

**JFW Industries, Inc.**



# **75SA-053 MANUAL**

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# Table of Contents

<u>Section Number/Description</u>	<u>Page</u>
1. Introduction	3
2. Manual Mode	4
3. RS-232 Mode	5
4. Ethernet Mode	6
5. Ethernet Configuration	7
6. Ethernet Configuration Session	8
7. JFW Command Set	10
8. JFW Test Program	14-15
9. FAQ's	16

## Additional Documents Provide with Manual:

1. Mechanical Outline Drawing
2. Specification Sheet

# 1. Introduction

## 1.1 Description

The JFW model 75SA-053 is switch assembly comprised of a 1P80T Self-Terminating solid-state switch. When the unit is powered up, the switch is set to “all off”. The unit is controlled remotely via Ethernet or RS-232. The unit is also manually controlled on the front panel using the keypad and LCD display. In Ethernet mode, up to 4 users can simultaneously connect to the test system.

In addition to this manual a CD is also provided. The CD contains the following:

- 1) Manual
- 2) Specification Sheet
- 3) Outline Drawing
- 4) JFW Test Program

## 1.2 Mechanical Specifications

The 75SA-053 is designed in a 19” rack style enclosure. The outline drawing details all necessary package dimensions and connector layouts. The unit is AC powered via a 3-prong receptacle on the rear panel. A standard power cord is supplied with the unit. The power supply itself is a universal AC power supply that can handle input AC voltages 100-240 VAC (47-63 Hz).

The 75SA-053 is AC current protected by use of a 2 Amp “Slo-Blo” AC fuse. The fuse is field replaceable in the event of any failure to the fuse. The fuse itself is a 5x20 mm “Slo-Blo” type fuse and is stocked by JFW (JFW #025-021, Littelfuse#215-002).

## 1.3 Front Panel Display

If the slide switch on the rear panel is set to Ethernet mode when the unit is powered on, then the LCD will display the text ***Ethernet Mode***. When a valid Ethernet connection to the unit has been made (using the correct IP address and port number), the text ***1 User Connected*** will be displayed. When the connection is closed, the text will be updated to read ***0 Users Connected***.

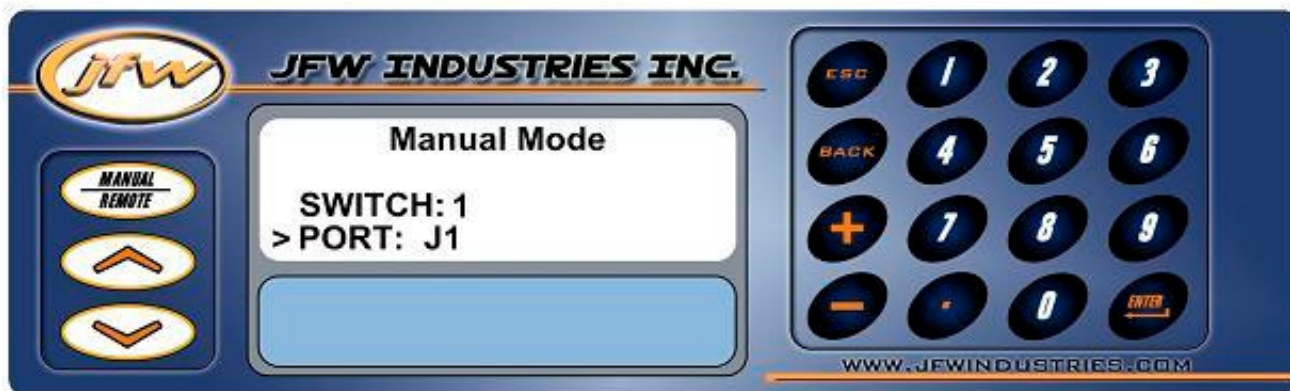
If the slide switch on the rear panel is set to RS-232 mode when the unit is powered on, then the LCD will display the text ***RS-232 Mode***. The current baud rate setting will also be displayed on the LCD. When the unit receives the Change Baud Rate remote command, the new baud will be immediately displayed.

