

JFW Industries, Inc.



50PMA-010
OPERATING MANUAL

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Additional Documents:

- A) Mechanical Outline Drawing
- B) Block Diagram
- C) Specification Sheet
- D) Sample Ethernet Configuration Session

1 - Introduction

The JFW model 50PMA-010 test system consists of thirty-six solid-state programmable attenuators and nine 8way power dividers. Please refer to the block diagram (092-5356) to view the configuration. This configuration allows the testing of multiple RF transceivers at the same time. The unit is controlled remotely via Ethernet control and manually controlled with a keypad and LCD on the front panel. The programmable attenuators can be set from 0 to 127dB in 1dB increments. The attenuators are set to 127dB (maximum attenuation) when the unit is turned on.

In the rear of the manual is located a CD. The CD contains the following:

- 1) 50PMA-010 Manual.PDF
- 2) 50PMA-010 Specification Sheet.PDF
- 3) 50PMA-010 Outline Drawing.PDF
- 4) 50PMA-010 Block Diagram.PDF
- 5) JFW test program (50PMA-010.EXE)
- 6) Sample Ethernet Configuration Session.PDF

2 - Mechanical Specifications

The 50PMA-010 is designed in a 19" rack enclosure assembly. 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 from 100 VAC up to 240 VAC (47-63 Hz).

The 50PMA-010 is also AC current protected by use of a 4 Amp "Slo-Blo" AC fuse also located on the rear panel above the AC power receptacle. 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 #215-004. The JFW part number is #025-018.

3 - Manual & Remote 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. If the unit is connected remotely to a user in remote mode and you switch to manual mode, the unit will close that remote connection before starting manual mode. While in manual mode, no remote Ethernet connections are allowed. In manual mode you have three options: press "1" to go back into remote mode, press "2" to set an attenuator to a new value, or press "3" to read the current attenuation setting of an attenuator.

The remote control is achieved through the ethernet connection located in the rear of the enclosure. There are three commands for controlling the 50PMA-010: Set Attenuator, Read Attenuator, and Fade Attenuator. All remote commands are described in greater detail in the "Command Set" portion of this manual. If commands are sent incorrectly to the unit, you will receive an error message. See the "Error Code List" portion of this manual for more details. The attenuators are set to maximum attenuation when the unit is turned on.

4 - Ethernet Configuration Cable

Included with the system should be one "Null Modem" 10 ft. cable (JFW #012-174 or L-Com #CSNULL9MF-10). This cable is used to interface with the Ethernet Configuration Port. The female connector will plug into the serial port on most PC's, and the male connector will mate to the back of the 50PMA-010.

5 - Ethernet Configuration Information

This unit comes pre-programmed to the following settings:

I.P. Address	192.168.1.250
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 50PMA-010. 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 50PMA-010. 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

6 - JFW Test Program

Nothing has to be installed onto your computer in order to run the JFW test program. Just copy the executable file (50PMA-010.EXE) from the CD that comes with this manual to any location on your computer. Run the executable file 50PMA-010.EXE to start the program.

The test program can be used to verify functionality of the 50PMA-010. A picture on 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 attenuators contained in the 50PMA-010. It shows the commands as they are sent and the responses from the unit. It also allows the user to set an attenuator to a specified attenuation value or keypress through the attenuation values. 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 attenuator value and setting in the appropriate blanks 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 attenuation” command. A “set attenuation” command can be verified by a query of the attenuation value using the “read attenuation” command.

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50PMA-010 Test Program

Ethernet Setup

Disconnect Ethernet

I.P. Address: 192.168.1.250

Port Number: 3001

Remote Commands

Set Attenuator Atten #: 1 dB: 0

Read Attenuator Atten #: 1

Keypress Atten #: 1 Start at dB: 0

Fade Attenuator Atten #: 1 Start at dB: 1 End at dB: 127 Interval Time: 50 milliseconds

Typed Commands

Send Message Clear Message

idn

Data Sent

idn Clear Text

Data Received

JFW Industries Inc., Model 50PMA-010, Firmware Rev A Clear Text

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7 - Command Set

The following command set is used in Ethernet mode. The command set consists of the four following commands:

- A) Set Attenuator Command
- B) Read Attenuator Command
- C) Identification Command
- D) Fade Attenuator Command

A) Set Attenuator Command

Syntax: SAx y <CR>
 x = attenuator number to control
 y = attenuation value to set the attenuator to
 <CR> = carriage return

Description: This command sets attenuator “x” to “y” attenuation in dB.

Examples: SA1 0 <CR> Sets attenuator 1 to 0dB.
 SA2 1 <CR> Sets attenuator 2 to 1dB.
 SA2 22 <CR> Sets attenuator 2 to 22dB.
 SA2 127 <CR> Sets attenuator 2 to 127dB.
 SA36 0 <CR> Sets attenuator 36 to 0dB.
 SA36 1 <CR> Sets attenuator 36 to 1dB.
 SA36 40 <CR> Sets attenuator 36 to 40dB.
 SA36 127 <CR> Sets attenuator 36 to 127dB.

Notes: There must be a space between the “x” and “y”.
 There must NOT be a space between the “SA” and the “x”.
 “x” must be between 1 and 36 (there are 36 total attenuators in this test system).
 “y” must be between 0 and 127 (attenuation range is 0-127dB x 1dB).
 Command is not case sensitive, but must be terminated by a carriage return.

Command Set (Continued)

B) Read Attenuator Command

Syntax: RAx <CR>
 x = attenuator number to query
 <CR> = carriage return
 <LF> = line feed

Description: This command returns the attenuation setting for attenuator “x”.

