DESKTOP SWITCH

FSD-1020

Smart Desktop 10/100 Ethernet Switch

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FCC Warning

The device has been tested and found to comply with limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the user's manual, may cause interference in witch case user will be required to correct the interference at his own expense.

CE Mark Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Reversion

User's manual for PLANET Desktop Switch
Models: FSD-1020
Rev: 1.0 (Feb. 1998)

Part No. EMHFSD1020

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Introduction

About FSD-1020 in General

The Desktop Switch FSD-1020 is a compact switch designed to meet the requirement for today's growing network. It introduces the management function with very low cost whilst maintaining high performance in networking. A build-in Mini-Console brings the non-management switch to a new era. With the help of Mini-Console, it can monitor the Utilization, Collision ratio, Statistic Counters, Port Status and configure a lot of settings which the traditional dump device can not achieve. It also provides some network protection such as Loop Isolation as well as Broadcast Storm Protection, making a more robust network.

Figure 1.1 Desktop Switch FSD-1020.

It provides 8 10BASE-T ports each configured as MDI, two 100BASE-TX ports each configured as MDI-X ports plus one MAC address expansion slot.

The Desktop Switch FSD-1020 is a plug and play Network Switching device. No settings need to be made to get the network up and running.

Key Features

Designed for high-performance, versatility, and cost-effectiveness, the Desktop Switch FSD-1020 provides the following key features:

8 ports of 10BASE-T, 2 ports of 100BASE-TX, an expansion slot for Memory enhancement and 1 MII port.

Auto-negotiation for 10/100Mbps.

Supporting full/half duplex auto-detection.

Smart Mini-Console operation for easy configuration and monitoring status.

Elegant Vacuum Fluorescent Display (VFD) providing network status information at a glance.

Exquisite VFD front panel display providing easy-watch diagnostic functions including port setting, status monitoring, traffic utilization, collision ratio, error rate, and so forth.

Three modes of smart buffer allocation to optimize your network for client-server, peer-to-peer, or standard network topology. You can assign a larger buffer to the heavily used ports connected to a server and a smaller buffer to less important terminals.

Affordable smart switch to replace dumb switch.

Mini-Console Highlights

Smart Mini Console operation.

Network loop detection and automatic isolation.

Broadcast traffic suppression to eliminate broadcast storm.

Applying smart buffer allocation algorithms to prevent packet loss.

Self-diagnostic and watch dog protection.

Unit Overview

The Desktop Switch FSD-1020 was designed to work in almost any network environment with several different types of ports.

Front Panel Layout

The Mini-Console, Console Keys, 2 10/100Base-TX Ports and 8 10Base-T Ports are situated on the front panel as shown in Fig. 1.2.

Figure 1.2. Desktop Switch FSD-1020 Front Panel.

Port Connections

Desktop Switch FSD-1020 boasts of three types of ports, for a total of eleven in all. Ports 1 and 2 are 10/100Base-TX ports ; ports 3 through 10 are 10Base-T ports with RJ-45 connectors and eleventh is the MII port. Ports 1~10 are located on the front panel while the MII port is located on the rear panel.
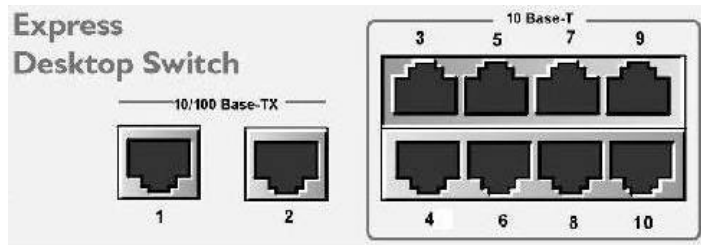
Figure 1.3 Desktop Switch FSD-1020 Ports.

The Mini-Console

The Mini-Console is a major new technological breakthrough first used in Desktop Switch FSD-1020, which provides extensive management capability for the user.
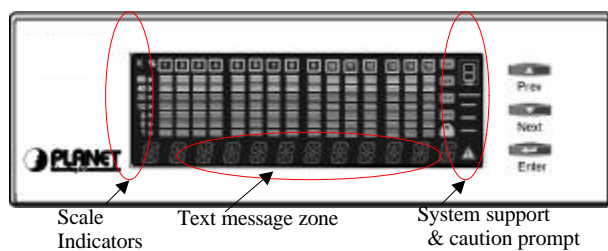
Figure 1.4 The Mini-Console.

With the built-in Console Keys, users are able to **monitor and configure** all the ports simultaneously or individually.

By simply pressing the three console keys, the system navigates up or down the menu tree to perform function such as, watching the traffic **Utilization, Collision Ratio, Statistic Counters, Port Status** as well as configuring the ports and optimizing system performance.
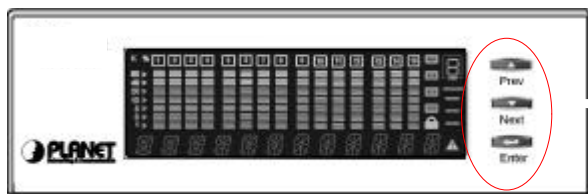
Figure 1.5 Pressing Console Key.

Although there are only three keys, it is easy to step through all the functions in the menu tree. The menu tree is constructed of one main level and two branches.

