
# *Installation/Instruction Manual*
# 8 Port 10/100 Ethernet Switch

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Manual No. - 1307541-01 Rev. O

## CE Mark Declaration of Conformance

This is to certify that this product complies with ISO/IEC Guide 22 and EN45014. It conforms to the following specifications:

| | | |
|---|---|---|
| **EMC:** | EN 55022 (1988)/CISPR-22 (1985) | class B |
| | IEC 1000-4-2 (1995) | 4kV CD, 8kV AD |
| | IEC 1000-4-3 (1995) | 3V/m |
| | IEC 1000-4-4 (1995) | 1kV - (power line) |
| | | 0.5kV - (signal line) |
| | IEC 1000-4-6 (1995) | 3Vrms |

This product complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.
Do not plug a phone jack connector into any of the RJ-45 ports. This may damage the switch.

## FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

***NOTE***

This equipment has been tested and found to comply with the limits for a Class B 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 and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. 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.

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

***EN55022 Declaration of Conformance***

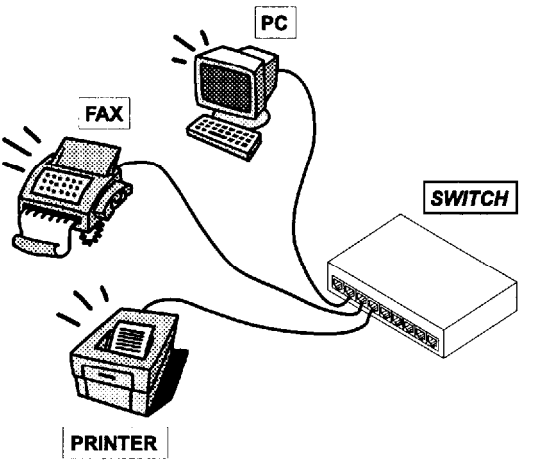
This is to certify that the OnQ Ethernet Switch is shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN55022:1987 Class B (CISPR 22:1985/BS 6527:1988).

# Table of Contents

## Introduction

This manual describes how to install and use the OnQ 8 Port Ethernet Switch. It features eight (8) 10/100Mbps Auto-Negotiation Switch ports and provides flexibility in your networking environment. The OnQ switch can be used to connect PC's, Servers, Hubs, Bridges and other Switches and Routers. It can also act as a bridge between 10Mbps and 100Mbps network segments.

Figure 1




Thanks to the switching technology, it supports 10Mbps and 100Mbps dedicated bandwidths in each port. The device is built with plug & play, auto-negotiation on all ports, as well as, half and full-duplex operations, store-and-forward transmission scheme, IEEE 802.3x flow control and back pressure operation for easy installation and smooth transition from legacy 10Mbps to 100Mbps Switched-Network. It also contains one (1) MDI port (uplink) to facilitate your network expansion.

To ensure maximum safety and good function, please read carefully and follow all directions in this manual to obtain a successful installation and operation. It is recommended that you have a basic understanding of Local Area Networking (LAN) concepts such as bridging, IEEE 802.3, 10BASE-T Ethernet and IEEE 802.3u 100BASE-TX Fast Ethernet.

## LED Indicators

The OnQ Ethernet Switch provides a variety of informative LED's on the front panel. *See Figure 2 below.*

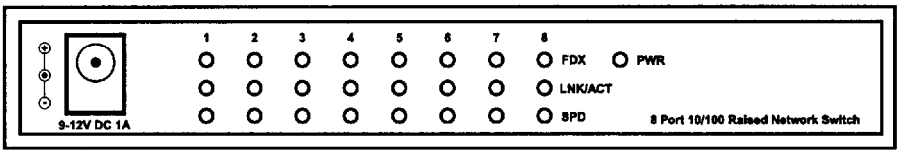



**Figure 2**

| LED | State | Indication |
|---|---|---|
| Power | On | Switch is powered |
| Speed | On | Port has a valid network connection on 100M |
| | Off | Port has a valid network connection on 10M |
| Link/Activity | On | Port has established a valid 1 network |
| | Off | Port has not established any network connection |
| | Flashing | Traffic is traversing the port |
| FDX | On | Port operates in full-duplex mode |
| | Off | Port operates in half-duplex mode |

## Uplink Multiple Port

You can use the uplink port of each 8 Port Switching Hub to cascade to a hub or a switch for connecting many different work-groups. The Up-Link port is the same port as port 1, but the pin assignments have been designed to contain crossover's. This allows you connect this port to a hub or switch hub without a crossover cable. The maximum distance between each hub to the switch is 100 meter (*refer to Figure 3 below*).

