JFW Industries, Inc.

50SA-164
OPERATING MANUAL

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- Mechanical Outline Drawing
- Specification Sheet
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1 - Introduction

The JFW model 50SA-164 is a quad 1P2T switch assembly. These switches are independently controlled for flexibility. The switch covers the band of DC-3000MHz and is controlled remotely via Ethernet. The unit is also manually controlled on the front panel using the keypad and LCD display. On startup, the switch assembly boots up with all switches set to NC.

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

1) 50SA-164 Manual.PDF
2) 50SA-164 Specification Sheet.PDF
3) 50SA-164 Outline Drawing.PDF
4) JFW test program (50SA-164.EXE)
5) Sample Ethernet Configuration Session.PDF

2 - Mechanical Specifications

The 50SA-164 is designed in a standard 19" rack enclosure assembly to remain compatible with most laboratory test racks. 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 50SA-164 is also 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 can be ordered through JFW or directly from Littelfuse. The Littelfuse part number is #215-002. The JFW part number is #025-021.

3 - Manual Control

The manual control is achieved with the keypad and LCD on the front panel of the unit. To change from remote mode to manual mode, press the <1> button on the keypad. In manual mode you have three basic options: press <1> to go back into remote mode, press <2> to set the switch port, or press <3> to read the state of the switch. The operation of the keypad is very straightforward and is guided by the prompts. The Set Switch command is programmed to only accept single-digit numbers. The program automatically enters the number after the digit is pressed. This speeds up the use of the manual control.

4 - Command Set

The command set for Ethernet is as follows:

Identification Command

Syntax: ID <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: ID <CR>
Returns "JFW Industries Inc., Model 50SA-164, Rev 0 <CR> <LF>"

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

Set Switch

Syntax: SSx y<CR>
x = selected switch (1-4) y = selected port (1-2) <CR> = carriage return

Description: This command sets the switch x to port y.

Examples: SS1 1<CR> Sets Switch 1 to NC.
SS4 2<CR> Sets Switch 4 to NO.

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

Read Switch

Syntax: RSx<CR>
x = selected switch (1-4) <CR> = carriage return

Description: This command reads the active port of the switch and returns it to the user.

Examples: RS1<CR> Reads active port.
Response → 1<CR><LF> Returns port 1 as active.

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

5 - Ethernet Control

This unit is Ethernet controlled via a standard RJ-45 Ethernet connector on the rear of the unit. Before the Ethernet can be used, it must be configured via the "Ethernet Configuration Port" on the back panel of the unit. To configure the Ethernet, connect the provided "Null Modem" cable from the "Ethernet Configuration Port" on the 50SA-164 to a COM port on an available PC. See section 7 of this manual for specific instructions on Ethernet configuration. The easiest method of verifying the unit is working correctly after your changes is to use the JFW provided test program. See section 11 of this manual for more information on this test software.

6 - Ethernet Configuration Cable

Included with the system should be one "Null Modem" cable (JFW part #012-174). This cable is used to interface with the Ethernet Configuration Port and for the RS-232 connection. 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 50SA-164. This cable can also be bought from L-Com (L-Com #CSNULL9MF-10)

7 - Ethernet Configuration Information

This unit comes pre-programmed to the following 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)

Important Note: An additional document "Sample Ethernet Configuration Session.PDF" comes with this manual and is located on the CD in PDF format. This sample session shows step by step how the Ethernet port is configured.

Open up a terminal session through your computer's COM port using a program like HyperTerminal. You must use the Ethernet Configuration Cable to make the physical connection from your COM port to the "Ethernet Config. Port" on the rear of the 50SA-164. The terminal session should use the following COM port settings:

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

You can verify a successful connection by typing "Hello World" in the terminal window. You should receive an echo back from the 50SA-164. The SET commands listed below can then be used to change the network properties.