The Previous/Next keys are used to cycle through item by item within the same level.
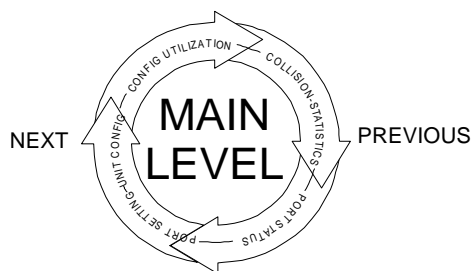
Figure 1.6 Next/Previous Cycle.

While a menu item is displayed, press the **Enter Key** to make the selection, or go to the next level. As you go down the levels, the **BACK** item can be selected to go up one level while the MAIN MENU item will go directly to the highest level.

In case you get lost somewhere in the tree, do not touch any key for 15 minutes and the console will jump back to **Utilization** in the Main Menu. You can start over from the beginning.

In the **PORT SETTING** and **UNIT CONFIG**, every selection can only be made by pressing and holding the **ENTER Key,** for about 0.5 seconds until a flashing star shown.

This is to prevent the user from accidentally configuring wrong settings.

Notice that settings that are preceded with an "*" are the current default settings. After making new settings, the "*" will change to the setting just made and will become the new current default.
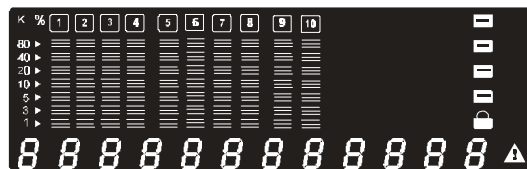
Figure 1.7 The Mini Console.

Port Indicators: Showing the activity of ports such as link up, link down, TX/RX, enabled or disabled.

They also show if a port is disabled by illuminating the frame

around the number in a bright amber color.

Figure 1.8 Port Indicators.

Scale Indicator: To indicate the level of Gauge bars.
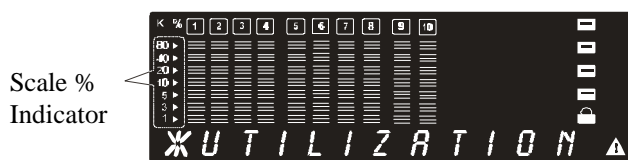
Scale %
Indicator

Figure 1.9 Scale Ratio Indicator.

Gauge Bars: To indicate the level of Utilization or Collision.

Figure 1.10 The Gauge Bars.

Message Zone: To display messages to the user and display menu options.
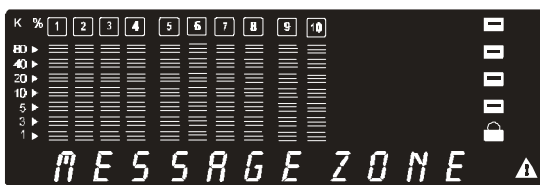
Figure 1.11 Message Zone.

Lock Indicator: Indicator the system settings are locked.

Caution Indicator: Indicate that the device is something wrong.

Figure 1 12 Lock/Caution Symbols.

Console Keys

The Console keys located to the right of Display area are used to navigate through the menus, make selections for monitoring and configuring the system.
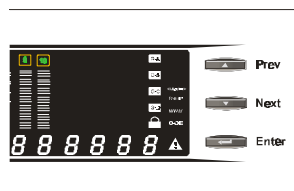
Figure 1.13 Console Keys.

Previous Key

The Previous Key is used to move backward or up through the menu tree similar to a keyboard's up arrow.

Next Key

The **Next** Key is used to move forward or down through the menu tree similar to a keyboard's down arrow.

Enter Key

The **Enter** Key is used to make selections similar to a keyboard's Enter key.

Rear Panel Layout

An MII port and a MAC Address Expansion Slot are located on the rear

Figure 1.14 Rear Panel

panel.

MAC address Expansion Slot

Desktop Switch FSD-1020 includes memory for learning and automatically updating the addresses of nodes or computers. The default can memorize 32 filtering addresses. This can be raised to 26K by installing FSD-MAC module in the expansion slot at the rear of the unit.
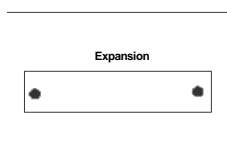
Figure 1.15 Memory Expansion Slot.

MII Port

To further enhance Desktop Switch FSD-1020 compatibility, an MII Port (Medium Independent Interface) is located on the rear panel. The MII port is shared with port #1, when either is in use the other is disabled. The MII port does not support Auto-Negotiation therefore the speed and duplex settings must be made manually, through the Mini-Console.
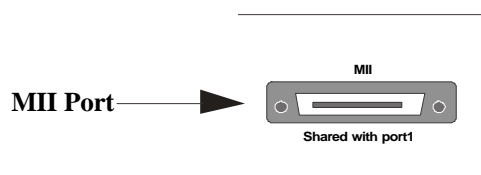
Figure 1.16 MII Port.

> *Note: MII Tranceivers are not hot-pluggable i.e do not connect/disconnect when the device power is ON*

C H A P T E R 2

Installation

This Chapter illustrates installation in different network environments.

Placment

The Desktop Switch FSD-1020 can easily be placed on the desktop using the four robber feet.

Figure 2.1 Desktop placement

Installing Module FSD-MAC

Mac Address Expansion Module can be inserted in the expansion slot
provided at the rear of the unit. Remove the screw holding the module cover
and remove the cover plate. Slide in the Module FSD-MAC and push to seat
it firmly. Replace the cover and the screw. For more about installation,
please also refer to the installation quide of the FSD-MAC
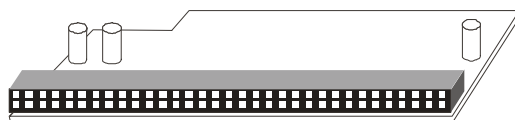
Figure 2.2 Module FSD-MAC.