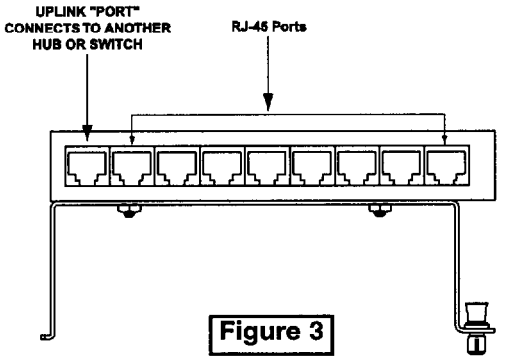



**Figure 3**

**Category 5 Specification:**

- Four pairs of wiring are required
- Cable type: Shield Twisted-Pair (STP) or Unshielded Twisted Pair (UTP)
- Wire gauge: 18 to 26 AWG
- Nominal impedance: 100 ohms
- Maximum cable length: 300ft (100m)
- Nominal attenuation: less than 11.5db

**RJ-45 Pin Assignments**

| Pin No. | Uplink | Port 1-8 |
|---|---|---|
| 1 | RD+ Receive from UTP | TD+ Transmit to UTP |
| 2 | RD- Receive from UTP | TD- Transmit to UTP |
| 3 | TD+ Transmit to UTP | RD+ Receive from UTP |
| 6 | TD- Transmit to UTP | RD- Receive from UTP |
| 4, 5, 7, 8 | Not Used | Not Used |

## Pre-Installation Requirements

Before you connect the Ethernet Switch to the network, make sure that you have the proper operating environment. To provide the proper operating condition, make sure the of the following installation requirements:

- Power Requirement: 120VAC @ 60Hz
- Cable Requirement: CAT5 UTP cable wiring for 10Mbps connection; CAT5 or CAT5E UTP cable wiring for 100Mbps

## Installation - Ethernet Hub in OnQ Enclosure

The OnQ 8 Port 10/100 Switch is designed to mount in any OnQ Service Center.

1. Align tabs on module with slots on the rear of the enclosure. *Refer to Figure 4.*
2. Insert tabs by angling module away from the back of the enclosure.
3. Rotate the module and insert fasteners on module into corresponding holes on the rear of the enclosure. (Plunger must be in pulled position for fastener to engage hole.)
4. Push plunger in to lock module in place. Pull on module to ensure module is locked properly in place.

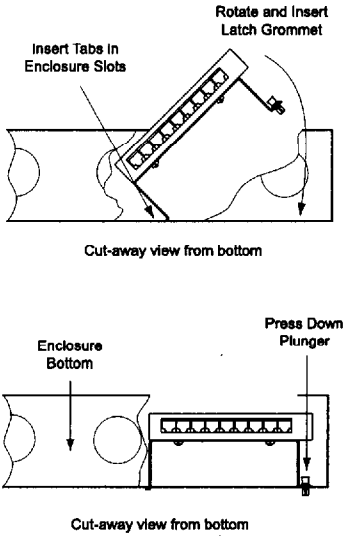



**Figure 4**

*Connecting Power*

1. Plug the AC power adapter, supplied with the Ethernet Switch, into a near by power outlet.
2. Route the power supply wire neatly and securely to the Ethernet Switch location.
3. Plug the power connector into the power jack on the rear of the switch.

*Connecting to Outlets*

1. Plug a straight through OnQ Category 5 jumper, such as part number 363201-XX, to the twisted pair jacks on the rear panel of the hub.
2. Connect the other end to the desired outlet jack on an OnQ Network Interface Module, such as part number 363486-01.

**Repeat connecting up to eight (8) outlets to the network.**
**NOTE: *Do not* use the uplink jack and Port-1 at the same time.**

## Cascading to another Switch or Hub

You can cascade the OnQ Ethernet Switch to another Ethernet Switch or Hub. (When attaching the Switch to a Router or other device, verify the port type implemented before connecting any cabling.) *Refer to Figure 5 on next page.*

1. Prepare straight-through Category twisted-pair cable with RJ-45 plugs. Make sure the cable does not exceed 100 meters (328 feet).

2. Connect one end of the cable to the switch's uplink port. When using the uplink port, be sure not to use Port 1.

3. Connect the other end of the cable to an MDI-X RJ-45 port on the other device (not an uplink port.)
   - Alternatively, you can connect from any MDI-X port on the Switch to an uplink port on the other device.
   - You may also attach to MDI-X ports at both ends if you use crossover cabling.

