KS-116

16-Port 10/100 Workgroup Switch
Installation Guide

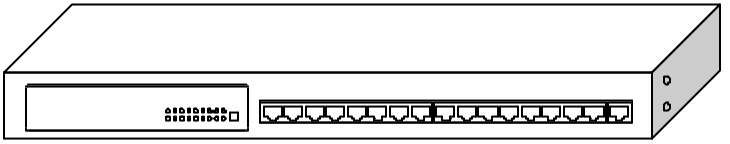
We make no warranties with respect to this documentation and disclaim any implied warranties of merchantability, quality, or fitness for any particular purpose. The information in this document is subject to change without notice. We reserve the right to make revisions to this publication without obligation to notify any person or entity of any such changes.

Trademarks or brand names mentioned herein are trademarks or registered trademarks of their respective companies.

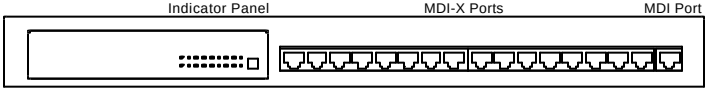
Installation Guide

16-Port 10/100Mbps Workgroup Switch

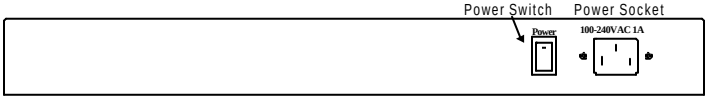
Sixteen 10/100Mbps RJ45 TX ports /w one MDI uplink port shared with Port 16.



Front View :



Rear View :



P/N:17000067

Contents

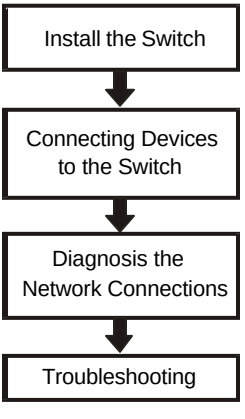
1. Introduction

This 16-port Switch is a plug-and-play 10/100Mbps Fast Ethernet switching hub. This switch can auto-sense the operation speed (10Mbps or 100Mbps) and operation mode (full or half duplex). It is very easy to install and use. Every network connection can use up to 200Mbps bandwidth to transfer data because of the switch architecture of the Switch. The total bandwidth of the Switch is 1.6Gbps. Users can use this 16-port Switch to enhance their network performance easily. There is a clear indicator panel for Link/Act, Full-duplex/Collision and connection speed of each port for network status monitor.

1.1 Package Contents

- One 16-port 10/100Mbps Ethernet Switch
- One AC power cord
- Two rack-mount kits and screws
- This installation guide

1.2 Installation Procedure



Section 2

Section 3

Section 4

Section 4, 5

2. Where To Place the Switch

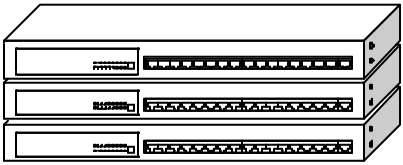
This 16-port Switch can be placed on a flat surface (your desk, shelf or table) or mounted onto a rack.

Place the 16-port Switch at a location with these connection considerations in mind:

- The switch configuration does not break the rules as specified in Section 3.
- The switch is accessible and cables can be connected easily to it.
- The cables connected to the switch are away from sources of electrical interference such as radio, computer monitor, and light fixtures.
- There is sufficient space surrounding the hub to allow for proper ventilation (the switch may not function according to specifications beyond the temperature range of 0 to 40 degrees C).

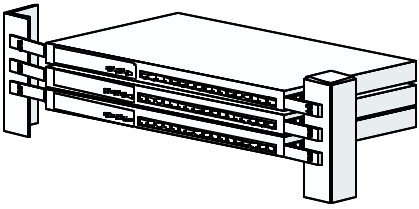
2.1 Placing The Switch on a Desk or Shelf

1. Place the first switch on a firm flat surface where you want to install the stack.
2. Place next switch on the first switch. Please don't put more than three this 16-port Switches in a stack to prevent shaking of the stack.