Connecting Other Network Devices

Connecting Workstations

Figure 2.3 shows the Desktop Switch FSD-1020 using as a desktop switch as
a client server mode. The server is connected to a 100Mbps port.
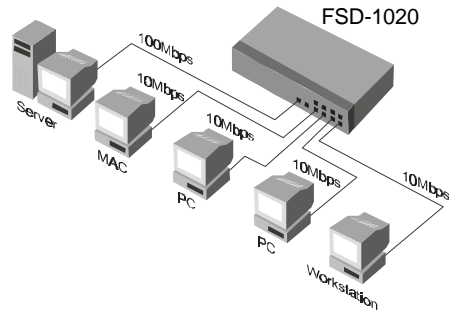
Figure 2.3 Connecting Workstations.

Connecting Ethernet Hubs

This example shows how the hubs can be connected to the Desktop Switch
FSD-1020 to form a larger network.
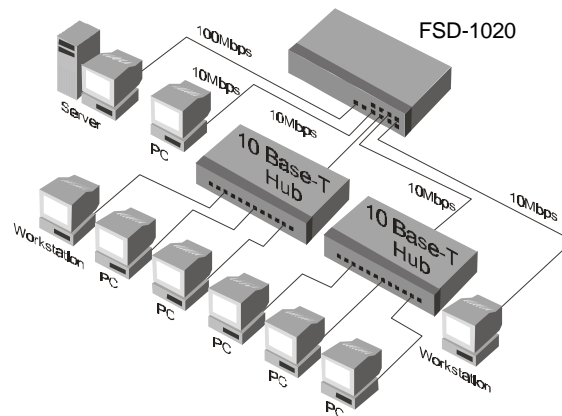
Figure 2.4 Connecting Ethernet Hubs.

Connecting Fast Ethernet Hubs

This example shows the 100Mbps hub can be used as a server farm and connect to the 100Mbps port of Desktop Switch FSD-1020.
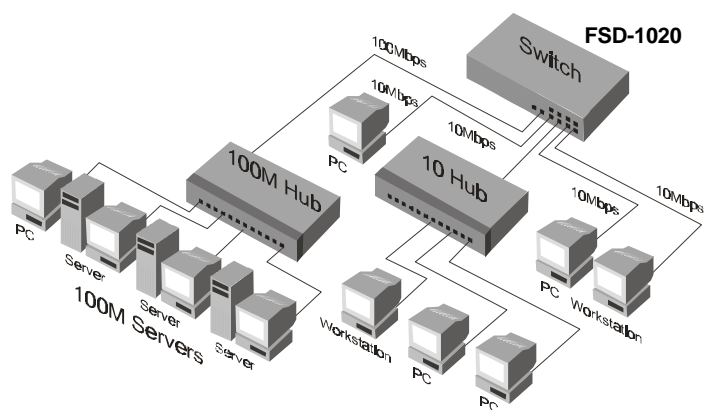
Figure 2.5 Connecting Fast Ethernet Hubs.

C H A P T E R   3

Operation

This Chapter describes using and understanding the Mini-Console.

The Mini-Console

The Mini-Console will appear similar to the following illustration. Becoming familiar with and understanding the functions of the Mini-Console will easily enable the user to utilize the full power of the Desktop Switch FSD-1020 and create an efficient network.
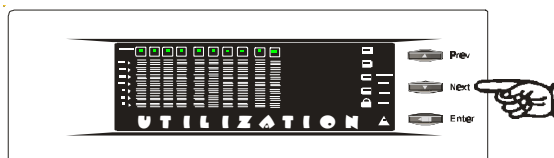
Figure 3.1 The Mini-Console

Message Zone

The Message Zone displays the menu items in the menu tree. The large Alpha Numeric Characters are easy to read and are an important navigational tool.

Figure 3.2 Message Zone

Observing Basic Port Information

The basic port information, such as link up, link down, transmit/receive activity, enabled/disabled as well as auto partition can be easily spotted through the **Port Indicators** located in the first row of the Mini-Console.

Figure 3.3 Port Indicators.

Port Indicators: Showing the activity of ports such as link up, link down, TX/RX, enabled or disabled.

The **Port Indicator** shows the ports that are linked up by intensifying the light for the ports that are available. The example above, Fig 3.3 shows ports 1~4, are linked up (or available).

While the ports are receiving or transmitting data, the port's number will be flashing.

When ports are disabled by the administrator, an amber frame around the port number will be turned on.

If the outline is blinking, it means it has been partitioned automatically due to some error condition such as a loop or

broadcast storm that has been detected.

Port Indicator Definitions

The following table summarizes the definition of the port indicators.

Port Number	Frame	Indicates
Slightly on	**Off**	**Port is available but link is down.**
On	**Off**	**Port is available and link is up.**
Flashing	**Off**	**Link is up and transmitting/receiving data.**
On	**On**	**The port is disabled by the administrator.**
On	**Blinking**	**The port is partitioned by machine itself due to errors.**

Table 3.1 Port Indicators.

Console Keys

Use the **Console Keys** to cycle through the Menu Tree and to make selections. The **Previous Key** and the **Next Key** are used to cycle through the menu.

