



September, 2004

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Normas Oficiales Mexicanas (NOM)  
INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
  - A: El cable de poder o el contacto ha sido dañado; u
  - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
  - C: El aparato ha sido expuesto a la lluvia; o
  - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño ; o
  - E: El aparato ha sido tirado o su cubierta ha sido dañada.

## About This Manual

### Preface

This manual describes how to install and use the 16 Ports Web-based Smart Ethernet Switch. The TX ports of the switch introduced here auto-negotiates the presence of 10/100Mbps and full/half-duplex mode and auto-MDIX. In addition, it allows an optional 100BaseFX multi-mode or single-mode fiber module, enabling long distance connection.

To get the most out of this manual, you should have an understanding of networking concepts such as bridging, IEEE 802.3 10BaseT Ethernet, IEEE 802.3u 100BaseTX/FX Fast Ethernet, and local area networks (LANs).

For more information about these topics, please refer to the Appendices.

In this manual, you will find:

- Introduction on the Switch
- Product features
- Illustrative LEDs functions
- Installation instructions
- Specifications

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## Product Overview

### Front View



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Figure 1: 16 Ports Web-based Smart Ethernet Switch

### Package Contents

When you unpack the product package, you shall find these items listed below.

- ✓ ***The 16 Ports Switch***
- ✓ *One AC power cord*
- ✓ ***User's Manual***

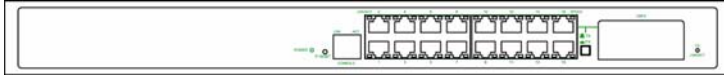
Please inspect the contents, and report any apparent damage or missing items immediately to your authorized reseller.

## Product Features

- ◆ PROVIDES 16 × 10/100MBPS PORTS USING RJ-45 CONNECTORS
- ◆ AN OPTIONAL SINGLE-PORT FIBER MODULE ALLOWS:
  - *100BASEFX MULTI-MODE FIBER WITH SC, ST, MT-RJ, VF-45 OR LC CONNECTOR*
  - *100BASEFX SINGLE-MODE FIBER WITH SC CONNECTOR*
- ◆ AUTO-NEGOTIATION FOR SPEED AND DUPLEX MODE ON TX PORTS
- ◆ 16 PORTS: 2K MAC ADDRESSES, 2M BITS BUFFER MEMORY
- ◆ AUTO-MDIX FOR ALL TX PORTS
- ◆ STORE-AND-FORWARD MECHANISM
- ◆ TRUE NON-BLOCKING ARCHITECTURE
- ◆ FULL WIRE SPEED FORWARDING RATE
- ◆ BROADCAST STORM FILTERING CONTROL
- ◆ BACK-PRESSURE AND IEEE 802.3X COMPLIANT FLOW CONTROL
- ◆ SYSTEM, IP CONFIGURATION, PORT, PORT-BASED VLAN, AND PORT-BASED TRUNKING SETTING THROUGH THE WEB-BASED CONSOLE PORT.
- ◆ FRONT PANEL PUSH BUTTON TO CHOOSE 100BASEFX OR PORT 16
- ◆ PRESS THE FRONT PANEL IP RESET PUSH BUTTON FOR FIVE SECONDS TO RESET THE ETHERNET SWITCH BACK TO THE DEFAULT IP ADDRESS. ( THE PORT, VLAN, AND TRUNKING SETTINGS WILL REMAIN THE SAME AS WHEN THEY WERE LAST SAVED ).
- ◆ FRONT PANEL PORT AND POWER STATUS LEDs
- ◆ STANDARD 19" RACKMOUNT SIZE, ONE-UNIT IN HEIGHT

## Front Panel Display

The LED indicators on the front panel provide you with instant feedback on each port status, and help you monitor and troubleshoot the switch.



**Figure 3: Front Panel LEDs**

## Power

This LED comes on when the switch is properly connected to power and turned on.

## Push Button

The push button is located at the right side of port 16 on the 16-Port Switch.

Depress this button to use twisted pair port 16, and press this button to use the 100BaseFX module.

## IP RESET Push Button

Press the Front panel IP RESET push button around five seconds to reset the Ethernet Switch back with the default IP Address.

## Port Status

The RJ-45 ports are numbered from 1 to 16 on the 16-Port Switch.

The LEDs are located on the ports of the switch, displaying status for each respective port. Please refer to the table below for more information.