2.2 Mounting The Switch Onto a Rack

1. Use the brackets and screws supplied in the rack mounting kit.
2. Use a cross-head screwdriver to attach the brackets to the side of the switch.
3. Position the switch in the rack by lining up the holes in the brackets with the appropriate holes on the rack, and then use the supplied screws to mount the switch onto the standard EIA 19-inch rack.

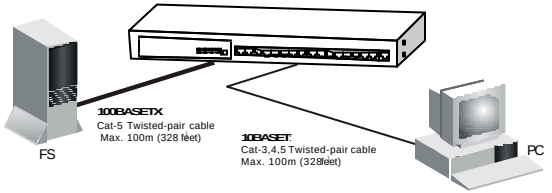


3. Configure the Network Connection

3.1 Connecting Devices to the Switch

[Connection Guidelines:]

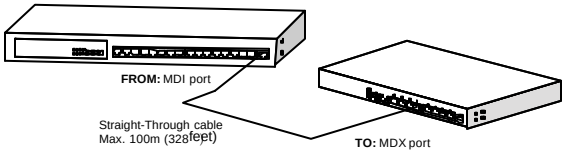
- Use Category 3 or 5 twisted-pair Ethernet cable when connecting 10BaseT devices to the switch (cable pin assignments defined in Appendix A)
- Use Category 5 (straight-through) twisted-pair Ethernet cable when connecting 100BaseTX devices to the switch (cable specifications are defined in Appendix B)
- Always limit the cable distance to 100 meters (328 ft) as defined by IEEE specification



3.2 Connecting to Another Ethernet Switch/Hub

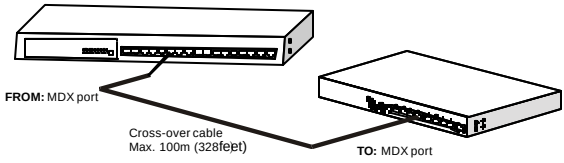
The Switch can be connected to existing 10 Mbps or 100 Mbps hubs/switches. The switch to switch/hub connection guidelines are as follows:

3.2.1 MDI to MDX Connect - Use normal "Straight Through" TP Cable when connecting the Switch MDI port to another standard port at the other



switch/hub.

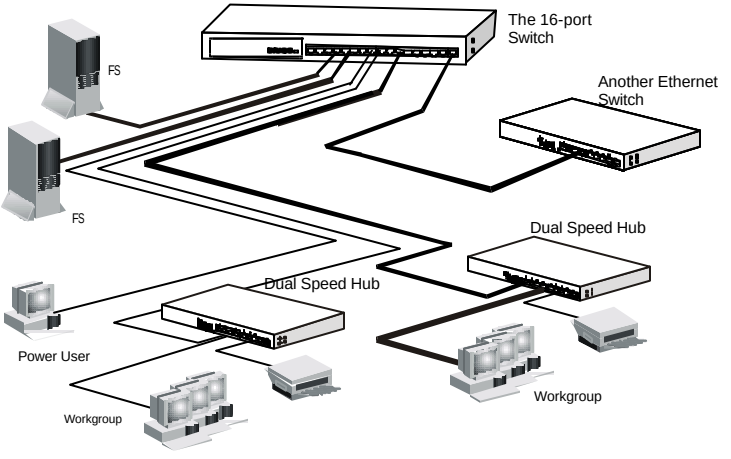
3.2.2 MDX to MDX Connect - Use crossover TP cable when connecting the Switch device port to another standard port at the other switch/hub.



3.3 Application

An Ethernet switch can be used to overcome the hub to hub connectivity limitations as well as improve overall network performance. Switches make intelligent decisions about where to send network traffic based on the destination address of the packet. As a result, the switch can significantly reduce unnecessary traffic.