The **Enter Key** is used to select the displayed menu item. See Figure 3.4.
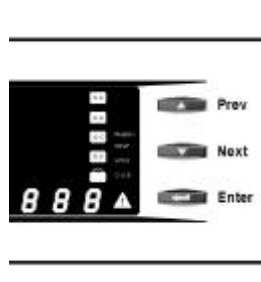
Figure 3.4 Console Keys.

When the systems power is turned on the system runs a **Self-Test**. The type of test is displayed in the Message Zone.

Tests such as, FIFO TEST, DRAM TEST and SRAM TEST are done. Results of some tests will also display. When the **Self-Test** is complete, the Mode Indicator will display the current mode (UTILIZATION).

Figure 3.5 Self-Test.

Menu Tree

There are up to three levels of menus in the **Menu Tree**. Press the **Next or Previous** Keys to cycle through all the items in each Menu level and press **Enter** to make a selection.

Main Menu	Sub-Menu	Sub Item Menu
UTILIZATION		
COLLISION		
STATISTICS®	**® PORT SEL®**	**® RX FRAMES** **® RX OCTETS** **® MULTICAST-RX** **® BROADCAST-RX** **® RX-ALIGN ERR** **® RX-CRC ERR** **® RX-JABBERS** **® RX-FRAGMENTS** **® OVERSIZE RX** **® UNDERSIZE-RX** **® TX FRAMES** **® TX OCTETS** **® MULTICAST-TX** **® BROADCAST-TX** **® PKT LOSS** **® RX OVERRUN** **® BACK** **® MAIN MENU**
	® CLEAR CNTR	
	® MAIN MENU	

PORT STATUS®	® PORT SEL®	® SHOW STATUS
	® ALL PORTS®	® 10M PORTS ® 100M PORTS ® HALF DUPLEX ® FULL DUPLEX ® ENABLED ® DISABLED ® CUT-THROUGH ® STORE-FWD ® BACK ® MAIN MENU
	® MAIN MENU	

PORT SETTING®	® PORT SEL®	® 10BASE-T
		® *100BASE-X
		® AUTO-NEGO
		® FULL DUPLEX
		® HALF DUPLEX
		® CUT THROUGH
		® STORE FWD
		® ENABLE
		® DISABLE
		® BACK
		® MAIN MENU
	® MAIN MENU	
UNIT CONFIG	® STORM DET®	® ENABLE
		® DISABLE
		® BACK
	® LOOP ISOLATE®	® ENABLE
		® DISABLE
		® BACK
	® FLOW CONTROL®	® ENABLE
		® DISABLE
		® BACK

	® LONG FRAME®	**® ENABLE** **® DISABLE** **® BACK**
	® CONSOLE LOCK®	**® ENABLE** **® DISABLE** **® BACK**
	® SET PASSWORD	
	® SUPER PSW®	**® ENABLE** **® DISABLE** **® BACK**
	® SYS RESTART	
	® SYS DEFAULT	
	® SYSTEM INFO®	**→DRAM 4M** **® TSW VER0** **→HW VER0** **→SW VER 2.01**
	® BUFFER MODE®	**® STANDARD** **® CLIENT SRVR** **® PEER_PEER** **® BACK**
	® MAIN MENU	

Table 3.2 The Menu Tree.

Exiting the Menu Tree

To Exit a Sub-Menu cycle through each item until a "MAIN MENU" or "BACK" is displayed in the Message Zone, press Enter to make the selection to return previous menu level.

Observing Network Traffic

The network manager may want to see the traffic load for every segment and try to balance the load. It is easy to do so with Desktop Switch FSD-1020 by selecting the UTILIZATION item. While the item is selected, the level of Utilization for the enabled ports goes up and down as the traffic load varies.

The system stays at UTILIZATION most of the time. For example, the system will return to UTILIZATION from other menus if the keys are not touched for a period 15 minutes.

The reference for the level of utilization is based on the speed of the port that is running. For example, a port that is running in 10M half duplex, the 100% stands for the bandwidth of 10M. Following table show the relation for each speed:

SPEED	100% Stands for:
10M half duplex	10M
10M full duplex	20M
100M half duplex	100M
100M full duplex	200M

Table 3.3 Duplex Speed.

Observing Collision Level

When Collision is the menu item in the Message Zone, the Port Number will be illuminated for each port that is connected and the Bar Gauge will continuously move up or down indicating the percentage of Collision for these ports. Collision occurs when two or more ports send data to the same port at approximately the same time. The Collision percent can be calculated with the following formula.

Collision Ratio = (number of packets collided / number of packets transmitted) * 100.

Note: When Collision is displayed in the Message Zone, it will not jump back to Utilization even when the keys are not entered longer than 15 minutes.

Monitoring Port Status

The ports 1~10 can be running in Full Duplex or Half Duplex. Furthermore, Ports 1 ~ 2 can be running at different speeds, say 10M or 100Mbps. It is useful to check the port setting to see if it has been running in the right mode.
It is even more helpful when the port is running in Auto Negotiation Mode, which is auto sensing for the connection speed. If Auto Negotiation Mode is not selected, the first thing to do is to make sure both the connected port and the remote device are running in the same mode.

You can watch the status of all port at same time if ALL PORTS, a sub menu of PORT STATUS, is selected. When ALL PORTS is selected, you can see the

entire ports status at once. In addition, when ALL PORTS is selected, the display will show the ports that are running in Half Duplex by lighting the bar just below the port number. By clicking PREVIOUS/NEXT key, you can walk through all items.

