KTI NETWORKS

Installation Guide

10/100 Fast Ethernet Switch with 100FX Connectivity

KS-108F Ver.B Series

DOC.101124-KS108FB

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TRADEMARKS

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FCC NOTICE

This device complies with Class B Part 15 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 the interference that may cause.

CE NOTICE

Marking by the symbol CE indicates compliance of this equipment to the EMC directive of the European Community. Such marking is indicative that this equipment meets or exceeds the following technical standards:

EMC Class B
EN 50081-1/1992 : EN55022, EN61000-3-2, EN61000-3-3
EN 50082-1/1998 : EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11

Table of Contents

1. Introduction

This 8-port Fast Ethernet switch series provides seven 10/100 TP ports and one 100BASE-FX fiber port, each capable of transmitting or receiving information simultaneously at full wire speed to control and allocate the network bandwidth.


Front


Rear

The key features of the switch series are:

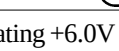
- **Optimized Bandwidth** : Combining eight 100Mbps-based Fast Ethernet switched ports, the switch delivers a high network bandwidth for your Fast Ethernet network
- **Easy Migration** : With 10BASE-T support on 10/100 port, the switch provides a non-disruptive and smooth migration path from Ethernet to a Fast Ethernet network.
- **Fiber Uplink Support** : With 100BASE-FX port, the switch provides a connectivity to a Fast Ethernet network via fiber cable.
- **Easy Installation** : With the functions of auto-speed-sensing and auto-negotiation on each port, the switch supports plug-and-play installation which eliminates configuration problems.

1.1 Features

Designed for resolving congestion problems caused by bandwidth-hungry devices and bandwidth-intensive applications as well as a high number of users, the switches not only adhere to the IEEE 802.3 10BASE-T, 802.3u 100BASE-TX and 100BASE-FX standards, but also feature:

- Seven 10/100BASE-TX auto-negotiation switched ports and one 100BASE-FX port for flexible connections to desktop PCs, servers and Fast Ethernet devices.
- The 10/100BASE-TX switched ports support:
  - auto-negotiation with auto-negotiation devices
  - full-duplex or half-duplex operation
  - automatic MDI/MDI-X configuration
- For the 100BASE-FX fiber port, the switch series support variety of fiber connectors for different application needs. The fiber connectors include ST, SC, MT-RJ, and VF-45 types for multimode and single mode fiber cables.
- Supports duplex mode selector for the 100BASE-FX fiber port.
- Self learning for active MAC addresses and address aging
- Store and forward switching to ensure only good packets are forwarded
- Forwarding and filtering at full wire speed
- Supports IEEE 802.3x flow control for full-duplex operation
- Supports back-pressure flow control for half-duplex operation
- Comprehensive LED indicators provide quick, easy to read port and switch information

1.2 Specifications

10/100 Ports	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX std. Shielded RJ-45 jacks with Auto MDI-X detection Auto-negotiation capable Speed for 10Mbps or 100Mbps Full-duplex or half-duplex mode support
100FX Port	IEEE 802.3u 100BASE-FX compliant Fixed 100Mbps operation Duplex mode selector - full duplex or half duplex
Flow control	IEEE 802.3x pause packet for full duplex operation Back-pressure for half duplex operation
Cables	10BASE-T Cat. 3, 4, 5 or higher (100 meters max.) 100BASE-TX Cat. 5, 5e or higher (100 meters max.) 100BASE-FX multimode or single mode fiber cable
LED indicators	Power status Per port : Speed, Link, Activity, Duplex, Collision status
Forwarding rate	14,880 pps for Ethernet (10M) 148,800 pps for Fast Ethernet (100M)
Filtering address	Multicast/Broadcast/Unicast address
MAC address	1K entries
Aging time	300 seconds
Environment	Temperature -5°C to 40°C Relative humidity 10% to 90% non-condensing
Dimensions	180 mm x 114 mm x 26 mm (WxDxH) 7.08 x 4.49 x 1.02 inch
DC IN Jack	D6.3mm–  +D2.0mm
DC IN voltage	Operating +6.0V ~ +12.6VDC (Device DC Input)
Consumption	DC input power consumption 3W @+5V