Consult the following table for details.

**i** Before you use this table for troubleshooting, make sure the switch is properly connected to power and turned on.

## Physical Ports

The 16 Ports Switch has sixteen or twenty-four 10/100Mbps ports using RJ-45 connectors and provides one slot for the optional single-port fiber module. The optional module allows fiber type (multi-mode or single-mode fiber) and connector (SC, ST, MT-RJ, VF-45, or LC) at user's discretion.

## Understanding Front Panel Design

<b>Power LED</b>	On	Power feeding in	
	Off	Power switched off	
		Improper connection	
<b>Console Port LED</b>	LNK	On	A valid network connection LNK stands for LINK
		Off	No connection



	ACT	Flashing	Transmitting or receiving data ACT stands for ACTIVITY
		Off	Neither transmitting nor receiving data
<b>Port LED</b>	LNK/ACT	On	A valid network connection LNK stands for LINK
		Flashing	Transmitting or receiving data ACT stands for ACTIVITY
		Off	Neither connection nor activity
	SPEED	On	A valid 100Mbps connection
		Off	A valid 10Mbps connection
<b>100FX Port LED</b>	LNK	On	A valid network connection LNK stands for LINK
		Off	No connection
	ACT	Flashing	Transmitting or receiving data ACT stands for ACTIVITY
		Off	Neither transmitting nor receiving data

## Installation

### Selecting a Site for the Equipment

As with any electric device, you should place the equipment where it will not be subjected to extreme temperatures, humidity, or electromagnetic interference. Specifically, the site you select should meet the following requirements:

- The ambient temperature should be between 32 and 104 degrees Fahrenheit (0 to 50 degrees Celsius).
- The relative humidity should be less than 90 percent, non-condensing.
- Surrounding electrical devices should not exceed the electromagnetic field (RFC) standards for IEC 801-3, Level 2 (3V/M) field strength.
- Make sure that the equipment receives adequate ventilation. Do not block the ventilation holes on each side of the switch or on the rear of the equipment.
- The power outlet should be within 6 feet ( 1.8 meters ) of the switch.

## Installation and Placement Instructions

### Mounted to 19-inch standard rack

Locate the accessories supplied in the product package. Use the rackmount brackets and screws to install the switch into any EIA 19" standard rack.

**Step 1:** Attach the brackets to each side of the chassis.

**Step 2:** Apply the screws to each side and secure them tightly.

**Step 3:** Carefully position the switch into the rack.

**Step 4:** Align the brackets to the side holes on the rack and use rack screws to secure the chassis with the rack.

**Step 5:** Proceed to the "Connecting to Power" section.

### Desktop or any flat surface

The switch can sit on desktop or any flat surface with adequate space and ventilation. If you want to place it onto a shelf, make sure the shelf can withstand the weight of the switch.

**Step 1:** Simply put the switch on the desired place.

**Step 2:** Ensure the switch receives good ventilation.

**Step 3:** Proceed to the "Connecting to Power" section.

## Optional Fiber Module Installation

Consult the following illustrations before installation.

**Step 1:** Make sure the power is switched off. The module is not hot-swappable.

**i** It may cause electric shock or any possible damage to the switch if the power is not switched off.

**Step 2:** Remove the module from the static-free container.

**Step 3:** Unscrew the cover plate of the expansion slot.  
(The slot for single-port module is located at the right side of the switch.)

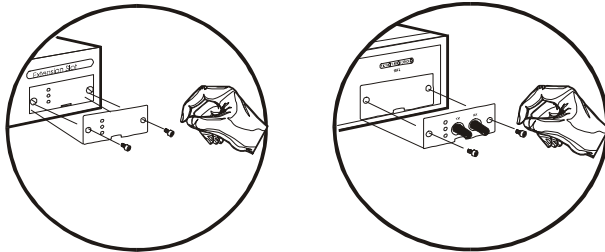
**Step 4:** Remove the plate.  
(Keep it for future use if you decide to remove this module later.)

**Step 5:** Carefully slide the module into the slot, following the internal plastic guide rails.

**Step 6:** Once it is fully slid in, snap in the module to make a proper connection.

**Step 7:** Fasten the module screws.

**Step 8:** Finally, turn on the power.



**Figure 4: Removal of cover plate**

**Fiber module being installed**

## Connecting to Power

Locate the supplied AC power cord.