The items that can be checked are Enabled Ports, Disabled Ports, Ports running in Cut-Through Mode as well as Ports running in Store-and-Forward Mode.
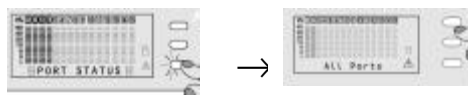
Figure 3.6 Port Status/All Ports.

When you want to see individual port's status, select a port and press the ENTER key. While the port is selected, the port status will be shown in the Mini-Console.
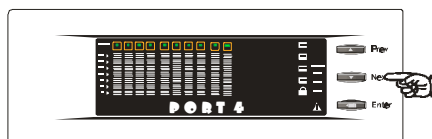
Figure 3.7 Port Select.

Since the status string may be longer than the display area, only part of the information will be shown and stays for few seconds before cycling to the next one. It will cycle around until PREVIOUS/NEXT is entered. When a PREVIOUS or NEXT key is entered, it will go back to PORT SEL item. If you want to go back to main menu, press the NEXT key until MAIN MENU is shown and then press the ENTER key.

PORT STATUS®	**® PORT SEL®**	**Cycles through** ⁻

	® ALL PORTS®	® 10M PORTS
		® 100M PORTS
		® HALF DUPLEX
		® FULL DUPLEX
		® ENABLED
		® DISABLED
		® CUT THROUGH
		® STORE-FWD
		® BACK
		® MAIN MENU
	® MAIN MENU	

Table 3.4 Port Status Menu Tree.

Monitoring Port Detail Information

The menu STATISTICS shows the statistic counters of all ports. It may be helpful to look at the counters to isolate network problems. All the counters display the accumulated value from Power On.

The counters can be cleared with the CLEAR CNTR command from the

Statistics sub menu.

Note: This command will clear all the counters in *all ports* rather than a specific port.
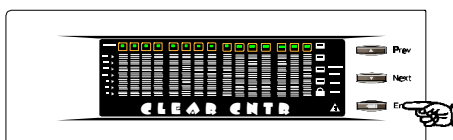
Figure 3.8 Clear Counters.

The table below lists the actions that will be performed when a sub-item of the menu tree in the Statistics is selected.

MENU ITEM	MEANING	ACTIONS
STATISTICS	**To display statistics counters**	**Go to the submenu**
PORT SEL	**To assign a port which counters are going to be displayed.**	**A specific port has been selected press NEXT to select a counter to be displayed.**
CLEAR CNTR	**Clear all statistic counters of all ports.**	**A flash of the display shows that action is done.**
RX FRAMES	**Displaying the total**	**The value of the**

	number of good packets received including Unicast, Broadcast and Multicast packets.	counter will be displayed periodically until a PREVIOUS /NEXT key is entered.
RX OCTETS	**To display the count of data and padding octets in frames that were successfully received.**	**Same as RX FRAME**
MULTICAST-RX	**To display the number of packets received that were directed to the Multicast Address.**	**Same as RX FRAME**
BROADCAST-RX	**To display the number of good packets that were directed to the broadcast address. This does not include Multicast packets.**	**Same as RX FRAME**
RX-ALIGN ERR	**To display the number of alignment errors in 10-Mbits/sec ports.**	**Same as RX FRAME**
RX-CRC ERR	**To display the number of CRC Errors.**	**Same as RX FRAME**
RX-JABBERS	**To display the number of Jabbers Errors.**	**Same as RX FRAME**
RX-FRAGMENTS	**To display the number of Fragment Errors.**	**Same as RX FRAME**

OVERSIZE RX	**To display the number of packets received that were longer than 1518 octets and were otherwise well formed. If the LONG FRAME mode is selected, only those packets longer than 1536 octets will be counted.**	**Same as RX FRAME**
UNDERSIZE RX	**To display the number of packets received that were less than 64 octets long and were otherwise well formed.**	**Same as RX FRAME**
TX FRAMES	**To display the number of packets transmitted successfully.**	**Same as RX FRAME**
TX OCTETS	**To display the count of data and padding octets of frames that were successfully transmitted for the selected port.**	**Same as RX FRAME**
MULTICAST-TX	**To display the total number of packets transmitted that were directed to a multicast address.**	**Same as RX FRAME**
BROADCAST-TX	**To display the total number of packets transmitted that were**	**Same as RX FRAME**

	directed to the broadcast address.	
PKT LOSS	**To display the number of packets sent to this port that were dropped due to transmit buffer full.**	**Same as RX FRAME**
RX OVERRUN	**To display the number of frames lost due to a lack of resources during frame reception.**	**Same as RX FRAME**
BACK	**Go back to upper level.**	**Go back to port selection.**
MAIN MENU	**Go back to main menu.**	**Go back to STATISTICS.**

Table 3.5 Port Statistics.

Optimizing Network Performance

When the network traffic is heavy, it can be identified by watching the Utilization or Collision Ratio. It may be the time to tune the system to match the environment.

Since the system resources are shared by all ports, the system allocates a limited budget to every port to prevent one failed port from using up all the resources. However, since the loading varies from port to port, the resources allocated for each port should be changed based on the traffic via the Mini Console to get the best network performance.

Three resource modes are available, **Standard, Client Server** and **Peer to Peer**. While one mode is selected, the display will show the relative levels, confirm the selection by pressing the ENTER key.

Please note that the resource allocation will not change immediately when a new mode is selected. It changes only after the next Power Up or System Restart. See Restart the Switch.

The following table shows the resource distribution between modes.

