



# User's Guide

## **Five (5)-Port 100/10Mbps N-Way Switch**

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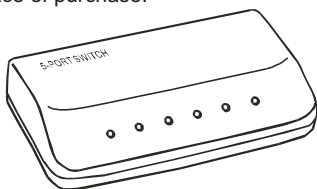
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# 1 UNPACKING INFORMATION

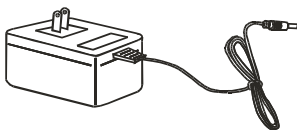
Thank you for purchasing this 5-Port 10/100Mbps N-Way Switch. Before continuing, please check the contents of the product package. This product package should contain the following items:

- One (1) 5-Port N-Way Switch
- One (1) Power Adapter
- This User's Guide

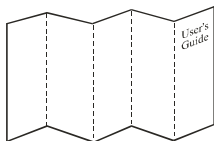
If anything is missing, please contact your place of purchase.



5-Port N-Way Switch



Power Adapter



User's Manual

## 2 PRODUCT DESCRIPTION

### 2.1 Model

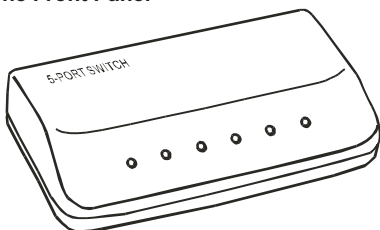
This Five (5)-Port 10/100Mbps N-Way Switch is a multi-speed, versatile network device combining both standard and "Big-Pipe" ports under the same hood. The number and types of ports are below.

Port Speeds	Number of Ports
100BASE-TX/10BASE-T	Five (5) TP ports

### 2.2 Key Features

- Five (5) independent bandwidths with 10Mbps □ 200Mbps capability.
- Five (5) Switched ports with Auto-Negotiation function.
- 128K bytes shared buffer memory.
- 1K MAC Address entries. (maximum)
- Full wire speed □ Store-and-Forward □ technology instantly eliminates bad packets.
- Filtering/Forwarding rate: 148,800 packets/sec. per port maximum.
- IEEE 802.3x Flow-Control support for Full-Duplex operation.
- Back-Pressure support for Half-Duplex operation.
- Palm sized with external power adapter.
- IEEE 802.3u and 802.3 standards compliant.
- Plug-&-Play with easy to read diagnostic LEDs.
- Five (5)-Port Auto-MDIX detects and corrects crossover cables.

## 2.3 The Front Panel



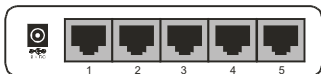
## 2.4 Status LEDs

This Switch comes with a complete range of LEDs. The table below lists each LEDs name, color, and a brief description of its function.

- One (1) for Power On/Off
- One (1) per port for Link / Activity

Name	Color	Function
Pwr	Green	Lit: Power "On"
LINK / ACT	Green	Lit: When the port has a valid physical connection (Link) with another device. Blinks: Indicates Activity when port is sending or receiving data.

## 2.5 The Rear Panel



## 2.6 Power Connector

The power connector is designed to be used with the power adapter included in the product package.

## 2.7 10/100Mbps TP Ports

Each port has an Auto-Negotiation function that senses the attached device's maximum operating bandwidth and automatically sets the connected port to operate at 20Mbps or 200Mbps in Full-Duplex, and up to 10Mbps or 100Mbps in Half-Duplex.

## 2.8 Port Connectors

Each TP port uses RJ-45 connectors that allow network TP cables to be quickly attached or removed.

All the TP ports provide an Auto-MDIX function.

## 2.9 Cabling

**10Mbps** - Category 3, 4 or 5 TP cabling can be used for transmitting data at 10Mbps or 20Mbps(Full-Duplex) on 10BASE-T networks.

**100Mbps** - Only Category 5 TP cabling can be used for transmitting data at 100Mbps or 200Mbps(Full-Duplex) on 100BASE-TX networks.

Port Type	Cable Type	Connector
10BASE-T	Category 3, 4 or 5 TP	RJ-45
100BASE-TX	Category 5 TP	RJ-45

**Note:** Category 5 TP cable is also recommended whenever installing new cabling.

### 3 **INSTALLATION**

This Switch is "Plug-&-Play." It does NOT require software configuration. Users can immediately use any of the features of this product simply by attaching the cables and turning on the power.

#### **Installation**

- Place the Switch on a clean, flat desk or table top close to a power outlet.
- Insert the jack end of the power adapter into the Switch's power connector.
- Insert the plug end of the power adapter into a grounded power outlet.

**Note:** Be sure you are using a power adapter of the right type.

# 4 Optimizing Configuration

## 4.1 Half- and Full-Duplex

This Five (5)-Port N-Way Switch supports both Half- and Full-Duplex modes for 10BASE-T and 100BASE-TX.

**Half-Duplex:** Data cannot be transmitted and received at the same time.

**Full-Duplex:** Data can be transmitted and received at the same time.

**Note:**

- Full-Duplex transmission is only possible between Two (2) devices with a dedicated link (e.g., switch-switch, switch-PC)
- Both devices must be capable of Full-Duplex
- Both devices must negotiate to Full-Duplex (via Auto-Negotiation)

Each port on this Five (5)-Port N-Way Switch can detect and set the line's operating mode by using their Auto-Negotiation function.

## 4.2 Fast Ethernet

100BASE-TX is called "Fast Ethernet." In Fast Ethernet (100Mbps) data travels ten times faster than in traditional Ethernet (10Mbps).

Below is a list of the cable types and connectors supported for 10BASE-T and 100BASE-TX networks.

