example, choose 4 ports for trunking.
- Quit and save the change.
  As in the example, port 13, 14, 15, and 16 are grouped into trunk2.



Note: The VLAN and trunking functions are not allowed to operate at the same time; only one of them is operational at a time.

The VLAN will be disabled while selecting this MAC-based trunking settings.

4. Trouble Shooting

The SS0116/SE0116 can be easily monitored by its LED indicators. Please follow the troubleshooting steps below to solve any problem you may encounter during installation or implementation of the SS0116/SE0116.

1. Power LED is not lit

Check if the power cord is properly connected to the power outlet and is firmly plugged into the power socket of the switch.

2. Port Number(Green) is not lit when connected to a valid LAN device

- Check the power switch of the network device attached to the switch; make sure it is turned ON.
- Check the network cable; make sure it is properly connected to the switch and the network device.
- Check the network cable; make sure the UTP cables comply with EIA/TIA 568 and Category 5 specification.

Please perform the following tests:

- Please check whether the RJ-45 cable is functional. Replace with another working cable and see whether the condition can be improved.
- Use another port on the SS0116/SE0116. If a link can be established this way, the first port is faulty. Please contact your local acercm dealer for assistant.
- Make sure that all devices are connected to the network.
- Please ensure that the network adapter cards installed in the workstation or other devices to the switch are in well working condition.

[!] Contact your dealer if problem persists.

Appendix:

Ordering Information:

Part Number	Model Number	Description
99.332N2.001	SE0116	16-Port Fast Ethernet Switch
99.333N2.001	SS0116	16-Port Smart Fast Ethernet Switch
99.33228.001	MFF001-SC	100Base-FX Fiber Module, Multi Mode, SC connector
99.33228.002	MFF001-ST	100Base-FX Fiber Module, Multi Mode, ST connector
99.33228.003	MFF001-VF45	100Base-FX Fiber Module, Multi Mode, VF-45 connector
99.33228.004	MFF001-MTRJ	100Base-FX Fiber Module, Multi Mode, MT-RJ connector
99.33228.005	MFF001-SC20	100Base-FX Fiber Module, Single Mode 20Km, SC connector
99.33228.006	MFF001-SC40	100Base-FX Fiber Module, Single Mode 40Km, SC connector
99.33228.007	MFF001-SC60	100Base-FX Fiber Module, Single Mode 60Km, SC connector

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A. LIMITED WARRANTY

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During the warranty period, Benq will, at no additional charge, repair or replace defective parts with serviceable used parts that are equivalent to new parts in performance. All exchanged parts and network product replaced under this warranty will become the property of Benq. There will be no charge for labor or parts during the one-year warranty period from the date of purchase.

To ensure timely response to a service request, please complete and detach the Benq Warranty Registration Card, then return it together with a copy of your sales receipt to Benq within ten (10) calendar days after date of purchase by end user.

In the event the network product exhibits a defect in material or workmanship within the warranty period, Benq will provide the warranty services applicable to the network product as defined below.

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work product; (b) by the use of parts not manufactured or sold by Benq; (c) by modification of the network product; (d) as a result of service by anyone other than Benq or an Benq Authorized Service Provider; (e) improper transportation or packing when returning the network product to Benq or an authorized Service Provider; or (f) unusual physical or electrical stress or interference, failure or fluctuation of electrical power, lightening, static electricity, fire or acts of God.

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