

JFW Industries, Inc.



75SA-058 MANUAL

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Table of Contents

| <u>Section Number/Description</u> | <u>Page</u> |
|-----------------------------------|-------------|
| 1. Introduction | 3 |
| 2. Ethernet Mode | 4 |
| 3. Ethernet Configuration | 5 |
| 4. Ethernet Configuration Session | 6-7 |
| 5. JFW Command Set | 8-14 |
| 6. JFW Test Program | 15-16 |
| 7. FAQ's | 17 |
| 8. Startup Information | 18 |
| 9. Scripts | 19-20 |

Additional Documents Provide with Manual:

1. Mechanical Outline Drawing
2. Specification Sheet

1. Introduction

1.1 Description

The JFW model 75SA-058 is switch assembly comprised of a single 1P16T Self-Terminating solid-state RF switch. When the unit is powered up, the switch is set port “all off”. The unit is controlled remotely via Ethernet. 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-058 is designed in a 1RU 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-058 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).

4. Ethernet Mode

4.1 Overview

The 75SA-058 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. If commands are sent incorrectly to the unit, you will receive an error message.

4.2 Multiple Ethernet Connections

The firmware for 75SA-058 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-058 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)

There are two methods for changing the IP settings of the unit.

- 1) Use the JFW Test program to configure the settings using either a Serial Connection or Ethernet connection. For further information on this method see the Test program section #8.**
- 2) Use a terminal program like HyperTerminal to configure the unit. This method is outlined below and in the next section.**

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

3. Remote Command Set

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

| <u>Command</u> | <u>Page</u> |
|----------------------------------|-------------|
| 1) Identification..... | 9 |
| 2) Disconnect..... | 9 |
| 3) Set Switch..... | 10 |
| 4) Set Switch with Response..... | 10 |
| 5) Read Switch..... | 10 |
| 6) Close..... | 11 |
| 7) Pause..... | 12 |
| 8) Message..... | 13 |
| 9) Clear..... | 13 |
| 10) Store..... | 14 |
| 11) Recall..... | 14 |

If you send a remote commands to the unit that is not properly formatted, then 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 switch in this test system.

Error3 Port value out of range.

This error occurs when the port value is not 0-16.
The switch in this test system is a 1P16T switch with "0" for all off.

Error4 Interval time out of range.

This error occurs when the interval time of the pause command is not 1-9999.

Error5 Interval time not properly formatted.

This error occurs when a "M" or "S" does not follow the interval time for the pause command.
The "M" formats the interval time to milliseconds. The "S" formats the interval time to seconds.

1 Identification Command

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

Description: This command returns the identification information for this system and is followed by a carriage return and a line feed. It will list JFW Industries Inc, followed by the JFW model number and the firmware revision level.

Examples:
IDN <CR>
"JFW Industries Inc., Model 75SA-058, Firmware Rev 0 <CR> <LF>"
"Current Ethernet Connections = 1 <CR> <LF>"

Notes: *The IDN command will also return a Message in Ethernet mode if a Message has been stored using the Message command.
To erase the message, any user can send the Clear command from Ethernet mode.
Command is not case sensitive, but must be terminated by a carriage return.

2) 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>
Returns: " Connection Closing<CR><LF>" and closes the Ethernet connection.

Notes: There must NOT be a space between the "D", "I", and "S".
Command is not case sensitive, but must be terminated by a carriage return.

3) Set Switch Command

Syntax: `SSx y <CR>`

x = switch number to control
y = port value to set the switch to
<CR> = carriage return

Description: This command sets switch “x” to port “y”.

Examples: `SS1 1 <CR>` Sets switch 1 to Port 1.
`SS1 0 <CR>` Sets switch 4 to “ALL OFF”.

Notes: “x” must be 1 (there is only 1 switch in this test system).
 “y” must be 0-16 (0 = ALL OFF).
 There must be a space between “x” and “y”.
 Command is not case sensitive, but must be terminated by a carriage return.

4) Set Switch with Response Command

Syntax: `SSRx y <CR>`

x = switch number to control
y = port value to set the switch to
<CR> = carriage return

Description: This command sets switch “x” to port “y”.

Examples: `SSR1 1 <CR>` Sets switch 1 to Port 1. Returns: “Switch#1 = Port 1<CR><LF>”
`SSR1 16 <CR>` Sets switch 1 to Port 16. Returns: “Switch#1 = Port 16<CR><LF>”

Notes: “x” must be 1 (there 1 switch in this test system).
 “y” must be 0-16 (0 = ALL OFF).
 There must be a space between “x” and “y”.
 Command is not case sensitive, but must be terminated by a carriage return.