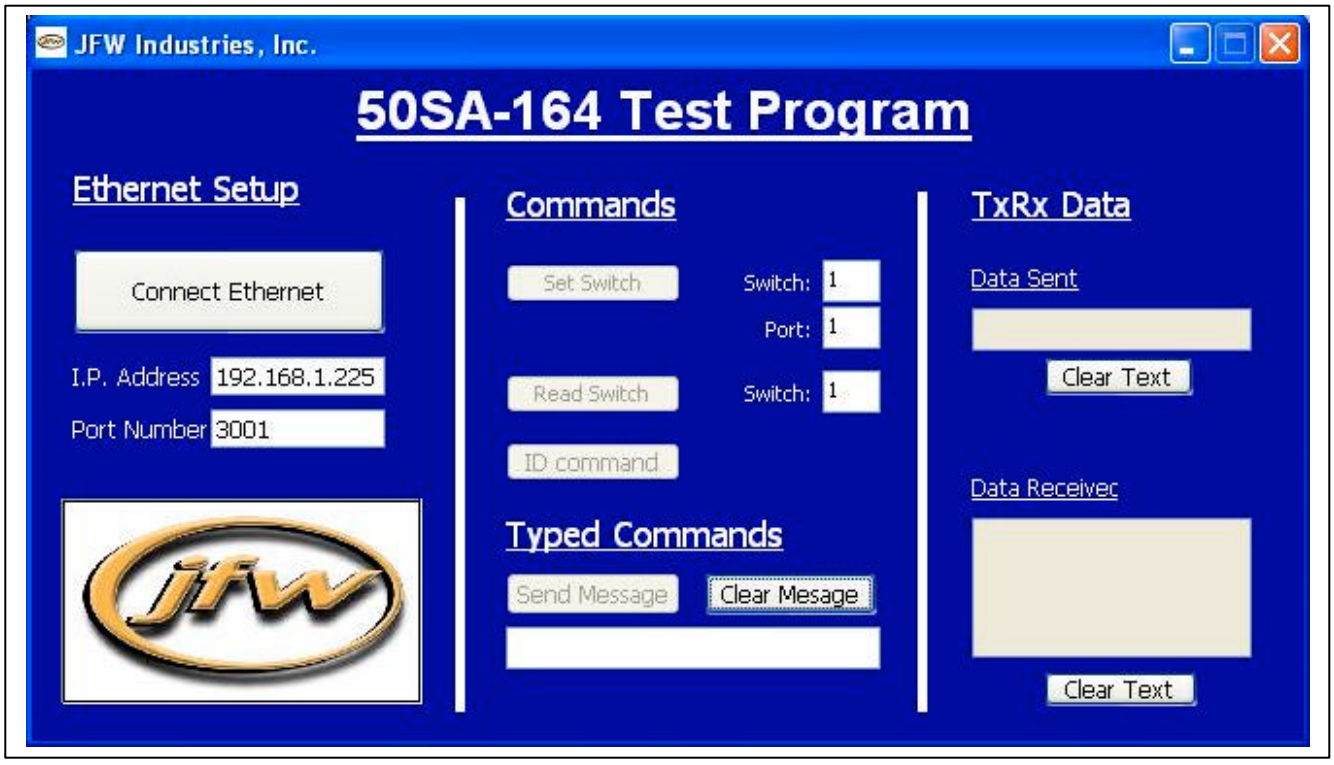
SET IP xxx.xxx.xxx.xxx	changes the I.P address
SET NETMASK xxx.xxx.xxx.xxx	changes the Netmask
SET GATEWAY xxx.xxx.xxx.xxx	changes the Gateway
SET NAMESERVER xxx.xxx.xxx.xxx	changes the Nameserver

8 - JFW Test Program

Nothing needs to be installed onto your computer in order to run the JFW test program. Just copy the executable file (50SA-164.EXE) from the CD that comes with this manual to any location on your computer. Run the executable file 50SA-164.EXE to start the program.

The test program can be used to verify functionality of the 50SA-164. A picture of the test program is shown below. Before exiting the program, it is a good idea to close any connections you have made while using the software.

The test program allows the user to control the 50SA-164. It shows the commands as they are sent and the responses from the unit. It allows the user to set the switches to a selected output port, read the current active port and ask the unit to identify itself. You must enter the IP address (that you have programmed into the unit via the Ethernet programming port on the back of the box) into the IP address window. The port default setting is 3001. The commands are very straightforward, just enter in the port value in the appropriate blank and click. You will see the command you sent in the Data Sent window and any response in the Data Received window. There is no response to the "set switch" command. This command can be verified by using the "RS" command.



9 - Error Code List

Error1 Command is not formatted incorrectly.

This error occurs if characters other than ID, SS, RS appear in the buffer.
This also occurs if there is no space between the switch number and port.
This also occurs if there is no switch number following the SS or RS commands.

Error2 Switch number out of range.
Valid ports are 1-4.

Error3 Switch port value out of range.
Valid ports are 1-2.

10 - TROUBLESHOOTING

Initialization Time

After the 50SA-164 has been turned on, it will take at least 8 seconds for the unit to completely initialize itself. If you send remote commands while it is still initializing, the command will not be executed.

External Troubleshooting

If the 50SA-164 is installed in a system and does not seem to be functioning properly, JFW recommends first removing the 50SA-164 and testing it by itself. This will verify that it is indeed the 50SA-164 that is not working and not another part of the system. It is also recommended that all testing at this stage be done with the JFW test program to help determine software inconsistencies.

Ethernet Problems

It is very important that the remote command format follow the specified format as detailed earlier in the "Command Set" section of this manual.

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.

AC Voltage Fuse

There is a AC voltage fuse located on the back panel. This fuse is rated at 250 Volts/2 Amps. If the fuse is blown, it can be replaced per the Littlefuse #215-002 or JFW part #025-021.

Unknown Error

If communication between the host computer and the 50SA-164 has been established and the software has been verified as working properly, then the problem lies internal to the unit either with the control board or one or more RF components. Please consult the factory at this point for possible further troubleshooting instructions. Use the email address **sales@jfwindustries.com**.