100FX Port Fiber Specifications

KS-108FB-xxx Duplex Series

Model Ext	Fiber	Wavelength	Tx Power	Sens.	Ref.Distance
-T	ST	MMF 1310nm	-19 ~ -14dBm	-31dBm	2km
-C	SC	MMF 1310nm	-19 ~ -14dBm	-31dBm	2km
-JM	MT-RJ	MMF 1310nm	-19 ~ -14dBm	-31dBm	2km
-VM	VF-45	MMF 1310nm	-20 ~ -14dBm	-31dBm	2km
-SA2	SC	SMF 1310nm	-15 ~ -8dBm	-31dBm	20km
-SL2	SC	SMF 1310nm	-15 ~ -8dBm	-32dBm	20km
-SL3	SC	SMF 1310nm	-15 ~ -8dBm	-34dBm	30km
-SL4	SC	SMF 1310nm	-5 ~ 0dBm	-34dBm	40km
-SL6	SC	SMF 1310nm	-5 ~ 0dBm	-35dBm	60km
-SL7	SC	SMF 1310nm	-3 ~ +3dBm	-37dBm	70km
-SL9	SC	SMF 1310nm	0 ~ +5dBm	-37dBm	90km
-SL10	SC	SMF 1550nm	-3 ~ +3dBm	-37dBm	100km
-SL12	SC	SMF 1550nm	0 ~ +5dBm	-37dBm	120km

Ref. Distance : reference distance when operating on full duplex mode
MMF : Multimode fiber - 62.5/125μm, 50/125μm
SMF : Single Mode fiber - 9/125μm

Single Fiber Bi-Di WDM Series

Model Ext	Fiber	Wavelength	Tx Power	Sens.	Ref.Distance
-W3515	SC SMF	Tx 1310nm Rx 1550nm	-14 ~ -8dBm	-31dBm	15-20km
-W5315	SC SMF	Tx 1550nm Rx 1310nm	-14 ~ -8dBm	-31dBm	15-20km
-W3540	SC SMF	Tx 1310nm Rx 1550nm	-8 ~ 0dBm	-34dBm	40km
-W5340	SC SMF	Tx 1550nm Rx 1310nm	-8 ~ 0dBm	-34dBm	40km

Single Mode CWDM Series

Model Ext	Fiber	Wavelength	Tx Power	Sens.	Ref.Distance
-CxxW40	SC SMF	Tx 1xx0nm Rx 1100-1650nm	-5 ~ 0dBm	-35dBm	40km
-CxxW80	SC SMF	Tx 1xx0nm Rx 1100-1650nm	0 ~ +5dBm	-37dBm	80km

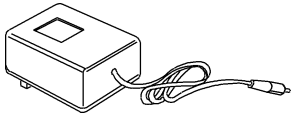
Tx 1xx0nm : 1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610nm

2. Installing the Switch

2.1 Unpacking

Check to see that you have everything before you start the installation.

- Installation guide
- The switch unit
- One AC power adapter for the unit

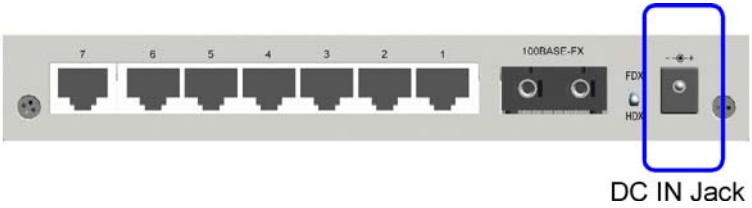


2.2 Checking AC Power

Before you begin the installation, check the AC voltage of your area. The AC power adapter which is used to supply the DC power for the unit should have the AC voltage matching the commercial power voltage in your area. The specifications of the AC power adapter are:

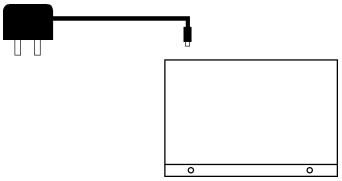
- AC input power: AC power voltage of your area
- DC output power: Rating options: +5V 2A, +7.5V 1A
- DC plug type: 

The DC power jack for the AC power adapter is located on the rear of the switch as shown below:

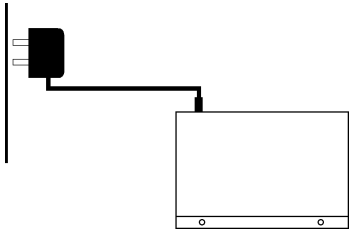


2.3 Installing the Switch

1. Install the switch with the AC power adapter provided.



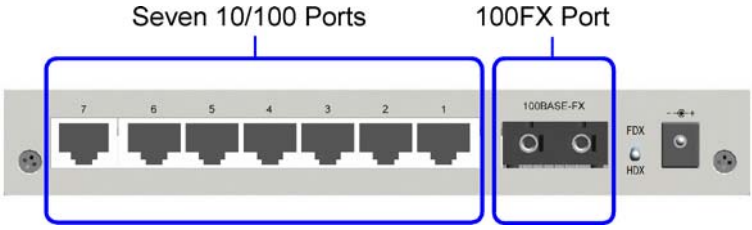
2. Connect the power adapter cable to the switch before connecting the adapter to the AC outlet.



