

JFW Industries, Inc.



50MS-XXX
Sample Test Software for
Matrix Switches

This document corresponds to firmware 3.0.0 (or higher)

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1.0 INTRODUCTION

The sample test program is designed to work with test systems running firmware 3.0.0 (or higher). This test system can be used to configure the Ethernet setting, configure the RS-232 setting, and control paths through a matrix switch. All transmitted commands are displayed in the *DATA SENT* window. All data received from the test system is displayed in the *DATA RECEIVED* window.

1.1 ETHERNET TEST BOX

JFW does have an Ethernet test box setup at fixed IP address 104.63.176.50 (port 3001). You can connect to this test box with the sample test program and be able to send/receive remote commands.

1.2 FIRMWARE OVERVIEW

Command syntax and examples can be found in the 3.x.x Firmware Manual which is available for download in the test systems section of the JFW website. The 3.x.x firmware is written with a multi-threaded command process that allows multiple connections to the test system. Remote commands received from different connections are handled independently. Each connection can send remote commands to the test system without blocking any functionality of the test system to the other connections. Listed below are some 3.x.x firmware feature highlights:

- DHCP capable.
- Ethernet and RS-232 interfaces run simultaneously.
- Multi-Threaded command process (i.e. non-blocking architecture).
- Up to 12 simultaneous Ethernet connections to the test system.
- User configurable command line prompt.
- Remotely accessible help files with command syntax and examples.
- Command options such as Lock (-L) and Verbose (-V).
- The ability to escape out of erroneous Pause commands.
- Date feature that allows for time tracking with timestamp command option.
- User comments can now be added to script files without interfering with script execution.

1.3 MATRIX COMMANDS

Matrix Attributes.....Set the lock/unlocked attributes of a switch
Set InputSets an input to a particular output port
Set Output.....Sets an output to a particular input port
Read InputReads the state of a particular Input port
Read Output.....Reads the state of a particular Output port
Read All Inputs.....Returns the current state of all Inputs ports
Read All Outputs.....Returns the current state of all Outputs ports
Read Matrix Paths.....Returns the current state of both Input ports & Output ports

1.4 SECURITY REMOTE COMMANDS

IDENTCan be used to set/clear a system password or login to a system if a password is set.
RESTRICT.....ADMIN level user can restrict use of certain remote command (i.e. Date, Prompt)

1.5 SYSTEM REMOTE COMMANDS

IdentificationRespond with system identification information
HelpReturns list of all command available for the test system
Serial.....Set/respond with serial interface settings baud rate and flow control
Net.....Set/respond with network interface settings such as IP address, DHCP mode, etc.
CloseCloses all active network connections except for connection that sent command
DateSet/respond with time and date for the system
Disconnect.....Disconnects the current network connection
Uptime.....Respond with the time that has passed since being turned on or rebooted
NameSet/respond with name of the current connection
Show UsersReturn a table listing all current connections to the test system
MOTDSet/respond with the message of the day
Message.....Sent a message up to 480 characters to another connection
Prompt.....Set/respond with the current command prompt setting
PauseSuspend remote command execution for a connection for specified time duration
Escape.....Break from the current task
StoreStores the current settings for all paths
RecallRecalls the path settings saved with Store command and sets all paths
RebootRemotely reboot the test system
Startup.....Setup a list of commands that are executed when the system first boots
WipeClears all saved data and resets the system to factory defaults