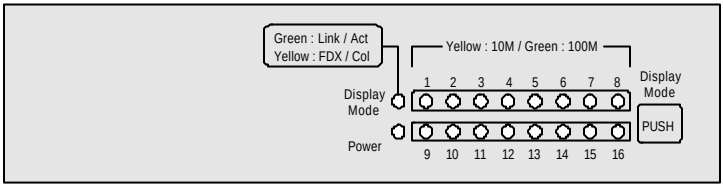
The example below demonstrates the switch ability to segment the network. The number of nodes on each segment is reduced thereby minimizing network contention (collisions) and boosting the available bandwidth per port.



4. LEDs Conditions Defined

4.1 LEDs Defined

The 16-port Switch LEDs provide useful information about the switch and the status of all individual ports.



LED	STATUS	CONDITION	
Power	ON	Switch is receiving power.	
Display Mode**	Green	The LED function of Port 1 ~ 16 is "**Link / Act**".	
	Yellow	The LED function of Port 1 ~ 16 is "**FDX / Col.**" (Full Duplex / Collision).	
LEDs of Port 1~16	if in "**Link / Act**" function	ON	Port has established a valid link.
		Flashing	Data packets being received or sent.
	if in "**FDX / Col.**" function	ON	The connection is Full Duplex.
		Flashing	Packet collisions occurring. A low level of collision is a part of normal Ethernet Operation.
	Green	The connection speed is 100Mbps.	
	Yellow	The connection speed is 10Mbps.	

** The Display Mode is switched by the "PUSH" (a push button switch) on the panel.

5. Troubleshooting

5.1 Resolving No Link Conditions

The possible causes for a no link LED status are as follow:

- The attached device is not powered on
- The cable may not be the correct type or is faulty
- The installed building premise cable is faulty
- The switch port may be faulty

Note: ***Because Port 16 MDI-X port and the MDI port share the same components, if the Port 16 MDI-X port is used, please don't use the MDI port. Or, if the MDI port is used, please don't use the Port 16 MDI-X port.***

5.2 Q&A

1. Computer A can connect to Computer B, but cannot connect to Computer C through the 16-port Switch.
   - ✓ The network device of Computer C may fail to work. Please check the link/act status of Computer C on the LED indicator. Try another network device on this connection.
   - ✓ The network configuration of Computer C may be something wrong. Please verify the network configuration on Computer C.

2. The possible causes for the 16-port Switch no work status are as follow:
   - ✓ Power cord or the internal power supply problem. Check the Power LED indicator.
   - ✓ MDI/MDI-X port is misused. Never use MDI port and Port 16 MDI-X port at the same time because they share the same components.
   - ✓ The cable may not be the correct type or is faulty. And the cable length limit is 100 meters.
   - ✓ The installed building premise cable is faulty.

3. The LED display does not work correct.

- ✓ Because the LED of Port 1 ~ 16 can be switched between "Link / Act" or "FDX / Col." functions, please check if the LED display is in the correct display mode. Please refer to Section 4 for LED Display.

A. Product Specifications

Access Method	CSMA/CD, 10 Mbps or 100 Mbps
Standards Conformance	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX
Communication Rate	10/100 Mbps on RJ-45 ports
Communication Mode	Full / Half duplex
Media Supported	*10BASE-T* - 100 Ohm Category 3,4,5 twisted-pair *100BASE-TX* - 100 Ohm Category 5 twisted-pair
Indicator Panel	LEDs for Power, Display Mode, Link/Act(Speed) or FDX/Col.(Speed). One PUSH button on the front panel for Display Mode switch.
Number of Ports	Sixteen 10BASE-T/100BASE-TX RJ45 ports
MDI-X/MDI Selection	Alternate Port
Dimensions	430 x 105 x 44 mm (16.9 x 4.1 x 1.7 inch)
Weight	1.4 Kg (3.08lb)
Certification	CE Mark
Emissions	FCC Class A / VCCI Class-I / CISPR Class A
Immunity	IEC 1000-4-2/3/4
Power Consumption	10Watts max.
Input Power	Full range: 100 to 240V, 50 to 60 Hz
Temperature	Standard Operating: 0 to 40°C (32 to 104°F) Storage: -40 to 70°C (-40 to 158°F)
Humidity	5% to 95% (Non-condensing)