**Step 1:** Connect the AC power cord to the receptacle at the back of the switch.

**Step 2:** Attach the plug into a standard AC outlet with a voltage range from 100~240Vac.

**Step 3:** The power LED on the front panel will then illuminate.



**Figure 5: Rear view of the switch**

## Connecting to Your Network

### Cabling

**Step 1:** First, ensure the power of the switch (and end devices) is turned off.

**i** It may cause an electric shock or any possible harm to you if the power is not switched off.

**Step 2:** Prepare cable with corresponding connectors for each type of port in use.  
(Consult the table below for cabling requirements based on connectors and speed considerations. )

**Step 3:** Connect one end of the cable to the switch and the other end to a desired device.

**Step 4:** Once the connections between two end devices are made successfully, turn on the power and the switch is operational.

### Network Segmentation

The maximum segment distance between a node and a directly connected switch port on a 100BaseFX network is 75km using 10/125 (or 9/125) $\mu$ m single-mode fiber optic cable. It is capable of a maximum span of 2km when 62.5/125 (or 50/125) $\mu$ m multi-mode fiber optic cable is used.

### Cable Specifications Table

<b>Ethernet Standards</b>	<b>Connector</b>	<b>Port Speed Half/Full Duplex</b>	<b>Cable</b>	<b>Max. Distance</b>
10BaseT	RJ-45	10/20 Mbps	Cat. 3, 4 or 5 UTP/STP	100 m
100BaseTX	RJ-45	100/200 Mbps	Cat. 5 UTP/STP	100 m
100BaseFX Multi-mode	ST, SC, MT-RJ, VF-45, LC	100/200 Mbps	62.5/125 $\mu$ m multi-mode fiber	2 km
100BaseFX Single-mode	SC	100/200 Mbps	10/125 $\mu$ m single-mode fiber	15 km
100BaseFX Single-mode	SC	100/200 Mbps	10/125 $\mu$ m single-mode fiber	40 km
100BaseFX Single-mode	SC	100/200 Mbps	10/125 $\mu$ m single-mode fiber	75 km

## Switch Configuration

### Setting up Console Port Connection (Web-Based Browser Interface)

The Ethernet Switch provides a browser interface that lets you configure and manage the Ethernet Switch from a Web browser (such as Microsoft Internet Explorer or Netscape Navigator) remotely.

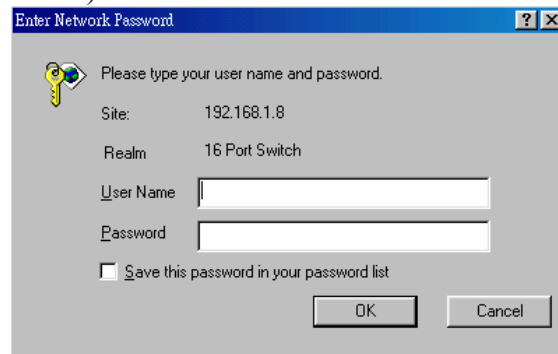
By connecting to the Ethernet Switch's console port, you can access the Ethernet Switch's web interface applications directly in your web browser by entering the default IP address of the Ethernet Switch (192.168.1.10). You can then use your web browser to list and manage the Ethernet Switch configuration parameters from one central location.

### Logging on to The Ethernet Switch

#### Switch IP Address

In your web browser, specify the **default IP address** of the Ethernet Switch (**192.168.1.10**).

Example: ( 1616W: 192.168.1.8 )



#### User Name

Enter the factory default user name: **admin**.

#### Password

Enter the factory default password (no password, **press Enter directly**).

Otherwise, enter a user-defined password if you followed the instructions later and changed the factory default password.

Enter Network Password

Please type your user name and password.

Site: 192.168.1.8

Realm: 16 Port Switch

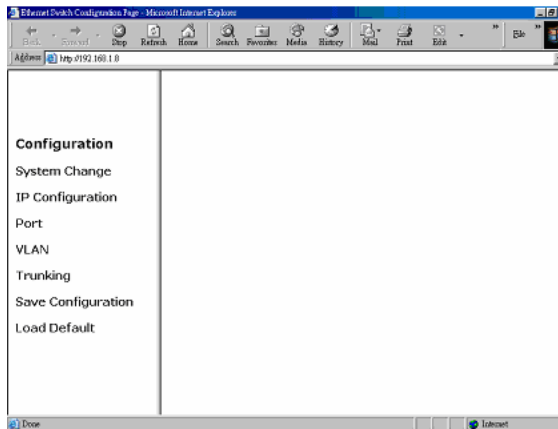
User Name: admin

Password:

Save this password in your password list

OK Cancel

## Main Menu



## System Change

The **System Change** parameters can be displayed by clicking the **System Change** button in the left sub-menu.