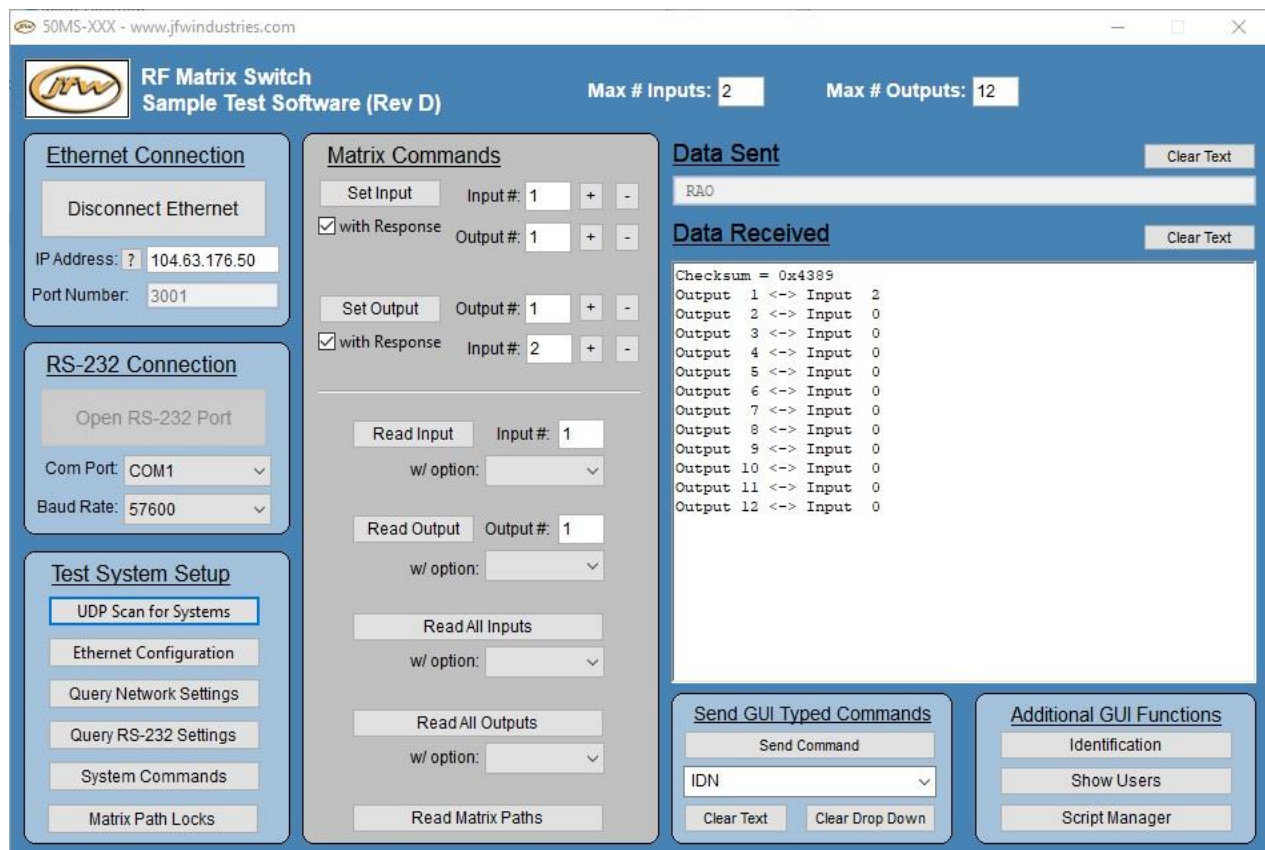
2.0 TEST PROGRAM

No installation program needs to be run in order to use the GUI sample test program. Just copy the executable file onto any location on your computer. When you exit the program, it does create some text files that are used to save basic settings for the next session.

2.1 MAIN MENU

The main menu is broken up into seven basic areas.

- In the top right are 2 text boxes that allow the user can change the # of Input ports or the # of Output ports.
- The ETHERNET CONNECTION mini-box is where you enter the test system's IP Address and open a new network connection.
- The RS-232 CONNECTION mini-box is where you select your computer's COM port number and your computer's Baud rate.
- The TEST SYSTEM SETUP mini-box is where you set/read the test system's settings. It also has two "query" buttons that allow you to check the test system's network and RS-232 settings.
- The MATRIX COMMANDS mini-box provides all of the functionality you need to set/read matrix paths.
- Commands sent to the test system are shown in the DATA SENT text box. Messages received from the test system are shown in the DATA RECEIVED text box.
- In the bottom right are two mini-boxes that allow additional functionality that is provided by the GUI test program such as the Script Manager.