5) Read Switch Command

Syntax: `RSx <CR>`

x = switch number to query
<CR> = carriage return
<LF> = line feed

Description: This command returns the port setting for switch “x”.

Examples: `RS1 2 <CR>` Sets switch 1 to Port 2.
`RS1 <CR>` Returns: “Switch#1 = Port 2<CR><LF>”.

Notes: “x” must be 1 (there is 1 switch in this test system).
 Command is not case sensitive, but must be terminated by a carriage return.

6) Close Command – Ethernet Only

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-058, Firmware Rev 0<CR><LF>”

“Current Ethernet Connections = 4<CR><LF>”

CLOSE<CR>

“75SA-058 – 3 Connections Closing<CR><LF>”

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-058, Firmware Rev 0<CR><LF>”

“Current Ethernet Connections = 1<CR><LF>”

The one connection that is left open is your connection.

Notes: This command is used mainly if you are running an important test and need sole access to the switches by closing any other Ethernet connections to the 75SA-058. This command is also helpful to use if you have an intermittent Ethernet connection to your network, possibly through wireless or connecting via VPN. If you lost your connection, you would then have to reconnect to the 75SA-050 and it would open a new socket. Sending the Close command would then close the original socket and correct the current number of connections. Command is not case sensitive, but must be terminated by a carriage return.

7) Pause Command

Milliseconds Interval Syntax: **PAUSExM<CR>**

Seconds Interval Syntax: **PAUSExS<CR>**

x = duration of time to pause

M = interval time format set to milliseconds

S = interval time format set to seconds

<CR> = carriage return

Description: This command pauses the test system for “x” duration of time. The time duration can be set from 1-9999. The time duration can be formatted to be in milliseconds or in seconds depending on if there is a “M” for milliseconds or “S” for seconds. The pause command is useful when sending scripts to the test system and you want a timed pause between other remote commands.

Examples:

| | |
|----------------------------|---|
| PAUSE100M<CR> | Returns: “Pause Starting<CR><LF>” <i>Test system pauses for 100 milliseconds.</i> Returns: “Pause Finished<CR><LF>” |
| PAUSE15S<CR> | Returns: “Pause Starting<CR><LF>” <i>Test system pauses for 15 seconds.</i> Returns: “Pause Finished<CR><LF>” |

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

Feedback: At the beginning and ending of each PAUSE command, the test system will send all connected users a message to provide feedback of the test system status. At the beginning, the message “Pause Started” is sent. When the command has finished executing, the message “Pause Finished” is sent.

8) Message Command – Ethernet Only

Syntax: MESSAGE x<CR>
<CR> = carriage return

Description: This command will allow you to send a custom message to any new user that connects to the 75SA-058.

Examples: MESSAGE I will be using the switch today (9/2) -CLK<CR>
Returns: "Message Stored<CR><LF>"
Then if a new user connects to the 75SA-058, they would see:
"Connection Open 75SA-058<CR><LF>"
"I will be using the switch today (9/2) -CLK <CR><LF>"

-or if an IDN command is sent-

IDN<CR> Returns:
"JFW Industries Inc., Model 75SA-058, Firmware Rev 0 <CR> <LF>"
"Current Ethernet Connections = 2 <CR> <LF>"
"I will be using the switch today (9/2) -CLK <CR><LF>"

Notes: "x" can be any ASCII string up to 100 characters long.
There must be a space between MESSAGE and "x".
This command is helpful for letting colleagues know you are using the test system for an important test and the port settings must not be disturbed.
The Message can be cleared by sending the Clear command from any user connected in Ethernet mode.
Command is not case sensitive, but must be terminated by a carriage return.

9) Clear Command – Ethernet Only

Syntax: CLEAR<CR>
<CR> = carriage return

Description: This command clears the custom Message stored by the Message command.

Examples: MESSAGE I will be using the switch today (9/2) -CLK <CR>
IDN<CR> Returns:
"JFW Industries Inc., Model 75SA-050, Firmware Rev 0 <CR> <LF>"
"Current Ethernet Connections = 2 <CR> <LF>"
"I will be using the switch today (9/2) -CLK <CR><LF>"

CLEAR<CR> Returns: "Message Cleared<CR><LF>"
IDN<CR> Returns:
"JFW Industries Inc., Model 75SA-050, Firmware Rev 0 <CR> <LF>"
"Current Ethernet Connections = 2 <CR> <LF>"

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

10) Store Command

Syntax: STORE<CR>
<CR> = carriage return

Description: This command will write the current switch settings to the onboard flash memory to be Recalled at a later time, even after power cycling the 75SA-058.