Examples:

SA2 0 <CR>	Sets attenuator 2 to 0dB.
RA2 <CR>	Reads value of attenuator 2. Sends back “0dB <CR> <LF>”.
SA1 5 <CR>	Sets attenuator 1 to 5dB.
RA1 <CR>	Reads value of attenuator 1. Sends back “5dB <CR> <LF>”.
SA4 63 <CR>	Sets attenuator 4 to 63dB.
RA4 <CR>	Reads value of attenuator 1. Sends back “63dB <CR> <LF>”.
SA36 127 <CR>	Sets attenuator 36 to 127dB.
RA36 <CR>	Reads value of attenuator 36. Sends back “127dB <CR> <LF>”.

Notes: There must NOT be a space between the “RA” and the “x”.
 “x” must be between 1 and 36 (there are 36 total attenuators in this test system).
 Command is not case sensitive, but must be terminated by a carriage return

C) 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>
 Returns “JFW Industries Inc., Model 50PMA-010, Firmware Rev A <CR> <LF>”

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

Command Set (Continued)

D) Fade Attenuator Command

Milliseconds Interval Syntax: FAx y z tM <CR>

Seconds Interval Syntax: FAx y z tS <CR>

x = attenuator number to control

y = starting attenuation value

z = ending attenuation value

t = interval time

M = interval time format set to milliseconds

S = interval time format set to seconds

<CR> = carriage return

Description: This command fades the attenuator number "x" from "y" dB to "z" dB in "t" interval time. The interval time is from 1-9999. The intervals can be formatted to be in milliseconds or in seconds depending on if there is a "M" for milliseconds or "S" for seconds following the interval number. The fade command allows the attenuator to fade from a low dB value to a high dB or from a high dB value to a low dB value.

Examples:

FA1 0 63 300M <CR>	Fade attenuator #1 from 0dB to 63dB in 1dB steps with 300 milliseconds between steps.
FA1 31 63 1S <CR>	Fade attenuator #1 from 31dB to 63dB in 1dB steps with 1 second between steps.
FA2 60 7 5S <CR>	Fade attenuator #2 from 60dB to 7dB in 1dB steps with 5 seconds between steps.
FA2 55 60 1M <CR>	Fade attenuator #2 from 55dB to 60dB in 1dB steps with 1 millisecond between steps.
FA36 9 2 50M <CR>	Fade attenuator #36 from 9dB to 2dB in 1dB steps with 50 milliseconds between steps.

Notes:

- There must be a space between the "x", "y", "z", and "t".
- There must NOT be a space between the "FA" and the "x".
- Either a "M" or a "S" must follow the interval time "t".
- There must NOT be a space between the "t" and the following "M" or "S".
- "x" must be between 1 and 36 (there are four 36 attenuators in this test system).
- "y" must be between 0 and 127 (attenuation range is 0-127dB x 1dB).
- "z" must be between 0 and 127 (attenuation range is 0-127dB x 1dB).
- "y" and "z" should not be set to the same attenuation value.
- "t" must be between 1 and 9999.
- Command is not case sensitive, but must be terminated by a carriage return.

8 - Error Code List

- Error1** **Command is not formatted incorrectly.**
This error occurs if characters other than SA, RA, IDN or FA appear in the buffer.
- Error2** **Attenuator address out of range.**
This error occurs if the attenuator address is not 1-36.
There are 36 total programmable attenuators in 50PMA-010.
- Error3** **Attenuation value out of range.**
This error occurs when the attenuation value is not 0-127dB.
The attenuation range for this test system is 0-127dB x 1dB.
- Error4** **Interval time out of range.**
This error occurs when the interval time of the fade attenuator 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 fade attenuator command. The "M" formats the interval time to milliseconds. The "S" formats the interval time to seconds.

9 - TROUBLESHOOTING

Initialization Time

After the 50PMA-010 has been turned on, it will take at least 10-15 seconds for the unit to completely initialize itself. If you send an Ethernet command while it is still initializing, the command will not be executed. After the unit is properly initialized and ready for use, the text "Listening for user.." will be displayed on the LCD.

Ethernet Connection

The LCD on the front panel helps to show the current state of the 50PMA-010. The text "Listening for user.." is displayed when the unit is waiting for a user to make an Ethernet connection. The Text "Connection Made" is displayed when a user establishes an Ethernet connection to the unit.

If you are having trouble connecting to the unit check your IP address, Gateway, Netmask, and Port Number. The Ethernet port number is hard-coded to 3001 and can not be changed. Use the document "Sample Ethernet Configuration Session" for a step by step tutorial on how to configure the Ethernet settings.

Software Troubleshooting

If the 50PMA-010 does not seem to be functioning properly, JFW recommends testing the 50PMA-010 with the JFW test program. This will determine if there is any software or command format problems.

If the unit works with the JFW test software, then the problem is most likely in your system's software setup. It is very important that the command messages follow the specified format as detailed earlier in the Command Set section of this manual. The set attenuator and read attenuator commands must be terminated with a carriage return.

AC Voltage Fuse

There is a AC voltage fuse located on the back panel. This fuse is rated at 250 Volts/4 Amps. If the fuse is blown, it can be replaced per the Littlefuse #215-004 or JFW #025-018.

Unknown Error

If communication between the host computer and the 50PMA-010 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 with a RF component. Please consult the factory at this point for possible further troubleshooting instructions (sales@jfwindustries.com).