## 2. Manual Mode

### 2.1 Switching Modes

If the unit is connected remotely to a user in Ethernet mode and you switch to manual mode using the *Manual/Remote* button, the unit will close that Ethernet connection before starting manual mode. While in manual mode, no remote Ethernet connections are allowed.

If the unit is in RS-232 mode and you switch to manual mode, the unit will stop executing RS-232 commands that it receives. When you switch back from manual mode to RS-232 mode, all RS-232 commands that were received while in manual mode are deleted from the receive buffer.



### 2.2 Using the Keypad

Manual control is based on the location of the “>” cursor on the left side of the LCD. The cursor indicates which line you are currently on. When the “>” cursor is on the *Port* line, the port value may be changed. This unit only has one switch, so the “>” remains on the *Port* line continuously.

The port setting can be changed by using the number buttons (0-9) or the “+” and “-” buttons. Using the “+” and “-” keys is a convenient way to quickly scroll through the ports.

The JFW logo on the keypad is also a button. If you press the logo button, the current revision level of the firmware will be display. The information will be displayed for 8-9 seconds, then return to the main menu automatically.

## **3. RS-232 Mode**

### **3.1 Overview**

This unit is RS-232 controlled via a standard 9-Pin D connector on the rear of the unit that is labeled “RS-232”. The test system must be in RS-232 mode for the RS-232 port to be active. The remote command format and examples can be found in the *JFW Command Set* section of this manual. The command formats are the same for both RS-232 and Ethernet control. If commands are sent incorrectly to the unit, you will receive error messages.

The baud rate can be set at 9600, 19200, or 38400. The current baud rate is displayed on the front panel by the LCD. To change to a different baud rate, the remote command *Change Baud Rate* must be sent. This remote command is fully described in the *JFW Command Set* section of this manual.

The slide switch on the rear panel allows the user to select between Ethernet and RS-232 modes. Set the slide switch to the desired mode and turn the unit off. When the unit is turned on, it will boot up in the selected mode.

### **3.2 RS-232 Cable**

Included with the system should be one “Null Modem” cable (JFW part #012-174). This cable is used to interface with the RS-232 Port. This cable is DE-9P to DE-9S and is the “Null Modem” type. The female connector will plug into the serial port on most PC’s, and the male connector will connect to the “RS-232 Port” of the 75SA-053.

### **3.3 RS-232 Port Settings**

When sending commands to the 75SA-053, your computer’s RS-232 port settings must be configured as follows. The baud rate must be set at 9600, 19200, or 38400. The parity must be set to “none”. The data length must be set to “8” data bits. The stop bit must be set to “1”. If your RS-232 port is not configured with these settings, the 75SA-053 will not receive and execute the commands sent. It will not send back an error either, because communication was never established.

BAUD RATE	9600 (or 19200, 38400)
PARITY	none
DATA LENGTH	8 bits
STOP BITS	1
FLOW CONTROL	none

## **4. Ethernet Mode**

### **4.1 Overview**

The 75SA-053 is Ethernet controlled via a standard RJ-45 Ethernet connector on the rear of the unit. The Ethernet port is a 10/100Base-T port that follows TCP/IP protocol. The remote command format and examples can be found in the *JFW Command Set* section of this manual. The command formats are the same for either Ethernet or RS-232 control. If commands are sent incorrectly to the unit, you will receive an error message.

The slide switch on the rear panel allows the user to select between Ethernet and RS-232 modes. Set the slide switch to the desired mode and turn the unit off. When the unit is turned on, it will boot up in the selected mode.

### **4.2 Multiple Ethernet Connections**

The firmware for 75SA-053 allows for multiple Ethernet connections. There can be up to 4 users connected to the test system simultaneously. All users will connect to the test system using the same IP address and port number. When you send the identification command (IDN), it will send back an ASCII message that includes the number of current Ethernet connections to the test system.

All commands sent to the test system are stored in a receive buffer. Each command is executed sequentially until there are no more remote commands in the receive buffer. It takes about 1 millisecond for the firmware to process a *Set Switch* or *Read Switch* remote command.

## 5. Ethernet Configuration

This 75SA-053 comes configured with the following Ethernet settings.