2.2 NETWORK CONFIGURATION

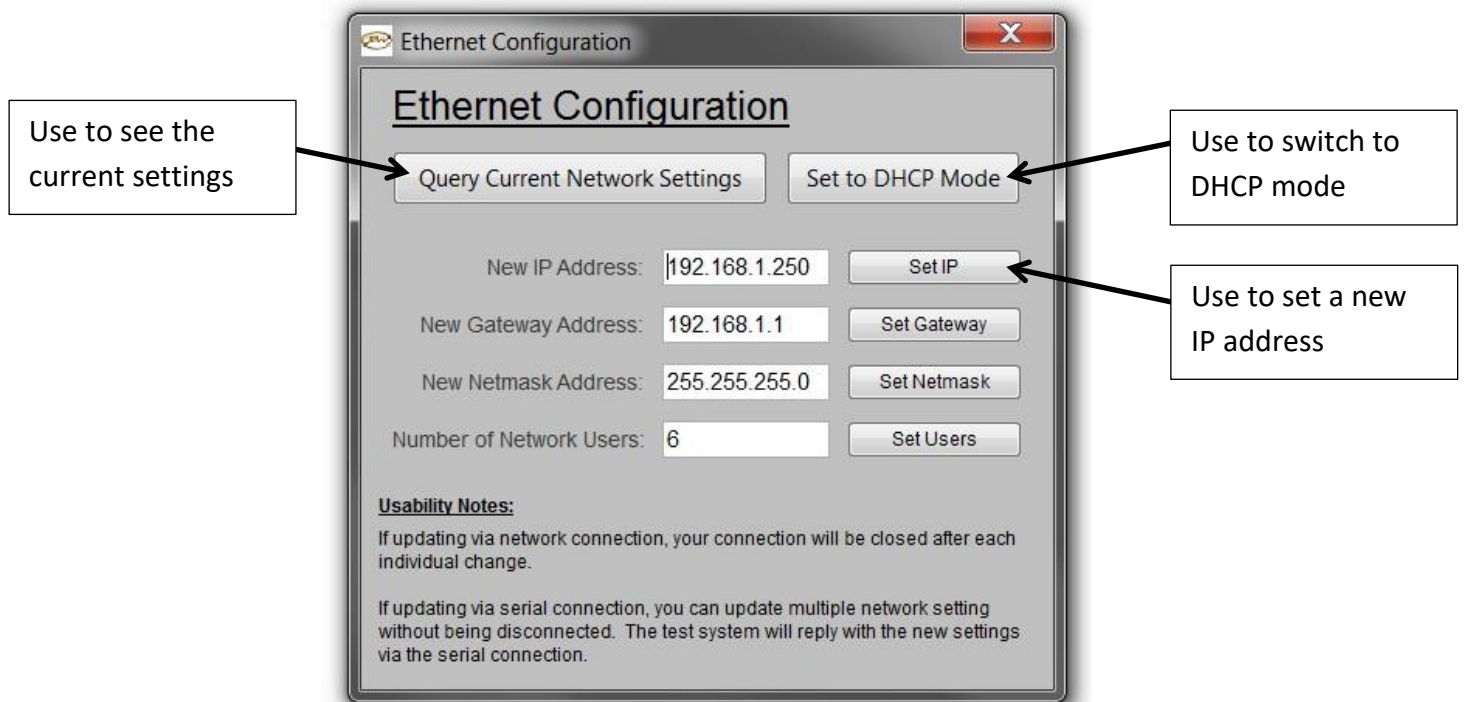
Update via RS-232 Connection

Make an RS-232 connection to the test system. A null modem type cable must be used to connect your COM port to the RS-232 port of the test system. Select your COM port number and Baud rate (57600 Baud factory default). Once the RS-232 port is open, click the ETHERNET CONFIGURATION button to open the configuration window. From the configuration window you can query the current settings, change to Fixed Address mode, change the maximum number of network connection, or set the IP Address/Gateway/Net mask. If you use a RS-232 connection you may update multiple network properties without losing your connection.

