



## **HFS24T**

***24- Port 10/100M  
Rack Mount Switch***

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**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 limitations 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 a different outlet from the one that the receiver is connected to.
- Consult your local distributors or an experienced radio/TV technician for help.
- Shielded interface cables must be used in order to comply with emission limits.

Changes or modifications to the equipment, which are not approved by the party responsible for compliance, could affect the user's authority to operate the equipment.

**CE Mark Warning**

This equipment complies with the requirements relating to electromagnetic compatibility, EN 55022 class A for ITE, the essential protection requirement of Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

**LIMITED WARRANTY**

Hawking Technology guarantees that every HFS24T 24-Port 10/100M Rack Mount Switch is free from physical defects in material and workmanship under normal use for two (2) years from the date of purchase. If the product proves defective during this two-year warranty period, call Hawking Customer Service in order to obtain a Return Authorization number. The warranty is for repair or replacement only. Hawking Technology does not issue any refunds. **BE SURE TO HAVE YOUR PROOF OF PURCHASE. RETURN REQUESTS CANNOT BE PROCESSED WITHOUT PROOF OF PURCHASE.** When returning a product, mark the Return Authorization number clearly on the outside of the package and include your original proof of purchase.

**IN NO EVENT SHALL HAWKING TECHNOLOGY'S LIABILITY EXCEED THE PRICE PAID FOR THE PRODUCT FROM DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE**

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## Package Contents

HFS24T 24-Port 10/100M Rack Mount Switch

The complete HFS24T package consists of:

- One HFS24T 24-Port 10/100M Rack Mount Switch
- Four rubber feet with adhesive backing (rubber feet may already come installed by manufacturer)
- 19" Rack Mount Kit
- One Power Cord
- One User's Manual

Check to make sure that the unit was not damaged during shipping and that no items are missing. If you encounter a problem, please contact your dealer.

Please read this user's manual thoroughly, and follow the installation and operation procedures detailed in the following pages.



## Introduction

HFS24T 24-Port 10/100M Rack Mount Switch

The HFS24T 24-Port 10/100Mbps Rack Mount N-Way Switch is designed for easy installation and high performance. The switch provides you with a flexible, reliable, and affordable solution for your Ethernet network, and includes 24 independent 10Base-T/100Base-TX ports. The HFS24T enables the segmentation of large networks into smaller, connected subnets, thus allowing you to experience improved performance for demanding applications. Each port delivers up to 200Mbps throughput, and is able to operate in either half or full-duplex modes.

The 24-Port 10/100Mbps Rack Mount N-Way Switch features an N-Way auto-negotiation (or auto-sense) function (refer to the chapter titled, “N-way Process”), which automatically adjusts the device for optimum operation. “Store-and-Forward” architecture filters eliminate error packets and improve efficiency. The HFS24T also utilizes auto-MDI/MDIX technology, which enables you to use either standard Ethernet cables or crossover Ethernet cables to connect with other devices. Moreover, the built-in Universal Power Supply allows you to easily install the switch without an external power adapter.

The HFS24T is also ideal for use with multiple, high-speed servers to share bandwidth within 10Mbps or 100Mbps workgroups. With maximum throughput of 200Mbps, any port can be used to provide workstations with a congestion-free data pipe for simultaneous access to the server. In addition, the switch can be expanded by cascading two or more switches together. The switch can be cascaded from any port and to any number of switches.

The Plug and Play HFS24T is powerful and reliable, and can run your high-end video, graphic, multimedia, database, and mission-critical applications with ease.



## Features

HFS24T 24-Port 10/100M Rack Mount Switch

- Complies with IEEE 802.3 10Base-T and IEEE 802.3u 100Base-TX standards
- (24) 10/100M auto-negotiation, auto-MDI/MDIX Ethernet ports
- Supports store-and-forward architecture and performs forwarding and filtering at non-blocking full wire-speed
- Supports “10/100M” and “Link/Activity” LED modes with “Power” (on) auto diagnostic
- Supports IEEE 802.3x flow control for full duplex operation
- Supports back pressure for half duplex operation
- Supports 8K MAC address entries
- 320K Bytes buffer memory
- Built-in universal power supply (100 - 240VAC)
- EMI certifications: FCC Class A, CE mark



## Select Features: Summary

HFS24T 24-Port 10/100M Rack Mount Switch

### **MAC Address Table and Learning**

The switch features a MAC address table that is capable of 8K entries. Each entry is used to store the address information of network nodes on the network, including MAC address, port ID, etc. This information is critical for packet filtering and forwarding.

When one packet comes in from any port, the switch will learn the source address, port ID, and other related information in the address table. Thus, the content of the MAC address table updates dynamically.

### **Filtering and Forwarding**

When a packet comes in from a particular port on the switch, the destination address is checked against the source address learning. The switch will look up the address table for the destination address. If not found, the packet will be forwarded to all other ports except the port from where the packet came in. If found, and the destination address is located at a different port than the one from which the packet came in, the packet will be forwarded to the port where the destination address is located, based on the information in the address table. But if the destination address is located at the same port as the one from which the packet came in, then the packet will be filtered.

### **Store-and-Forward**

Store-and-forward architecture is a type of packet-forwarding methodology. With the store-and-forward function, the switch will store the complete packet in the internal buffer and perform a complete error check before transmitting to the network. Therefore, no error packets will disturb the network. This results in increased efficiency and stability.

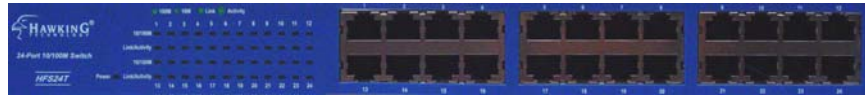


# Hardware Description

## HFS24T 24-Port 10/100M Rack Mount Switch

This chapter provides a description of the front panel, rear panel, side panel and LED indicators of the switch.