I.P. Address    **192.168.1.225**  
Gateway        **192.168.1.1**  
Netmask        **255.255.255.0**  
Port            **3001** (hard-coded into the unit and can not be changed)

In order to configure the IP settings, the test system must be in Ethernet mode. Use the Null Modem cable (JFW part #012-174) supplied with the test system to make the physical connection from your COM port to the “Ethernet Config. Port” on the rear panel. Open up a terminal session through your computer’s COM port using a program like HyperTerminal. The terminal session should use the following COM port settings:

Baud Rate:    9600  
Data Bits:     8  
Parity:        None  
Stop Bits:     1  
Flow Control: None

The four commands listed below are used to change the IP properties. When the commands have been executed, the test system will send back an ASCII message. See the example session in the next section.

SET IP xxx.xxx.xxx.xxx	Changes the I.P address
SET NETMASK xxx.xxx.xxx.xxx	Changes the Netmask
SET GATEWAY xxx.xxx.xxx.xxx	Changes the Gateway

After you have changed the IP settings, you can verify the changes using the *Show* and *Show Eth0* commands. After these commands are sent, the test system will echo back an ASCII message that shows all of the updated settings. See the example in the next section.

SHOW	Displays the Gateway setting
SHOW ETH0	Displays IP address and Netmask settings

## 6. Ethernet Configuration Session

This is a sample Ethernet configuration session that show step by step how to configure the Ethernet settings. It shows the commands that are sent and the response of the test system.

The current settings are:      IP address    **192.168.1.222**  
Gateway            **192.168.1.2**  
Netmask            **255.255.255.2**  
Port                **3001** (hard-coded in system and can't be changed)

The new settings will be:      IP address    **192.168.1.250**  
Gateway            **192.168.1.1**  
Netmask            **255.255.255.0**  
Port                **3001** (hard-coded in system and can't be changed)

Step 1:            Position the slide switch on the back panel to Ethernet mode.

Step 2:            Turn on the power to the test system. The test system is now in Ethernet mode.

Step 3:            Connect the Null modem cable from you computer's serial port to the port on the test system labeled "Ethernet Config. Port".

Step 4:            Open a terminal program (such as Hyperterminal for Windows) and configure the serial settings to 9600 Baud, 8 data bits, no parity, 1 stop bit, no flow control.

Step 5:            You are now ready to send commands to configure the Ethernet port. Text that you type is shown below in bold. The <enter> is the enter key on your keyboard.

**help <enter>**

TCP/IP User Block Console Version 1.1

Available commands: (type "help <command>" for more info)

echo                - Turn on or off echoing of characters.  
set                 - Configure various options.  
add nameserver    - Add a nameserver to the current l  
mail                - Send an e-mail.  
show                - Show current configuration.  
help                - This help screen.  
OK

**show <enter>**

Current Configuration:

I/O Parameter: 9600  
Gateway: 192.168.1.2  
Name Servers:  
Mail Server:  
Mail From: user@somewhere.com  
Interfaces: ETH0

OK

**show eth0 <enter>**

Current ETH0 Configuration:

```
Status:          up
IP Address:      192.168.1.222
Netmask:         255.255.255.2
MTU:             600
Ping Config:     off
Ping Config Done: no
```

OK

**set ip 192.168.1.250 <enter>**

IP address set to: 192.168.1.250

OK

**set netmask 255.255.255.0 <enter>**

Netmask set to: 255.255.255.0

OK

**show eth0 <enter>**

Current ETH0 Configuration:

```
Status:          up
IP Address:      192.168.1.250
Netmask:         255.255.255.0
MTU:             600
Ping Config:     off
Ping Config Done: no
```

OK

**set gateway 192.168.1.1 <enter>**

Gateway set to: 192.168.1.1

OK

**show <enter>**

Current Configuration:

```
I/O Parameter:  9600
Gateway:         192.168.1.1
Name Servers:
Mail Server:
Mail From:       user@somewhere.com
Interfaces:      ETH0
```

OK

## 7. JFW Command Set

The following command set is used for both Ethernet mode and RS-232 mode. The command set consists of the following commands:

- 7.1 Identification
- 7.2 Change Baud Rate
- 7.3 Disconnect
- 7.4 Close
- 7.5 Set Switch
- 7.6 Read Switch

If you send a remote command to the unit that is not properly formatted, you will receive one of the following error messages.