Update via Ethernet Connection

New test systems are shipped out in DHCP mode. If you connect the test system to your network it will automatically be assigned an IP address, gateway, and net mask from your DHCP server. To determine the current IP address use the UDP SCAN FOR SYSTEMS button located in the TEST SYSTEM SETUP mini-box. Using UDP protocol any JFW test system running firmware 3.0.0 (or higher) will respond with its current settings. Once you know the IP address you may make an Ethernet connection to the test system and use the ETHERNET CONFIGURATION window to configure settings. If you update network properties using a network connection, your network connection will close after each individual change.

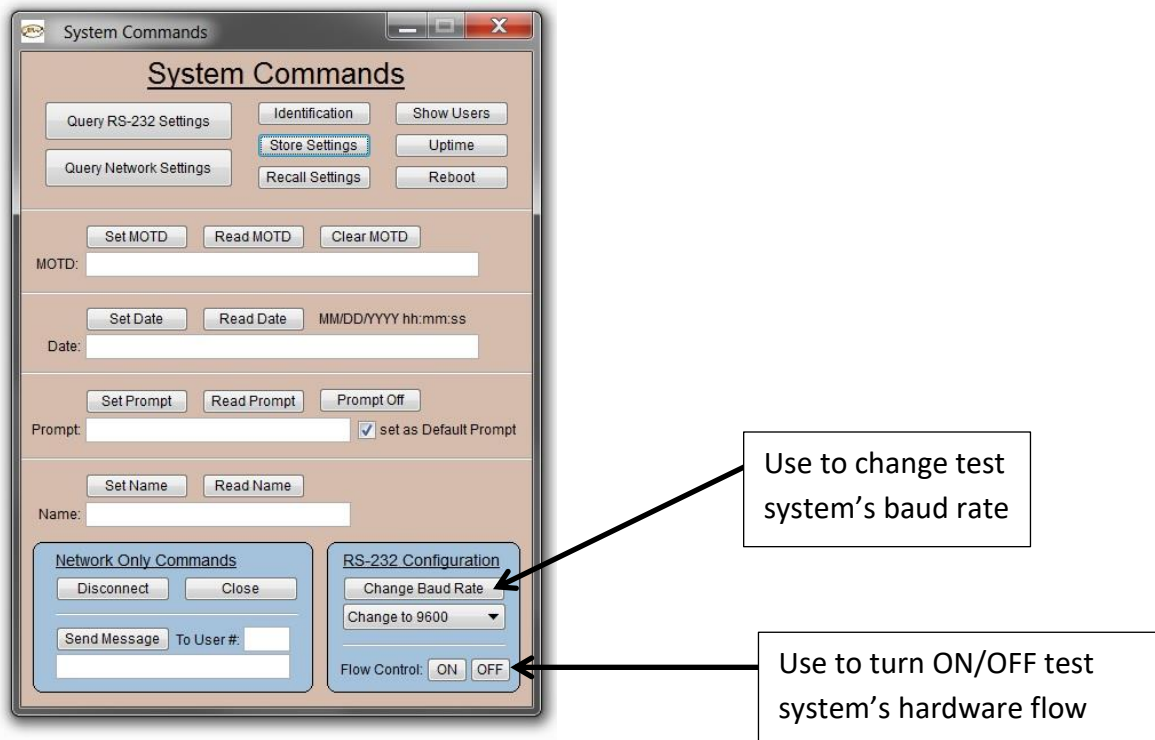
All of the functionality of the ETHERNET CONFIGURATION window is derived from the NET remote command. See the Firmware Manual for details/examples of the NET command. Using a terminal program you could set up the network settings typing each NET command out by hand or sending a script.