3. Making Network Connections

3.1 Switched Ports

The following figure shows the locations of the switched ports:



3.2 Making UTP Connections

10/100 TP Port Configuration

All 10/100 TP ports support configuration as follows:

Auto-negotiation capable
Highest capability : 100M Full duplex
Speed : auto-sensing for 100Mbps or 10Mbps
Duplex : Full duplex, Half duplex
Auto MDI-X function

The following table lists the configuration used for the 10/100 port when it connects to different devices:

Connected Device	**Configuration Used**
10BASE-T hub port	10Mbps, half-duplex
100BASE-TX hub port	100Mbps, half-duplex
Auto-negotiation port	Determined via auto-negotiation process
Non-auto*1 half-duplex port	auto-speed-sensing *2, half-duplex
Non-auto full-duplex port	Not supported

*1 Non-auto : non-auto-negotiation
*2 speed is determined by auto-sensing function

Cables

Depending on the connection speed, use the proper UTP cables:

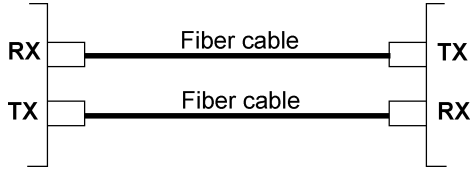
Speed	Cables used	Distance
100M	Cat. 5, 5e, or higher grade	100 meters
10M	Cat. 3, 4, 5, 5e, or higher grade	100 meters

Auto-MDI-X Function

An Auto-MDI-X function will automatically detect if a crossover is required and make the swap of Tx pair and Rx pair internally. With this function, straight-through cable can be used for any connection. MDI to MDI-X connection rule is not necessary anymore. In the switches, all TP ports are equipped with this function. You can use just straight-through type of cables for all your connections.

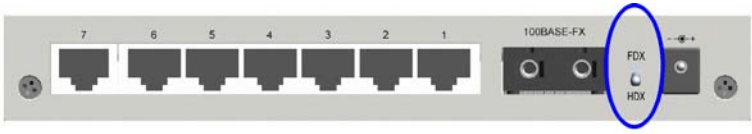
3.3 Making Fiber Connection

For different fiber connections, several alternative models can be selected for different fiber connections. Refer to Section 1.2 for the model selection. The following figure illustrates a connection example between two SC fiber ports:



100FX Duplex Selector

This selector is used for 100FX port duplex mode selection as follows:



100FX Duplex Selector

Setting Position	Duplex Mode
FDX	Full duplex
HDX	Half duplex

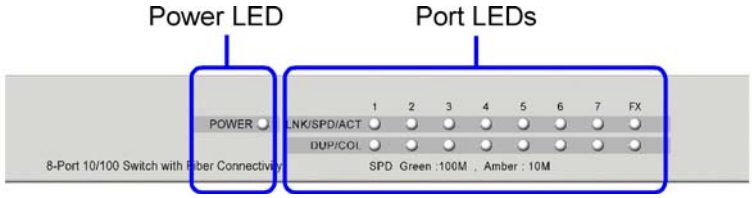
The following table lists the maximum **MM** fiber cable length connecting to different devices:

Connected Device	Distance (MMF cable)
Network card half-duplex fiber port	400 m
Network card full-duplex fiber port	2 km
Class I hub half-duplex fiber port	160 m
2 Class II hub half-duplex fiber port	112 m
Switched half-duplex fiber port	400 m
Switched full-duplex fiber port	2 km

4. LED Indicators

4.1 LED Panel

The switch provides comprehensive LED indicators for diagnosing and monitoring the operation of the switch as illustrated below:



4.2 Interpretation

LED Functions

POWER LED : indicates the power status of the switch.
LNK/SPD/ACT LED : indicates the link status, connection speed status, and traffic status of the switched port
DUP/COL LED : indicates the duplex status and collision status of the switched port

LED States and Indications

LED	State & Color		Indication
POWER	Off	--------	No power is supplied to the switch.
POWER	On	Green	Power is being supplied to the switch.
LNK/SPD/ACT	On	Green	Speed 100M, link up
LNK/SPD/ACT	On	Amber	Speed 10M, link up
LNK/SPD/ACT	Blink	Green	Speed 100M, link up, Tx/Rx activities
LNK/SPD/ACT	Blink	Amber	Speed 10M, link up, Tx/Rx activities
LNK/SPD/ACT	Off	--------	Link down
DUP/COL	On	Green	Full duplex mode
DUP/COL	Off	--------	Half duplex mode, no collision
DUP/COL	Blink	Green	Half duplex mode, collisions