MODE	Using Condition
Standard	**The load for every 10Mbps port is evenly distributed.**
Client Server	**It is suitable for the network running in client server mode. The server is better to be connected in port 1~4. The budget for port 1~2 is smaller than port 3~4 whereas it is larger than port 5~10. Meanwhile, the budget for port 3~4 is greater than port 5~10's budget. If hubs are connected, it is preferred to connect them to ports 1~4.**
Peer to Peer	**Resource for port 3~6 are larger than ports 7~10.**

Table 3.6 Resource Mode.

<u>*Selecting a Buffer Mode*</u>

Standard Mode shown in Fig. 3.9 illustrates memory allocation distributed evenly across all ports.

Figure 3.9 Standard Mode.

Changing the system setting to Standard Mode from the Main Menu:

   UNIT CONFIG>BUFFER MODE><STANDARD>Press and Hold Enter

Client Server Mode shown in Fig. 3.10 illustrates memory allocation favoring ports 1~3.

Figure 3.10 Client Server Mode.

Changing the system setting to Client Server Mode from the Main:

   UNIT CONFIG>BUFFER MODE><CLIENT SRVR>Press and Hold
   Enter

Peer to Peer Mode shown in Fig. 3.11 illustrates memory allocation favoring ports 1~6.

Figure 3.11 Peer to PeerMode.

Changing the system setting to PEER to PEER Mode from the Main:

UNIT CONFIG>BUFFER MODE><PEER_PEER >Press and Hold Enter

Configuring Ports

This device will encounter problems unless it is configured correctly, to match the setting of remote sites. Fortunately, all the ports of Desktop Switch FSD-1020 support Auto-Negotiation and all ports are configured in this mode. In the Auto-Negotiation mode, it learns the setting of the opposite site and configures itself to meet its counter part. For the 10M ports, the Auto-Negotiation capability enables the auto-setting of the Duplex-mode(whether Half or Full) depending on the remote device.

However, in rare conditions you should configure manually, such as when the opposite site does not support Auto-Negotiate.

To configure a port, first select the port and then select the desired setting. The speed setting is available only for ports 1~2. Ports 3~10 only support 10Mbps.

PORT SETTING>PORT SEL><*setting*>

When a setting is selected, an asterisk symbol ('*') will be added to the first character of the string. Making it convenient to check what the settings for these ports are, by just going through the sub menu of PORT SETTING, without making any confirmation. When you see the item that begin with an '*', the port is set in that mode.

While the AUTO-NEGO is set, the speed and duplex selection are no longer

available. <u>**The speed and duplex will be decided by the result of the negotiation.**</u> By contrast, if either the speed or duplex is selected, the AUTO-NEGO function will not work. It forces the port to run in the mode just set.

All settings will be saved in the EEPROM.

Setting the port speed forces the port to use the selected speed only, if the device it is contacting is set at a different speed, the data will not be sent. By default, Auto-Negotiation is set, and the port will negotiate to the fastest speed available to both ports.

If the port being contacted doesn't have Auto Negotiate, then this port must be configured to the same as the other port.

PORT SETTING ®	**® PORT SEL®**	**® 10BASE-T**
		® 100BASE-T
		® AUTO-NEGO
		® FULL DUPLEX
		® HALF DUPLEX
		® CUT THROUGH
		® STORE FWD
		® ENABLE

		® **DISABLE**
		® **BACK**
		® **MAIN MENU**
	® **MAIN MENU**	

Table 3.7 Port Settings.

Unit Configuration

Broadcast Storm Protection

Some devices in the network may generate broadcast storms, thereby jamming the network with broadcast packets. It may take about 10 seconds to detect a broadcast storm.

When the Broadcast Storm Protection is Enabled, the system will monitor the incoming packets to see if that port is enduring a broadcast storm. While Broadcast Storm is detected, the port will be disabled temporarily and the frame around the port number will blink. The message zone will show the message "BRDCST STORM" altering normal display. Every 15 minutes, the port will be released to see if it is still enduring the broadcast storm.

The Broadcast Storm Protection function is disabled when shipped from manufacturer. This function can be enabled through the Mini-Console. The command sequence is:

> UNIT CONFIG > STORM DET > ENABLE><Enter and hold>

After the command is entered, it will be saved in the EEPROM.

Loop Isolation

Loop Isolation is an important feature of the Desktop Switch FSD-1020, supported **only if** the memory expansion module FSD-MAC is installed. This condition could exist if two ports are inadvertently connected to each other causing a loop.
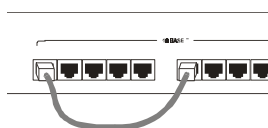
Figure 3.12 Loop Condition.

The switching device can not sustain a loop because it produces Broadcast Storm thereby jamming the system with looping packets. Desktop Switch FSD-1020 supports isolating the looped ports. If the function is enabled, the device will monitor all ports to see if there are any loops.

Once a loop is detected, it will disable any one of the two ports. The port number outline-frame will blink indicating it has been temporarily isolated. Every 10 minutes, the port will be released to see if it is still looping.

The function of LOOP ISOLATE is disabled at the time it shipped from manufacturer. You have to enable the function through Mini-Console. The command sequence is:

UNIT CONFIG > LOOP ISOLATE > ENABLE><Enter and hold>

After the command is entered, it will be saved in the EEPROM.

Sub-Menu	Command	To Set Press:
Loop Isolation	Enable	Enter and hold

	Disable	Enter and hold
	Back	Enter

Table 3.8 Loop Isolation.