2.3 RS-232 CONFIGURATION

The RS-232 CONFIGURATION mini-box is located on the SYSTEMS COMMANDS window. You can update the baud rate or hardware flow control setting. The RS-232 settings can be set while you are connected to the test via a RS-232 connection or a network connection.

All of the functionality of the RS-232 CONFIGURATION mini-box is derived from the SERIAL remote command. See the Firmware Manual for details/examples of the SERIAL command. Using a terminal program you could set up the RS-232 settings typing each SERIAL command out by hand or sending a script.

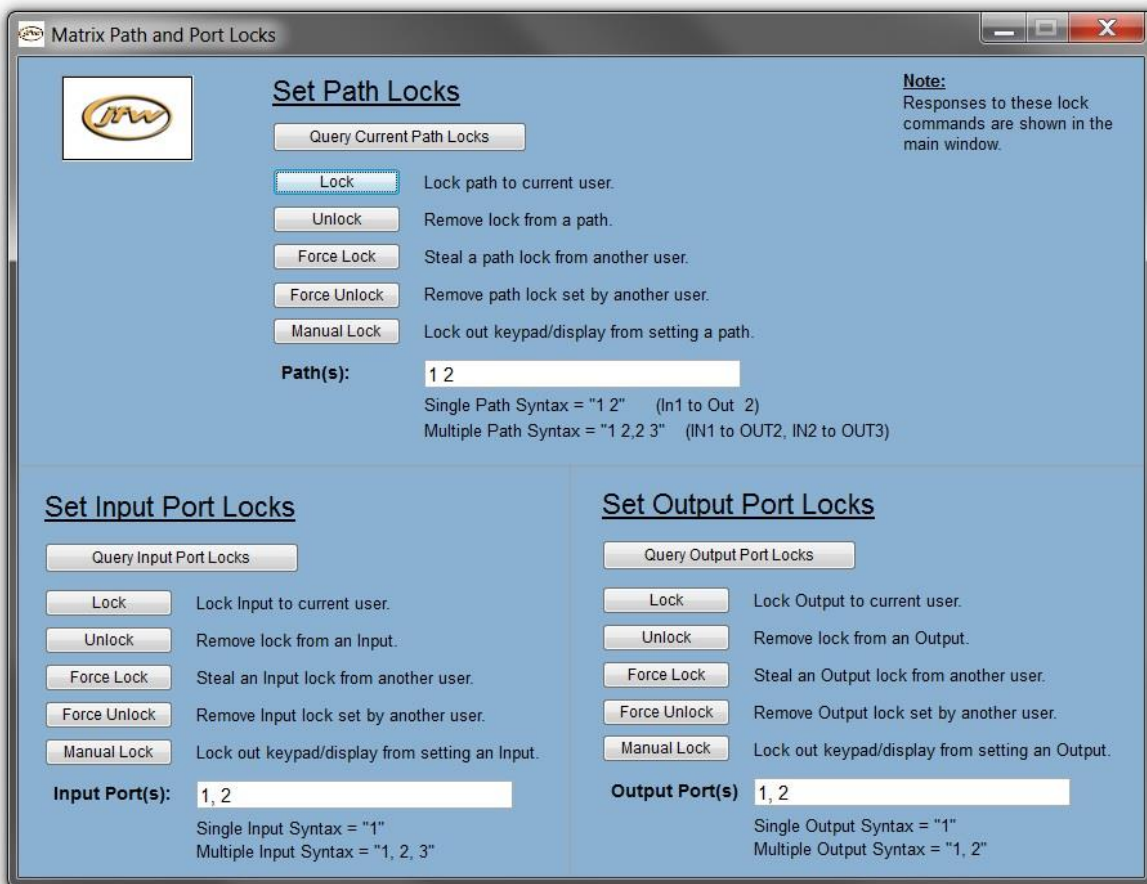


2.4 MATRIX PATH LOCKS WINDOW

To open this window click the MATRIX PATH LOCKS button located in the TEST SYSTEM SETUP mini-box. Commands sent/received can be viewed in the main window's Data Sent and Data Received text boxes. The switch locks window provides the following functionality:

- Lock path(s) or Inputs or Outputs to the current connection
- Unlock path(s) for use by all connections
- Steal a locked Path or Port from another connection
- Remove a Path or Port lock that was set by another connection
- Lock out a manual user (if the test system has a keypad/display)

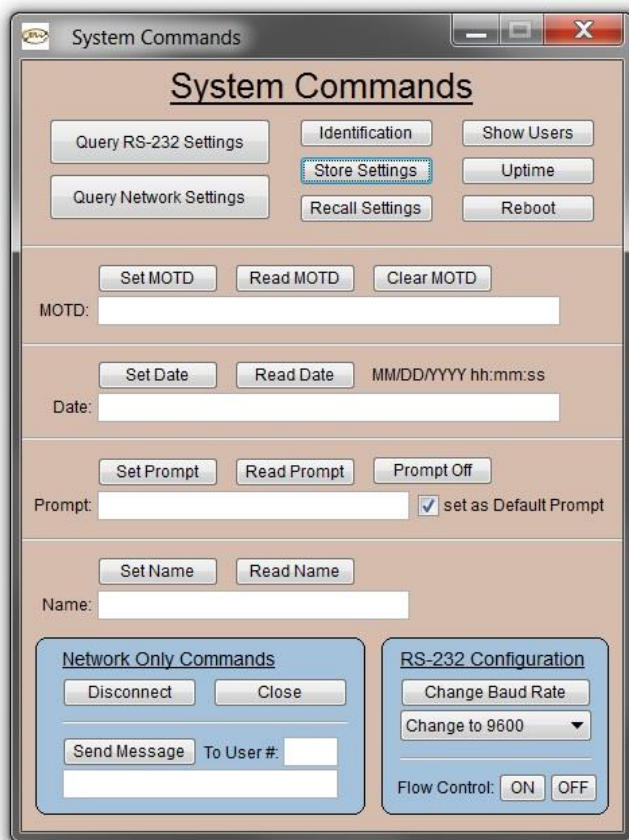
All of the functionality of this window is derived from the MATRIX remote command. See the Firmware Manual for details/examples of the MATRIX command. Using a terminal program you could set up the switch locks typing each MATRIX command out by hand or sending a script. The syntax of each command as it is sent to the test system can be seen in the "DATA SENT" text box of the main window.



2.5 SYSTEM COMMANDS WINDOW

To open this window click the SYSTEM COMMANDS button located in the TEST SYSTEM SETUP mini-box. All of the functionality of this window is derived from the remote commands that can be found in the System Commands section of the Firmware Manual. Commands sent/received can be viewed in the main window's Data Sent and Data Received text boxes.

- Query RS-232 Respond with test systems current RS-232 port settings (i.e. Baud rate, Flow Control)
- Query Network..... Respond with test systems current Network settings (i.e. IP Address, Net mask, Gateway, etc.)
- Identification..... Respond with system identification information
- Store..... Stores the current settings for all paths
- Recall..... Recalls the path settings saved with Store command and sets all paths
- Show Users..... Return a table listing all current connections to the test system
- Uptime Respond with the time that has passed since being turned on or rebooted
- Reboot..... Remotely reboot the test system
- MOTD Set/respond with the message of the day
- Date..... Set/respond with time and date for the system
- Prompt Set/respond with the current command prompt setting
- Name..... Set/respond with name of the current connection
- Disconnect..... Disconnects the current network connection
- Close..... Closes all active network connections except for connection that sent command
- Message Sent a message up to 480 characters to another connection
- Change Baud Set the baud rate of the test system
- Flow Control..... Set the hardware flow control of the test system