### Front Panel



The front panel includes:

1. (24) 10/100M auto-negotiation, auto-MDI/MDIX RJ-45 Ethernet ports
2. Corresponding LED indicators along with one additional “Power” (on) LED indicator.

### Rear Panel



The rear panel includes a power cord input for the built-in universal power supply.

### Side Panel



The side panels include mounting holes to be used when installing the switch onto a standard 19” rack.



## Hardware Description

HFS24T 24-Port 10/100M Rack Mount Switch

The LED indicators will help you monitor the status of each port and connected segment. The functions of the LED indicators are described below.

<b>LED Indicators</b>	<b>Description</b>
Power	The indicator is lit green when the power is on. Otherwise, it remains unlit.
10/100M	LEDs from the two rows labeled “10/100M” are lit when there is a 100Mbps connection (or link) to a corresponding port, and remain unlit when there is a 10Mbps connection.
Link/Activity *	LEDs from the two rows labeled “Link/Activity” are lit when there is a connection to a corresponding port, and blink whenever reception or transmission (i.e., Activity) of data is taking place.

\* If the port is connected but the Link/Activity LED is dark, check the following items:

1. If the switch and connected devices are powered on.
2. The port’s cable is firmly connected to the switch and associated device.
3. The connecting cable is of the correct type.
4. If the connecting device and/or network adapter, is functioning properly.



## Hardware Installation

HFS24T 24-Port 10/100M Rack Mount Switch

The HFS24T is a Plug and Play network device and does not require any special setup procedures. Connect the power cord and cables correctly, and the unit is ready for use.

### Switch installation

1. Place the switch in an appropriate location. When placing the switch, two items need to be considered:
  - **Convenient Location:** The switch should be placed in a location that is central to your home or office space and allows all computers and networked devices to be connected to the switch.
  - **Power:** The switch must be placed in a location that is accessible to a nearby electrical outlet.
2. Power on the switch by connecting the power cord.
3. Make sure that the “Power” LED is lit. If the “Power” LED does not light up, check the power cord to ensure that it is properly connected to the power outlet. If the “Power” LED still remains unlit, please contact your dealer for support.

### Ethernet Port Connections

Connect user machines, servers, additional switches, hubs, or other appropriate devices to the Ethernet ports on the switch with either standard or crossover Ethernet cables. (For switch-to-switch connections, only standard cables are needed because each switching port supports auto-crossover.)

Make sure that the corresponding LEDs are working properly. (See previous chapter for description.)

### Note

*Make sure that:*

1. *There is proper heat dissipation from and adequate ventilation around the switch.*
2. *The cabling is away from power lines and sources of electrical noise such as radios, transmitters and broadband amplifiers.*
3. *Water or moisture cannot enter the unit.*



## Hardware Installation

HFS24T 24-Port 10/100M Rack Mount Switch

### Rack Mount Installation

The following describes a general sequence of steps for securing the unit on a rack:

1. Place one mounting bracket over the bracket mounting holes on each side panel of the unit.
2. Insert the screws (included in the rack mount kit) through the bracket and, using a screwdriver, secure the screws into the bracket mounting holes on the unit.
3. Place the unit onto the rack by securing the mounting brackets to the mounting strips on either side of the rack. To do this, align the holes on the mounting brackets with the appropriate holes on the mounting strips. Be sure to use screws that are meant for use with the specific rack that you will be mounting the unit on. (These screws are provided or specified by the manufacturer of the *rack*, not by Hawking Technologies.)



“Auto-negotiation” (N-way) mode automatically sets the best possible bandwidth (10Mbps, 100Mbps) when a connection is established with another network device.

Auto-negotiation (or auto-sense) functions are determined by these set data-transfer rate priorities:

1. 100Base-TX Full Duplex (200 Mbps)
2. 100Base-TX Half Duplex (100Mbps)
3. 10Base-T Full Duplex (20Mbps)
4. 10Base-T Half Duplex (10Mbps)

Each port with N-way capability supports half/full duplex functions.



# Specifications

HFS24T 24-Port 10/100M Rack Mount Switch

<b>Standards</b>	IEEE 802.3, 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.3x Flow Control
<b>Interface</b>	(24) 10/100Mbps RJ-45 Ports (Support auto-MDI/MDIX)
<b>Cable Connections</b>	RJ-45 (10BASE-T): UTP Category 3,4,5 RJ-45 (100BASE-TX): UTP Category 5
<b>Network Data Rate</b>	Auto-negotiation (10Mbps, 100Mbps)
<b>Transmission Mode</b>	Auto-negotiation (Full-duplex, Half-duplex)
<b>LED Indicators</b>	Power: Lit green when power is on 10/100M: Lit green when there is a 100Mbps connection, unlit when there is a 10Mbps connection Link/Activity: Lit for successful connection, flashing for activity
<b>System Buffer Memory</b>	320K
<b>MAC Address Table</b>	8K entries
<b>Filtering/Forwarding Rate</b>	10Mbps: 14,880pps/14,880pps 100Mbps: 148,800pps/148,800pps
<b>EMI Certifications</b>	FCC Class A, CE mark
<b>Operating Temperature</b>	0 <sup>o</sup> - 50 <sup>o</sup> C (32 <sup>o</sup> - 122 <sup>o</sup> F)
<b>Operating Humidity</b>	10% - 90%
<b>Power Supply</b>	100 - 240VAC, 50 - 60Hz
<b>Dimensions</b>	330 x 230 x 44 (mm) (Width x Depth x Height) 13.00 x 9.05 x 1.75 (inches) (W x D x H)