Port Type	Cable Type	Connector
10BASE-T	Category 3, 4 or 5 TP	RJ-45
100BASE-TX	Category 5 TP	RJ-45

**Note:** If your 10BASE-T network currently uses Category 5 TP cabling, you can instantly upgrade the network to a 100BASE-TX network by changing network devices. (i.e. Adapters, Hubs, etc.)

### 4.3 Auto-Negotiation (N-Way)

Each TP port has a built-in Auto-Negotiation function. This technology automatically sets the best possible bandwidth as soon as a connection is established with another network device (usually at Power On or Reset). Auto-Negotiation functions by detecting the modes and speeds the attached device is capable of. They provide an Auto-MDIX function for all modes of operation that senses for the connected cable's polarity and automatically sets the Switch to correct polarity. Users only need to connect a network device into any 10/100Mbps TP port

### 4.4 Evaluating Auto-Negotiation Capability

Upon network cable attachment, each TP port will instantly set to operate as follows:

If the attached device is:	Each TP port will automatically set itself to operate at:
100Mbps, no Auto-Negotiation	100Mbps Bandwidth (100BASE-TX, Half-Duplex)
100Mbps, with Auto-Negotiation	200Mbps Bandwidth (100BASE-TX, Full-Duplex)
10Mbps, no Auto-Negotiation	10Mbps Bandwidth (10BASE-T, Half-Duplex)
10Mbps, with Auto-Negotiation	20Mbps Bandwidth (10BASE-T, Full-Duplex)

**Note:** If the attached device is set to a fixed mode it will not operate as an Auto-Negotiation device.

#### 4.5 MAC Address Table

Every Ethernet data packet includes both source and destination addresses. This 6-bytes ID is called the MAC (Media Access Control) Address.

This Switch can automatically learn and store up to 1K MAC addresses. It disappears when the switch is powered off or reset.

**Note:** When the network needs reconfiguration, we recommend first turning Off the power. After all nodes have been moved, turn the Switch back "On" to rebuild the internal MAC address table.

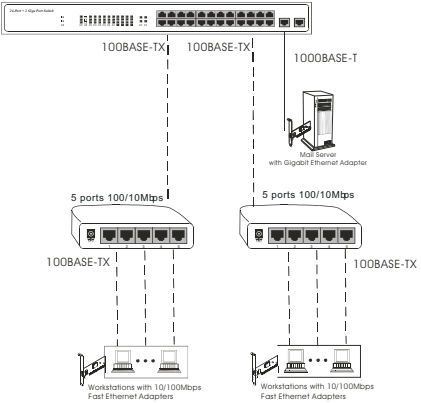
# 5 SAMPLE APPLICATION

This Five (5)-Port N-Way Switch is a powerful and flexible network device. It can be efficiently used for SOHO through enterprise networks.

Below is an easy 10/100Mbps SOHO network application that will maximize network speed and efficiency.

## 10/100Mbps Switch Network with Five (5) Independent Bandwidths

24 port switch with Gigabit ports



## 6 TROUBLESHOOTING

Before this Switch left the factory, it underwent numerous quality assurance checks to ensure proper operation. Most network problems are related poor cable connections. To check your cable connections, follow these simple steps:

- Check if the Link LED(s) is/are lit. A lit Link LED indicates there is a proper connection.
- Check if the Link LED(s) on each Adapter is lit.
- Try to send a message (transmit data) through the Switch.
- During transmission, check to see if this Switch's Link/Activity LED(s) is/are blinking.
- Send a message to the network Server through this Switch. Check that the Server's TX/RX LED is also blinking.

### **100BASE-TX has very strict cable restrictions.**

Cabling in this guide discusses exact requirements. However, here are some simple rules:

- No single cable connection can exceed 100 meters in length.
- Per segment cable length limitations begin at the Switch's port.

### **Link LED does not lit after cable is connected to the port.**

- Verify that the other end of the cable is connected to a device that is powered on and on-line.

**If the TP port LED status LED is normal,  
but network traffic is irregular:**

- Check that the attached device is not set to FORCED 100Mbps, or 10Mbps Full-Duplex.
- Some devices use a physical or software switch to change Duplex modes. Auto-Negotiation may not recognize this type of Full-Duplex setting.
- Power On/Off to reset the Switch

## 7 PRODUCT SPECIFICATIONS

Model	Five (5)-Port 10/100Mbps N-Way Switch
Standards	IEEE 802.3u: 100BASE-TX IEEE 802.3: 10BASE-T
Ports	Five (5) 100BASE-TX/10BASE-T
Media Support	100BASE-TX Category 5 TP 10BASE-T Category 3, 4 or 5 TP
Bandwidth	100BASE-TX/10BASE-T - 200/100/20/10Mbps, via Auto-Negotiation
Forwarding/ Filtering Rate	148800 packets/second per port @ 100Mbps, maximum 14880 packets/second per port @ 10Mbps, maximum
MAC Addresses	1K MAC address entries (maximum)Self-Learning
Buffer Memory	128K Bytes
Duplex Modes	All ports support Half-Duplex and Full-Duplex operation
Auto-MDIX	All ports support Auto-MDIX which can detect and corrects crossover cables
LED Indicators	One (1) for Power On / Off One (1) per port for Link / Activity
External Power Adapter	Output 9VDC, 1Amp (according to country)
Power Consumption	2.5W maximum
Environment	Operating Temperature: 0 ~ 45 C (32 ~ 113 F) Storage Temperature: -20 ~ 70 C (-4 ~ 158 F) Humidity: 10% ~ 90% Non-Condensing
Certifications	FCC Class B and CE Mark approved
Dimensions	118 x 70 x 25 mm (4.64 x 2.75 x 0.98 inches)

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### **FCC WARNING**

This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Part 15 of FCC Rules, which are designed to provide reasonable protection against electromagnetic interference in a commercial environment.

Changes or modifications to the equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### **CE MARK WARNING**

This is a Class B 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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