**Error1        Command is formatted incorrectly.**

This error occurs if a command does not follow it's proper command syntax.

**Error2        Switch address out of range.**

This error occurs if the switch address is not 1.

There is only one RF switch in this test system.

**Error3        Port value out of range.**

This error occurs when the port value is out of range.

Switch is a 1P80T. Valid port settings are 0-80. "0" is the all off state.

## **7.1 Identification Command**

Syntax:        **IDN<CR>**  
                  <CR> = carriage return

Description:   This command returns the identification information for the test system and is followed by a carriage return and a line feed. It includes the firmware revision level. In Ethernet mode, it will also include how many Ethernet connections are currently established with the test system.

Examples:     **IDN<CR>**

In RS-232 mode, the following will be sent back to the user:

**“JFW Industries Inc., Model 75SA-053, Firmware Rev 0<CR><LF>”**

**IDN<CR>**

In Ethernet mode when three users are connected, the following will be sent:

**“JFW Industries Inc., Model 75SA-053, Firmware Rev 0<CR><LF>”**

**“Current Ethernet Connections = 3<CR><LF>”**

Notes:        Command is not case sensitive, but must be terminated by a carriage return.

## **7.2 Change Baud Rate Command**

Syntax:        **CBx<CR>**  
                  x = new baud rate  
                  <CR> = carriage return

Description:   This command changes the baud rate of the test system. After receiving the command, the unit will reboot and start up at the new baud rate. The baud rate is stored in memory so that the test system will start up at the new baud rate if the unit loses power.

Examples:     **CB9600<CR>**        Changes the baud rate to 9600 baud  
                  **CB19200<CR>**    Changes the baud rate to 19200 baud  
                  **CB38400<CR>**    Changes the baud rate to 38400 baud

Notes:        “x” must be either 9600, 19200, or 38400.

Command is not case sensitive, but must be terminated by a carriage return

### **7.3 Disconnect Command**

Syntax:       **DIS<CR>**  
                  <CR> = carriage return

Description:   This command causes the test system to close the existing Ethernet connection.  
                  This command is only used while in Ethernet mode.

Examples:      **DIS<CR>**  
The message “**75SA-053 Connection Closing**” is sent back to the user.  
Then, the Ethernet connection is be closed.

Notes:         Command is not case sensitive, but must be terminated by a carriage return.

### **7.4 Close Command**

Syntax:       **CLOSE<CR>**  
                  <CR> = carriage return

Description:   This command causes the test system to close all other user's Ethernet connections to the  
                  test system, but leaves your Ethernet connection open. This command is only used  
                  while in Ethernet mode.

Example:       Four users are connected to the test system. Send an IDN to verify.

**IDN<CR>**  
“**JFW Industries Inc., Model 75SA-053, Firmware Rev 0<CR><LF>**”  
“**Current Ethernet Connections = 4<CR><LF>**”

**CLOSE<CR>**

Sending the close command will disconnect the other 3 users and leave you as the only  
Ethernet connection. Send an IDN to verify.

**IDN<CR>**  
“**JFW Industries Inc., Model 75SA-053, Firmware Rev 0<CR><LF>**”  
“**Current Ethernet Connections = 1<CR><LF>**”

Notes:         Command is not case sensitive, but must be terminated by a carriage return.



## 8. JFW Test Program

No installation program needs to be run in order to use the JFW test program. Just copy the executable file and directory located on the CD that is provided with this manual onto any location on your computer.

While using the program, you will see the commands you send displayed in the “Data Sent” window and any response from the test system in the “Data Received” window.

### Typed Command

Allows you to send any ASCII message you want to the test system. Just type your message in the text box and click on the Send Message button. Your Message is displayed in the “Data Sent” window.

JFW Industries, Inc.

**75SA-053 Test Program (Rev 0)**

**RS-232 Setup**

Close RS-232 Port

Com Port: none

Baud Rate: 9600

**Ethernet Setup**

Connect Ethernet

I.P. Address: 192.168.1.225

Port Number: 3001

Ethernet Configuration

**Remote Commands**

Set Switch Port #: 1

Read Switch

Change Baud Rate

**Typed Commands**

Send Message Clear Message

**Data Sent** Clear Text

**Data Received** Clear Text

# Ethernet Configuration with JFW Test Software

Used to configure the unit for the first time through the Serial Port.