System Change

Switch Name: 16 Port Switch

New Password:

Version: v1.10

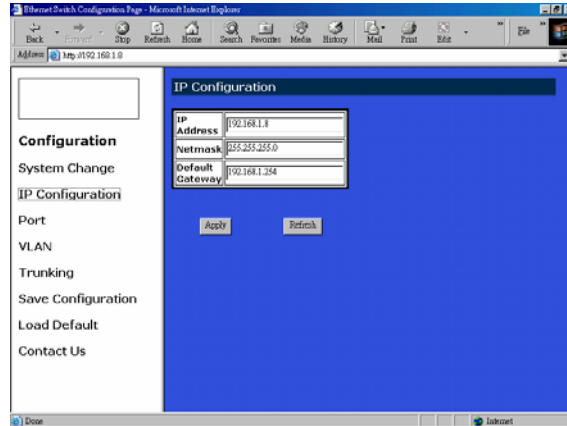
Mac Address: 00-e0-b3-00-00-2f

Apply

- Switch Name: Type a switch name and replace the current switch name with a new one. ( **Please restart your Computer once the Switch Name is replaced and saved under “ Save Configuration “ by the new name** ).  
 <Note> ( Only “ a-z “, “A-Z”, “0-9”, “under line” & “Space” can be acceptable, totally can not exceed 16 characters ).

- Password: Enter a user-defined password and change the factory default password.  
<Note> ( Only “ a-z “, “A-Z”, “0-9”, “under line” & “Space” can be acceptable, totally can not exceed 16 characters ).
- Apply: Click the **Apply** button and apply the new System settings.

## IP Configuration



- Refresh: Click the **Refresh** button and refresh back to the last saved IP Configurations.
- IP Address, Netmask, Default Gateway: You can see and change the IP Address, Netmask, and Default Gateway of the Ethernet Switch.
- Apply: Click the **Apply** button and apply the new IP Configurations.



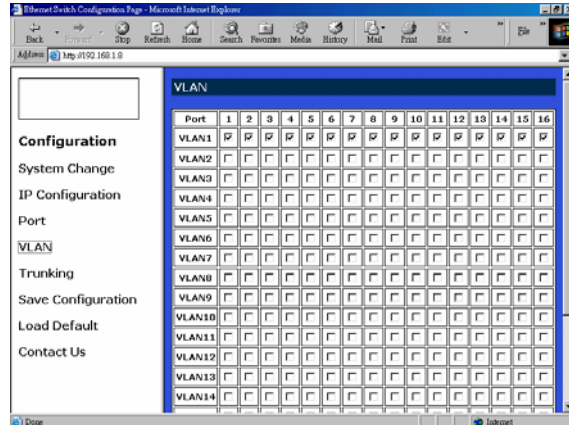
## Port

The screenshot shows a web browser window displaying the 'Ethernet Switch Configuration Page'. The main content area is titled 'Port' and contains a table with the following columns: Port Number, Type, Link Status, Mode, Flow, and Transmit/Receive. The table lists 12 ports, all of which are currently 'Link Down'.

Port Number	Type	Link Status	Mode	Flow	Transmit/Receive
1	TX	Link Down	AUTO	Enable	On
2	TX	Link Down	AUTO	Enable	On
3	TX	Link Down	AUTO	Enable	On
4	TX	Link Down	AUTO	Enable	On
5	TX	Link Down	AUTO	Enable	On
6	TX	Link Down	AUTO	Enable	On
7	TX	Link Down	AUTO	Enable	On
8	TX	Link Down	AUTO	Enable	On
9	TX	Link Down	AUTO	Enable	On
10	TX	Link Down	AUTO	Enable	On
11	TX	Link Down	AUTO	Enable	On
12	TX	Link Down	AUTO	Enable	On

- Refresh: Click the **Refresh On** or **Refresh Off** button to or not to refresh back to the last saved settings of the ports.  
 <Note> It is recommended to change the **Refresh On** button to **Refresh Off** while you change the settings of the ports. The **Refresh On** will refresh the settings of the ports shown on the screen around every ten seconds.
- Mode: Choose **AUTO**, **10HD**, **10FD**, **100HD** or **100FD** for the ports.
- Flow Control: Choose **Enable** or **Disable** to enable or disable the flow control of the ports.
- Transmit / Receive: Choose **On** or **Off** to turn on or off transmit / receive of the ports.
- Apply: Click the **Apply** button and apply the new settings of the ports.