Examples: SS 1 16<CR> Sets switch 1 to Port 16.
STORE<CR> Returns: "1 Switch Settings Stored In Memory<CR><LF>"

: Please allow approximately 1 second to write the data to memory.
Command is not case sensitive, but must be terminated by a carriage return.

11) Recall Command

Syntax: RECALL<CR>
<CR> = carriage return

Description: This command reads the data stored on the onboard flash memory from the last Storecommand, and resets all of the switches to those settings.

Example: (Continuing From the STORE Command Example Above)

| | |
|------------|---|
| SS1 1<CR> | "Sets switch to port 1" |
| RS1<CR> | Returns → "Switch#1 = Port 1<CR><LF>" |
| RECALL<CR> | Returns: "1 Switch Settings Loaded From Memory<CR><LF>" |
| RS1<CR> | Returns → "Switch#1 = Port 16<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-058 Test Program (Rev 0)

Ethernet Setup

Disconnect Ethernet

I.P. Address: 192.168.1.224

Port Number: 3001

Ethernet Configuration

Remote Commands

Set Switch Port #: 1

with Response

Read Switch

Store Current State

Recall Stored Settings

Remote Commands Cont'd

System ID

Typed Commands

Send Message Clear Message

Data Sent Clear Text

RS100

Data Received Clear Text

Switch #1 = J16

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 dropdown for 'Com Port' (COM7) and a 'Baud' rate of 9600. The Ethernet panel shows the 'Current I.P. Address' as 192.168.1.225 and 'Port Number' as 23. Below these are fields for 'New IP Address' (192.168.1.226), 'New Gateway Address' (192.168.0.1), and 'New Netmask Address' (255.255.0.0), each with a 'Set' button. There are also 'Show' and 'Show ETH0' buttons. At the bottom, there are 'Data Sent' and 'Data Received' sections, 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.

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 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".

10. Startup Information

Below is some basic information that you will need to know in order to operate your JFW test system. Refer to the test system manual for more detailed information. If you have any problems getting the test system up and running, please contact JFW (317-887-1340, sales@jfwindustries.com) and one of our engineers will assist you.

NOTE: The Switch is set to ALL OFF or “0” at startup.

Ethernet Config. Port

1. This port will only process the Ethernet configuration commands (i.e. set ip, set gateway, set netmask).
2. This port will NOT process the JFW command set (i.e. set switch, read switch, identification).
3. For a step by step guide to configuring the Ethernet port, refer to the document “Sample Ethernet Configuration Session”. Also, the test system manual has a section that covers Ethernet configuration.

Ethernet Port

1. This port will only process the JFW command set (i.e. set switch, read switch, identification).
2. This port will NOT process the Ethernet configuration commands (i.e. set ip, set gateway, set netmask).
3. The test system manual has a complete list of the JFW command set.

11. Test Scripts

Listed below are answers to frequently asked questions about using test scripts with JFW test systems.

What is a test script?

A test script is a text file (.txt) that lists multiple remote commands in a specific order in order to perform a specific RF test. Terminal programs such as Hyperterminal for Windows can be used to send the text file to a test system via Ethernet.

Why would I want to use test scripts?

You have a test that will be run repeatedly and it uses the same remote commands each time. Using a test script saves you from having to type in the same set of remote commands over and over.

How does the JFW test system execute a test script?

All remote commands listed in a test script are executed sequentially. When you send the script the terminal program lists all of the remote commands sent in the terminal window. The JFW test system stores all of the commands in a receive buffer. It reads the first command and executes the command. Only when the first command is fully executed does the test system read in the second command from the receiver buffer. Each command is read in and executed sequentially until all of the commands in the receive buffer are executed.

How many remote commands can be in one test script?

JFW has used test scripts on Ethernet test systems that contain as many as 1000 remote commands in a single test script.

What happens if I send a second test script before the first test script is finished?

The commands contained in the second test script will be processed after all of the commands in the first script have been executed.

How do I terminate each remote command in my text file with a carriage return?

When you use the “enter” key to go to the next line it will include a carriage return and line feed in the text file. This means that each line of the text file should contain only one remote command.

Why does the last remote command in my script does not execute?

The last command is not properly terminated with a carriage return. You must press the “enter” key at the end of the last remote command to add a carriage return in the text file.

11. Test Scripts Cont'd

How is the PAUSE command used in a script?

The PAUSE command can be used between Set Switch commands for automated testing purposes. You could set Switch #1 to Port #1, then pause 10 seconds and then set Switch #1 to Port #2.

The Script would read.

```
SS1 1<CR>  
PAUSE 15S<CR>  
SS1 2<CR>
```

This script would be saved in .txt file and uploaded to the unit via a terminal program like HyperTerminal.