Flow Control

Flow Control is another important feature supported by Desktop Switch FSD-1020. This feature provides a back-pressure method of preventing any packet loss, controlling the buffer-memory usage on every port effectively. It is disabled at the time of shipment from the manufacturer. You have to enable the function through the Mini-Console. The command sequence is:

UNIT CONFIG > FLOW CONTROL > ENABLE><Enter and hold>

Long Frame

The system can check the length of each packet sent. Packets larger than the range 1024~1518 bytes are long frames. When set to Enabled, Long Frames will be counted. When set to Disabled, Long Frames will be not be counted.

Lock the Console

Setting this option to **Enable** locks the system settings. If there is no password set, a prompt will request one be entered.

UNIT CONFIG > CONSOLE LOCK> ENABLE><Enter and hold>

If User Password has been set and the Lock Function "Enabled", the unit does not allow any settings to be changed, such as port setting and unit configuration, unless the correct password is keyed in and the

Mini-Console is unlocked by setting the Lock Function to "Disable".

Unlock the Console

Once the console is locked, a password will be asked when the menu item UNIT CONFIG is selected.

In the password session, a message "* * * *_ _ _ _ PSW" will be shown. You have to key in the correct password to enter the submenu. The regular Password assigned by you and the Super Password are all accepted. The first four asterisks are used for normal password while the others are used for Super Password. The regular password is assigned by the user and the Super Password is "**0 2 1 6 1 9 9 7**". The Super Password is used in case you forget your password.

After the password session is passed, you can go to the sub menu of UNIT CONFIG. Then enter following command to unlock the Mini-Console:

> UNIT CONFIG > CONSOLE LOCK > DISABLE><Enter and hold>

After the command is complete, the lock sign should be OFF and you are free to configure any settings.

Secure the Switch

Two passwords are provided to protect the device from being accessed anyone other than administrator. Further information regarding Password and Super Password, please refer to Unlock the Console section.

Set Password

Enter a 4 digit password using the numbers from 0~9.

The <Prev> key can be pressed to select the password number. The <Next> key is used to move from one digit of password to the next one. When the password digits have been keyed in, press <Enter> to complete the password

setting.

Cancel Password

Enter the command UNIT CONFIG > SET PASSWORD. Entering four blanks will clear the password. Please refer to section Lock the Console to enter a password.

In Case You Forget the Password

In case the password is forgotten and the super password (see Super PSW.) is disabled, the following steps must be taken to reset the date including password.

1. Power down (turn OFF the power).

2. Open the upper case.

3. Put a jumper on (indicated "Factory Reset" beside the jumper).

4. Power up (turn ON the power).

5. After the Power On Self-Test messages complete, you will see the message "DATA CLEAR" and then "POWER DOWN".

6. Power down.

7. Remove the Factory Reset jumper.

8. Power up again, the system data should be reset to the factory settings.

Super PSW

The Super Password is useful in case you are locked out of the system (your password is forgotten).

When Enabled the Super Password can be used to access the systems configuration. **(The super password is set as "*02161997*".)**

Disabling Super Password

Since the Super Password can be read from the menu, it can be disabled by the following command:

> UNIT CONFIG > SUPER PSW > DISABLE><Enter and hold>

Once the super password is disabled, only the regular password is accepted.

Please note that if you forget the password no other way except opening the case can be used to clear the password. See In Case You Forget the Password section.

Restart the Switch

In case you want to reset the Desktop Switch FSD-1020 Switch, simply enter the command:

> UNIT CONFIG > SYS RESTART ><Enter and hold>

The command will reset the switch and the data in EEPROM will not be reset to default value.

Restart the Switch in the event that it does not behave normally.

Restore System Setting

In case you want to set the system setting to the default value, simply enter the command:

UNIT CONFIG > SYS DEFAULT >   <Enter and hold>

The command will reset the switch and the data in EEPROM will be set to the
default values.

About The Switch

System Info

The Mini-Console will **auto cycle** through systems settings. Press any key to
disable.

When you enter the following command:

UNIT CONFIG > SYS INFO ><Press Enter>

It will display:

> Size of DRAM (packet buffer).
>
> TSW version (chipset version).
>
> HW version.
>
> SW version.

APPENDIX A

Product Specification

Standards Compliance

IEEE 802.3 10Base-T &
10Base5 Ethernet
IEEE 802.3u 100Base-TX
Fast Ethernet

Number of Ports

8 ports of 10Base-T (RJ-45)
2 ports of 10/100Base-TX
   (RJ-45)
1 MII port

Smart Console Operation

Capable of device
configuration, device / port
management, and network
monitor
Console management
through menu operation
Displaying traffic utilization
and collision status per port
Monitoring each port's
status and statistics by
users' intention
Setting up selected ports
Three console keys for
above management features

Graphic and alpha numeric
VFD display panel

Smart Port Setting

Port enable/disable
10Mbps, 100Mbps, or
auto-negotiation
Full/half duplex
Store forward /cut through
mode selection

Smart Network Monitoring

Overall port status display
Monitoring utilization,
collision, frame error, etc.