2.6 SCRIPT MANAGEMENT WINDOW

The Script Management screen allows you to send long complicated scripts to the test system from the test program. You can write your own script in a text editor or directly into the “Script to Send” text box. Traditionally, if you were sending a script through a Telnet service like PuTTY, it sends the entire script all at once. If the script is very long, this could overflow the receive buffer of the test system which would cause the test system to crash, reboot or lockup. Since many of these kinds of long scripts are repetitive, the Script Management window allows a user to send a smaller script repetitively and control the time duration between the scripts.

Saving and Loading Scripts

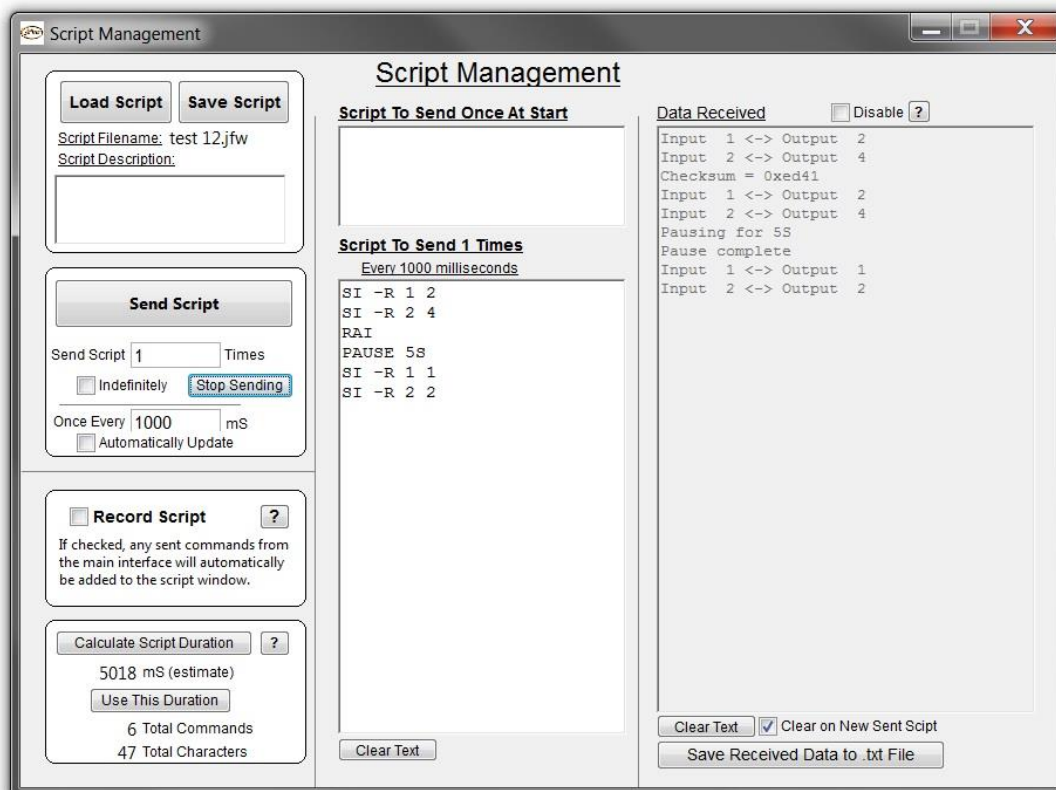
The Script Management window allows you to save your custom scripts as .jfw (.txt) files. The file will contain all of the information in Script Manager including the Description, Number of times to Send, Pause Duration between Scripts, the Initializing Script, and the Main Script.

Recording Scripts

Recording a script is helpful if you cannot remember the exact command format for a particular command and also eliminates typing errors from entering them manually. By selecting the “Record Script” checkbox, all commands sent from the rest of the test program will NOT be sent to the test system but will instead be recorded in the “Script to Send” text box.