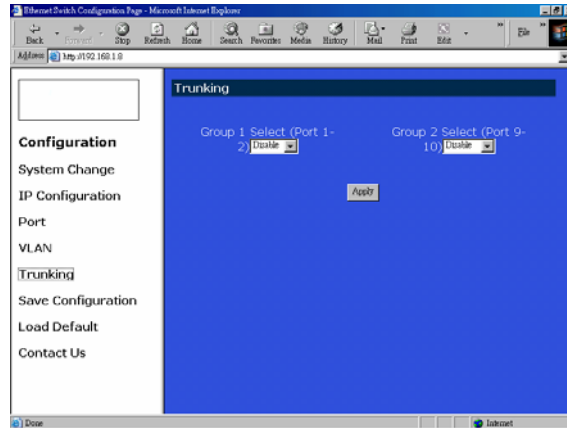
## VLAN



- VLAN: Click and choose the ports to be added into the VLAN groups.
- Apply: Click the **Apply** button and apply the new settings of the VLAN groups.  
 <Note> All Ports have to be selected to one of the VLAN Groups, those Port/Ports were not selected will be notified by the alarm message which shows “ Non-Identify VLAN Group On Port “.

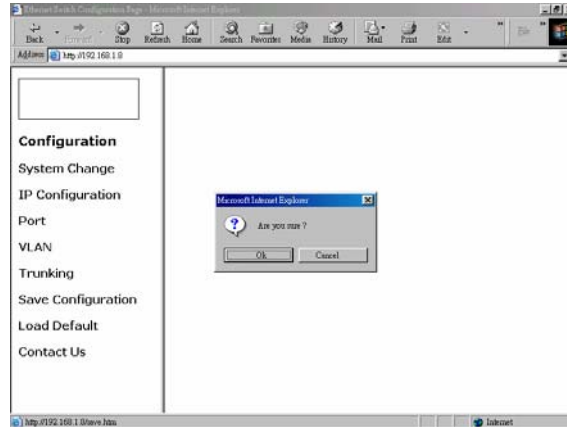
## Trunking

### 16 Ports Ethernet Switch:



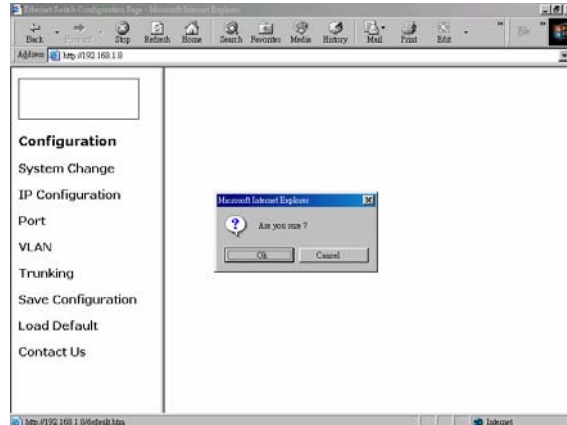
- **Disable:** Click and choose the **Disable** to disable the Trunking Group 1 or Trunking Group 2.
- **Trunking Group 1:** Click and choose the **Port 1, 2** to be added into the Trunking Group 1.
- **Trunking Group 2:** Click and choose the **Port 9, 10** to be added into the Trunking Group 2.
- **Apply:** Click the **Apply** button and apply the new settings of the Trunking Groups.

## Save Configuration



- Click **Save Configuration**.
- Click the **Ok** or **Cancel** button to or not to save the configurations.  
<Note> The **Cancel** button will discard any data you have changed since the last "Save" operation. Without clicking **Ok** button, the switch does not save any changes you may have made.

## Load Default



- Click **Load Default**.
- Click the **Ok** or **Cancel** button to or not to load the default settings.  
 < Note > Once the **Ok** button is selected, all last saved **Port**, **VLAN**, and **Trunking** setting will revert back to the default settings.