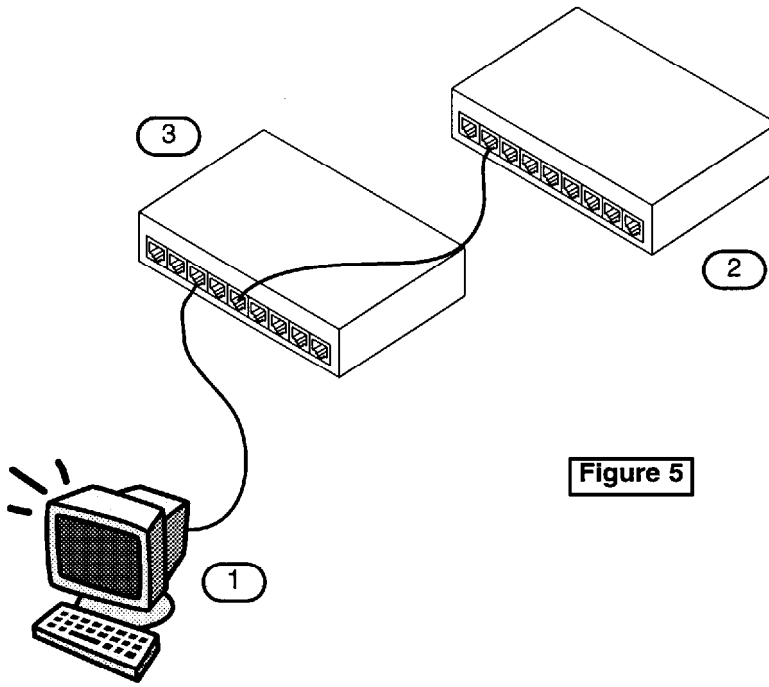



Figure 5

## Verify System Operation

Check each connection by viewing the port status indicators shown in the table on page 2. The Switch monitors the link status for each port. If the Link indicator fails to light when you connect a device, follow the trouble-shooting advice detailed on page 8.

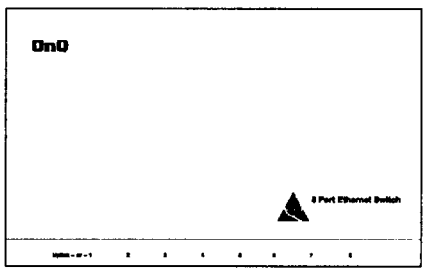
## Package Contents

The package of your dual-speed Ethernet Switch should contain the following items:

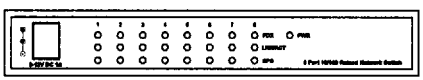
- OnQ 8 Port Ethernet Switch for mounting in OnQ Service Center
- External power adapter
- User Manual

NOTE: If any item is missing or damaged, please contact your dealer for replacement.

"Top" View




"Front" View



"Back" View

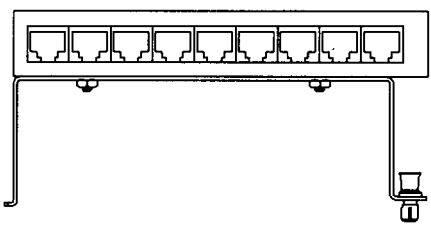


**Figure 6**
**Top, Front & Back Views of the OnQ Ethernet 8 Port Switch**

# Troubleshooting

## Diagnosing LED Indicators

The operation of the OnQ Ethernet Switch can be easily monitored through panel indicators to assist the network manager in identifying problems. This section describes common problems you may encounter and possible solutions.

Symptom: Link indicator does not light up after making a connection.

Cause: Network interface (i.e. a network adapter card on the attached device), network cable or switch port is defective.

Solution: Verify that the switch and attached device are powered. Be sure the cable is correctly plugged into both the switch and corresponding device. Verify that the proper cable type is used and its length does not exceed specified limits. Each twisted-pair cable should not exceed 100m (328ft). Check the adapter on the attached device and cable connections for possible defects. Replace the defective adapter or cable if necessary.

Symptom: Power indicator does not light up (green) after power adapter is attached.

Cause: Defective power outlet, power cord or power adapter.

Solution: Check the power outlet by plugging in another device that is functioning properly. Check the power cord with another device. If these measures fail to resolve the problem, have the units power adapter replaced by a qualified distributor.

## Specifications

| | |
|---|---|
| Access Method | CSMA/CD |
| Standards Conformance | IEEE 802.3u 100BASE-TX<br>IEEE 802.3 10BASE-T |
| Media Supported | 100 ohm CAT5 twisted-pair |
| Number of Ports | 8 RJ-45, 1 Uplink port |
| Switching Method | Store-and-Forward |
| Transmission Mode | Auto-negotiation (10/100Mbps, full/half-duplex) |
| Flow Control | Full duplex - IEEE 802.3x<br>Half duplex - Back pressure |
| Filtering/Forwarding Rate | Line speed |
| Power Requirement | DC 9V/1A |
| Power Consumption | 9VCD/0.43A |
| Operating Temperature | 0 to 40 degree C |
| Humidity | 10% to 90% non-condensing |
| Status LEDs | Per port LED: Link/Activity, FDX, SPD. Per Unit LED: Power |
| Dimensions | 6.5 x 3 x 3.5 inches |
| Certification | FCC Class B, CE Mark, |
| Emissions | CISPR Class B |
| Immunity | IEC 1000-4-2/3/4/6 |

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