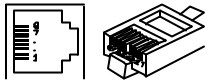
Network Bridging Function	Filtering, forwarding and learning
Switching Method	Store-and-forward
Address Table	8K entries
Queue Buffer	512K Bytes Shared Buffer
Filtering/Forwarding Rate	Line speed

B. Cable Specification

Two different types of cable are specified for use on the 16-port Switch:

- Standard "straight through" cable
- Hub to Hub "cross-over" cable

Cable Schematics



Standard Straight-Through Cable						
Hub / Switch side				Adapter side		
Pin #		Pair #		Pin #		Pair #
1	RX+	White-Green	----------	1	RX+	White-Green
2	RX-	Green	----------	2	RX-	Green
3	TX+	White-Orange	----------	3	TX+	White-Orange
4	Not Used	Blue	----------	4	Not Used	Blue
5	Not Used	White-Blue	----------	5	Not Used	White-Blue
6	TX-	Orange	----------	6	TX-	Orange
7	Not Used	White-Brown	----------	7	Not Used	White-Brown
8	Not Used	Brown	----------	8	Not Used	Brown
Hub-to-Hub Cross-Over Cable						
Hub / Switch side				Hub / Switch side		
Pin #		Pair #		Pin #		Pair #
1	RX+	White-Green	----------	1	RX+	White-Green
2	RX-	Green	----------	2	RX-	Green
3	TX+	White-Orange	----------	3	TX+	White-Orange
4	Not Used	Blue		4	Not Used	Blue
5	Not Used	White-Blue		5	Not Used	White-Blue
6	TX-	Orange	----------	6	TX-	Orange
7	Not Used	White-Brown		7	Not Used	White-Brown
8	Not Used	Brown		8	Not Used	Brown

Cable Type and Use

Connection	Speed	Cable Type
Hub to Hub (or Switch)	10Mbps	Cross-over, Cat-3,4,5 twisted pair
Hub to Hub (or Switch)	100Mbps	Cross-over, Cat-5 twisted pair

Hub to Server or Workstation	10Mbps	Straight-Through, Cat-3,4,5 twisted pair
Hub to Server or Workstation	100Mbps	Straight-Through, Cat-5 twisted pair
Hub to Print Server	10Mbps	Straight-Through, Cat-3,4,5 twisted pair
Hub to Print Server	100Mbps	Straight-Through, Cat-5 twisted pair

C. Compliances

EMI Certification

FCC Class A Certification (USA)

Warning: This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A digital device pursuant to Subpart B of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures are required to correct the interference.

Canada Department of Communications - Class A

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus", ICES-003 of the Department of Communications.

VCCI Class-I Compliance (Japan)

この装置は、情報技術装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

CE Mark Declaration of Conformance for EMI and Safety (EEC)

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

EMC:	EN55022(1988)/CISPR-22(1985)	class A
	EN60555-2(1995)	class A
	EN60555-3	
	IEC1000-4-2(1995)	4kV CD, 8kV AD
	IEC1000-4-3(1995)	3V/m

IEC1000-4-4(1995) 1kV - (power line), 0.5kV - (signal line)

This product complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.

Warning! Do not plug a phone jack connector in the RJ-45 port. This may damage this device.

D. Warranty

We warrant to the original owner that the product delivered in this package will be free from defects in material and workmanship for a period of warranty time from the date of purchase from us or the authorized reseller. The warranty does not cover the product if it is damaged in the process of being installed. We recommend that you have the company from whom you purchased this product install it.