Smart Switching Functions

Network loop detection and
automatic isolation (with
FSD-MAC)
Broadcast traffic
suppression to eliminate
broadcast storms
Applying smart buffer
allocation algorithm to
prevent packet loss
Self-diagnostic and
watch-dog protection

Switching Performance

RAM buffer: 4MB
Port memory:
buffer-selection algorithm for
each port
Filtering address table: up to
26K (default **32** filtering
addresses.
Packet filtering/forwarding
rate:
100Base-TX: 148,800 pps
per port
10Base-T: 14880 pps per
port
MAC address learning:
automatically updated and
aged

10/100Mbps Selection

10/100Mbps Speed
Selection
Auto-negotiation

Rx Reverse Polarity

Auto-correction

Expansion Module Slot

1 expansion slot for MAC
address expansion module
to enhance the MAC addr.

learning capacity to 26K
addresses

Power Requirements

90 - 240 VAC, 50/60 Hz
Internal universal power
supply

Environment

Operating Temperature: 0 to
50 degree C
Storage Temperature: -30 to
60 degree C
Operating Humidity: 5% to
95% non-condensing

Safety Regulations

CUL (UL & CSA), LVD

EMI Certifications

CE Mark, FCC Class A,
VCCI Class 1

Dimensions

W x D x H: 298 x 192 x 55
mm (1.25 U height)

Weight

1.5 kg

Mounting

Mounting accessory for wall
mounting. 90 or 180

A p p e n d i x B

Error Messages

In several case when the system detects abnormal conditions, it will generate error message and the system may halt. Following table shows how many error message may occur and what the system will do.

ERROR MESSAGE	CAUSE	SYSTEM REACTION
DRAM ERROR	DRAM did not pass the test during the power on self test	Halt
SRAM ERROR	SRAM did not pass the test during the power on self test	Halt
FIFO ERROR	The FIFO inside the chipset did not pass the test during the power on self test.	Halt
EEPROM ERROR	The EEPROM did not pass the read/write test.	Halt
FAN FAILED	The device detected that the fan is not working.	Halt, to protect the device
TSW ERROR	The main switching engine did not response	Halt
EALE ERROR	The MAC address learning engine did not response	Halt
EPM NO MEM	EEPROM memory is out of memory	System restart
EPM WR ERROR	Error when the device is writing EEPROM memory	No action until next power up
EPM RD ERROR	Error when the device is reading the EEPROM memory	No action until next power up
CHECKSUM ERR	The checksum in the EEPROM is corrupted.	System restart and the data will be brought to default value

Appendix C

Menu Tree

```
Root ─────────────┐
                  ├── UTILIZATION
                  ├── COLLISION
                  ├── STATISTICS ──┐
                  │                ├── PORT SEL ──┐
                  │                │   (P1:P10)   ├── RX FRAMES
                  │                ├── CLEAR CNTR ├── RX OCTETS
                  │                └── MAIN MENU  ├── MULTICAST-RX
                  │                               ├── BROADCAST-RX
                  │                               ├── RX-ALIGN ERR
                  │                               ├── RX-CRC ERR
                  │                               ├── RX-JABBERS
                  │                               ├── RX-FRAGMENTS
                  │                               ├── OVERSIZE RX
                  │                               ├── UNDERSIZE RX
                  │                               ├── TX FRAMES
                  │                               ├── TX OCTETS
                  │                               ├── MULTICAST-TX
                  │                               ├── BROADCAST-TX
                  │                               ├── PKT LOSS
                  │                               ├── RX OVERRUN
                  │                               ├── BACK
                  │                               └── MAIN MENU
                  │
                  └── PORT STATUS ──┐
                                    ├── PORT SEL(P1:P10) ── SHOW STATUS
                                    ├── ALL PORTS ──┐
                                    └── MAIN MENU   ├── 10M PORTS
                                                    ├── 100M PORTS
                                                    ├── HALF DUPLEX
                                                    ├── FULL DUPLEX
                                                    ├── ENABLED
                                                    ├── DISABLED
                                                    ├── CUT-THROUGH
                                                    ├── STORE-FWD
                                                    ├── BACK
                                                    └── MAIN MENU
```

```
Root
    ├── PORT SETTING
    │       ├── PORT SEL         ├── 10BASE-T
    │       │   (P1:P15)         ├── *100BASE-X
    │       └── MAIN MENU        ├── *AUTO-NEGO
    │                            ├── FULL DUPLEX
    │                            ├── HALF DUPLEX
    │                            ├── CUT THROUGH
    │                            ├── STORE-FWD
    │                            ├── ENABLE
    │                            ├── DISABLE
    │                            ├── BACK
    │                            └── MAIN MENU
    │
    └── UNIT CONFIG
            ├── STORM DET        ├── ENABLE
            │                    ├── DISABLE
            │                    └── BACK
            │
            ├── LOOP ISOLATE     ├── ENABLE
            │                    ├── DISABLE
            │                    └── BACK
            │
            ├── FLOW CONTROLE    ├── ENABLE
            │                    ├── DISABLE
            │                    └── BACK
            │
            ├── LONG FRAME       ├── ENABLE
            │                    ├── DISABLE
            │                    └── BACK
            │
            ├── CONSOLE LOCK     ├── ENABLE
            │                    ├── DISABLE
            │                    └── BACK
            │
            ├── SET PASSWORD
            ├── SUPER PSW        ├── ENABLE
            │                    ├── DISABLE
            │                    └── BACK
            │
            ├── SYS RESTART
            ├── SYS DEFAULT
            ├── SYSTEM INFO
            ├── BUFFER MODE      ├── STANDARD
            │                    ├── CLIENT SRVR
            │                    ├── PEER_PEER
            └── MAIN MENU        └── BACK
```

EMHFSD1020