## Technical Specifications

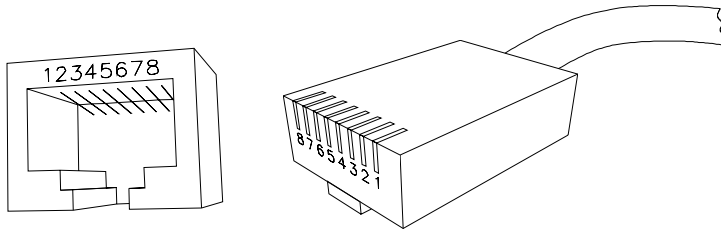
<b>16 Ports Web-based Smart Ethernet Switch</b>	
<b>Applicable Standards</b>	IEEE 802.3 10BaseT IEEE 802.3u 100BaseTX/FX
<b>Fixed Ports</b>	Sixteen ports for the 16-Port Switch
<b>Optional 1-port Module Type</b>	100BaseFX multi-mode or single-mode module
<b>Speed</b>	100BaseTX/FX: 200Mbps for full-duplex; 100Mbps for half-duplex  10BaseT: 20Mbps for full-duplex; 10Mbps for half-duplex
<b>Switching Method</b>	Store-and-Forward
<b>Performance</b>	148,800pps forwarding rate per port for 100Mbps 14,880pps forwarding rate per port for 10Mbps
<b>Chassis LED Indicators</b>	Power LED  For Console Port: LNK; ACT (2 LEDs) For ports: LNK/ACT; SPEED (2 LEDs)

## Physical Specifications

<b>16 Ports Web-based Smart Ethernet Switch</b>	
<b>Dimensions</b>	17.3 x 8.2 x 1.74 in. ( W440 × D207 × H44 mm ) 19" rack mount size, 1U high
<b>Weight</b>	Approximately 6.2 pounds ( 2.8kg )
<b>Power Input</b>	100 ~ 240 VAC, 50~60 Hz
<b>Input Fuse</b>	16 Ports: 3.3Volts DC, 4A
<b>Power</b>	16 Ports: 15W Maximum
<b>Operating Temperature</b>	32° ~ 122°F ( 0° ~ 50°C )
<b>Storage Temperature</b>	-13° ~ 158°F ( -25° ~ 70°C )
<b>Humidity</b>	10 ~ 90%, non-condensing
<b>Emissions</b>	FCC part 15 Class A, CE Mark

## Connector Pinouts

Pin arrangement of RJ-45 connectors:



**Figure 6: RJ-45 Connector and Cable Pins**

The following table lists the pinout of 10/100BaseT/TX ports.

### Connector Pin-Out

Pin	Regular Ports	Uplink port
1	Input Receive Data +	Output Transmit Data +
2	Input Receive Data -	Output Transmit Data -
3	Output Transmit Data +	Input Receive Data +
4	NC	NC
5	NC	NC
6	Output Transmit Data -	Input Receive Data -
7	NC	NC
8	NC	NC

## Ordering Information

16 Fixed Ports		Single-Port Module			
Cable Connector	Distance	Speed	Cable (/125 $\mu$ m) Connector	Distance	✓
<b>100BaseTX:</b> Cat. 5 or better UTP/STP RJ-45  <b>OR</b>  <b>10BaseT:</b> Cat. 3, 4, 5 or better UTP/STP RJ-45	100m	100BaseFX	MMF (50 $\mu$ m or 62.5 $\mu$ m) SC	2km	
		100BaseFX	MMF (50 $\mu$ m or 62.5 $\mu$ m) ST	2km	
		100BaseFX	MMF (50 $\mu$ m or 62.5 $\mu$ m) MT-RJ	2km	
		100BaseFX	MMF (50 $\mu$ m or 62.5 $\mu$ m) VF-45	2km	
		100BaseFX	MMF (50 $\mu$ m or 62.5 $\mu$ m) LC	2km	
		100BaseFX	SMF (9 $\mu$ m or 10 $\mu$ m) SC	15km	
		100BaseFX	SMF (9 $\mu$ m or 10 $\mu$ m) SC	40km	
		100BaseFX	SMF (9 $\mu$ m or 10 $\mu$ m) SC	75km	



- i. The maximum node-to-node network distance is in full-duplex operation.
- ii. MMF denotes Multi-Mode Fiber. SMF denotes Single-Mode Fiber.