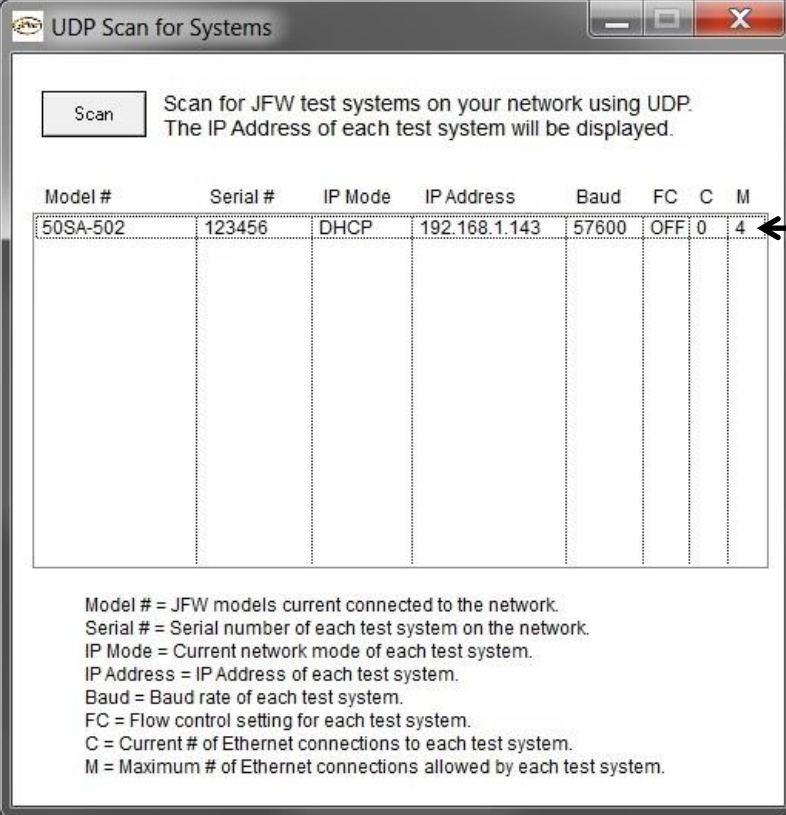
Calculate Script Duration

This feature calculates the entire length of the script in the “Script to Send” text box in milliseconds. This accounts for 3 milliseconds of processing time for each command. Commands that execute over time such as Pause, Fade, and Variable Handover are also included in the calculation.



2.7 UDP SCAN FOR SYSTEMS

To open this window click the UDP SCAN FOR SYSTEMS button located in the TEST SYSTEM SETUP mini-box. This window is helpful when you first receive a test system and the test system does not have a front panel display showing the current IP address or baud rate. Just click the SCAN button and any JFW test system on your network running firmware 3.0.0 (or higher) will respond with its model number, serial number, and port configuration settings. The request and responses are sent via UDP protocol. If you have multiple test systems with the same model number, then use the serial number as their unique identifier.



The screenshot shows a window titled "UDP Scan for Systems" with a "Scan" button and a description: "Scan for JFW test systems on your network using UDP. The IP Address of each test system will be displayed." Below this is a table with the following data:

Model #	Serial #	IP Mode	IP Address	Baud	FC	C	M
50SA-502	123456	DHCP	192.168.1.143	57600	OFF	0	4

Below the table, a legend defines the columns: Model # = JFW models current connected to the network; Serial # = Serial number of each test system on the network; IP Mode = Current network mode of each test system; IP Address = IP Address of each test system; Baud = Baud rate of each test system; FC = Flow control setting for each test system; C = Current # of Ethernet connections to each test system; M = Maximum # of Ethernet connections allowed by each test system.

Each line shows the current settings for a test system on your network.