Used to change the IP address when unit is already on your network through the current Ethernet connection.

The screenshot shows the 'Ethernet Configuration' window. It is divided into two main panels: 'Serial Network Configuration' and 'Ethernet Network Configuration'. The Serial panel includes a 'Com Port' dropdown menu set to 'COM7' and a 'Baud' rate set to '9600'. Below these is a button labeled 'Connect to Serial Ethernet Config Port'. The Ethernet panel includes a 'Current I.P. Address' field set to '192.168.1.225' and a 'Port Number' field set to '23', with a button 'Connect to Current IP to Change Settings'. Below the Ethernet panel are three rows of configuration options: 'New IP Address' (192.168.1.226) with a 'Set IP' button, 'New Gateway Address' (192.168.0.1) with a 'Set Gateway' button, and 'New Netmask Address' (255.255.0.0) with a 'Set Netmask' button. At the bottom of the configuration section are two buttons: 'Show' (with subtext '(shows current Gateway)') and 'Show ETH0' (with subtext '(shows current IP and Netmask)'). The bottom of the window features two text areas: 'Data Sent' and 'Data Received', each with a 'Clear Text' button.

New IP Address To be set.

Read the systems current settings.

Ethernet Configuration can be done using the provided JFW Test Software. When the unit is tested here at JFW we set it up on a standard 192.168.1.1 network so depending on your own network settings, you may not immediately be able to connect to the test system.

If this is the case you will first need to change the network settings of the unit serially via the serial “Ethernet Config” port on the rear panel of the unit.

- 1) Open the Ethernet Configuration window of the test program, located below the Ethernet Connection section.
- 2) From here, select the COM Port you have connected to the “Ethernet Config” RS-232 connector on the rear panel in the drop-down box under Network Configuration, and click “Connect to Serial Ethernet Config Port” button.

The three Set buttons should activate, allowing you to now reprogram the IP Address, Gateway, and Netmask below. The Show and ShowETH0 buttons allow you to read the current settings of the unit.

- 4) Once the Gateway and Netmask have been programmed to your network, you should be able to connect to the unit at the IP you selected. At this point you may change the IP address via Ethernet by connecting to it on port 23 under the Change Current IP Address section. Only the IP address can be changed via Ethernet however.

## **9. FAQ's**

If you are reading this page because you are having problems with a JFW test system, please contact JFW at **317-887-1340** or **sales@jfwindustries.com**. One of our engineers would be more than happy to help you troubleshoot the unit and get you back on track.

### **Why is the unit not responding to my Ethernet port configuration commands?**

The Ethernet is configured using the "Ethernet Config. Port" on the back panel. It is a RS-232 port. You must use a Null Modem type RS-232 cable. You must use the following RS-232 port settings with this port: baud rate (9600), data bits (8), parity (none), stop bits (1), flow control (none).

### **How do I find out the revision level of my firmware?**

Right after the unit is powered on, the firmware revision level is displayed on the LCD. The firmware revision level is also included with the information sent back from an "identification" remote command. In manual mode, you can press the JFW logo on the keypad. The JFW logo is a button that will display the firmware revision level.

### **I just switched from Ethernet mode to RS-232 mode using the switch on the back panel, but I am still in Ethernet mode. Why did the mode not change?**

You must turn the unit off and then back on for the change to take affect.

### **Why won't the unit respond to my Ethernet commands?**

Verify the following settings: IP address, Gateway, Netmask, and Port Number. Remember that the Port Number is hard-coded to 3001 and can not be changed. Check your command format in the "Remote Command Set" section of this manual.

### **Why won't the unit respond to my RS-232 commands?**

Verify the following RS-232 settings: baud rate, parity (none), data bits (8), and stop bits (1). The current baud rate is displayed on the front panel by the LCD. Check you command format in the "Remote Command Set" section of this manual.

### **Why don't I get a response from the unit when I send the remote command "RS1"?**

All remote commands must be terminated with carriage returns. Attach a carriage return to your command string right after the "1".