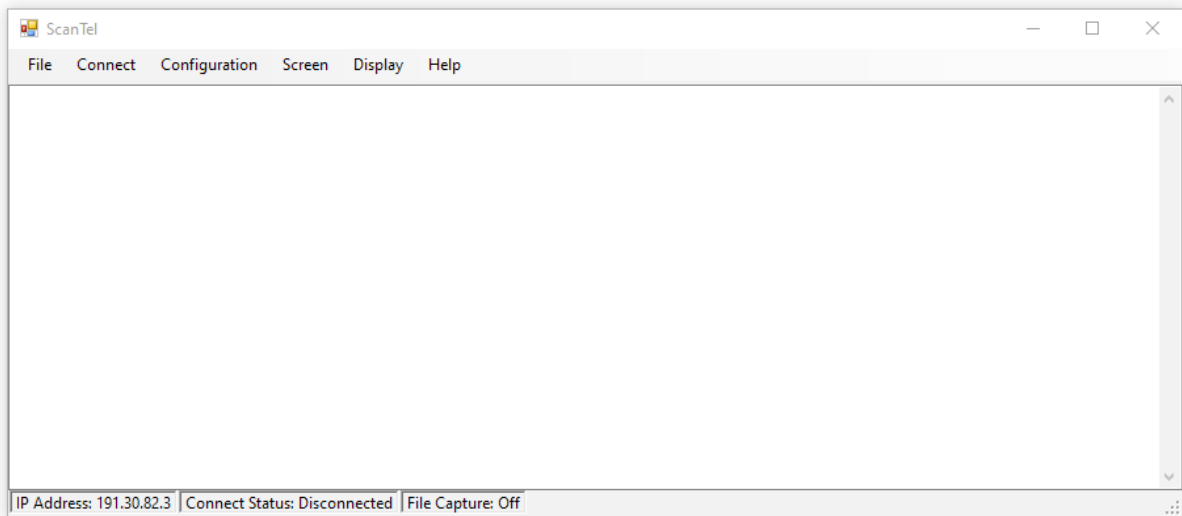# SCANTEL

SCANTEL.EXE

INSTALLATION AND OPERATION MANUAL

VERSION 1.07

Scanivalve

PREFACE

WARNINGS, CAUTIONS AND NOTES

The WARNING! symbol indicates that danger of injury for persons and the environment and/or considerable damage (mortal danger, danger of injury) will occur if the respective safety precautions are not taken.

The CAUTION ! symbol indicates danger for the system and material if the respective safety precautions are not taken.

The ESD note symbol indicates that proper precautions for handling Electrostatic Sensitive Devices needs to be taken when performing the related operation. This includes the use of grounded work surfaces and personal wrist straps to prevent damage to sensitive electronic components.

WARRANTY

Scanivalve Corporation, Liberty Lake, Washington, hereafter referred to as Seller, warrants to the Buyer and the first end user that its products will be free from defects in workmanship and material for a period of twelve (12) months from date of delivery. Written notice of any claimed defect must be received by Seller within thirty (30) days after such defect is first discovered. The claimed defective product must be returned by prepaid transportation to Seller within ninety (90) days after the defect is first discovered. Seller's obligations under this Warranty are limited to repairing or replacing, at its option, any product or component part thereof that is proven to be other than as herein warranted.

Surface transportation charges covering any repaired or replacement product or component part shall be at Seller's expense; however, inspection, testing and return transportation charges covering any product or component part returned and redelivered, which proves not to be defective, shall be at the expense of Buyer or the end user, whichever has returned such product or component part.

This Warranty does not extend to any Seller product or component part thereof which has been subjected to misuse, accident or improper installation, maintenance or application; or to any product or component part thereof which has been repaired or altered outside of Seller's facilities unless authorized in writing by Seller, or unless such installation, repair or alteration is performed by Seller; or to any labor charges whatsoever, whether for removal and/or reinstallation of the defective product or component part or otherwise, except for Seller's labor charges for repair or replacement in accordance with the Warranty. Any repaired or replacement product or component part thereof provided by Seller under this Warranty shall, upon redelivery to Buyer, be warranted for the unexpired portion of the original product warranty.

THIS WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARISING BY

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OPERATION OF LAW OR OTHERWISE, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND IN NO EVENT SHALL SELLER BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

In the event of a failure:

        1) Notify Scanivalve Corporation, Customer Service Department. Include model number and serial number. On receipt of this information, service data or shipping instructions will be forwarded. This may be transacted by telephone or e-mail.

        2) On receipt of shipping instructions, forward the product, transportation prepaid. Repairs will be made, and the product returned.

        3) All shipments should be made via "Best Way". The product should be shipped in the original packing container or wrapped in protective material and surrounded by a minimum of four (4) inches of a shock absorbing material.

TRADEMARKS ® AND COPYRIGHTS ©

Scanivalve is a registered trademark of Scanivalve Corporation.

All other brand and product names are trademarks or registered trademarks of their respective companies.

PACKAGING FOR SHIPMENT

If the product must be shipped, whether being returned to Scanivalve or relocated to another location it must be packaged properly to minimize the risk of damage. The recommended method of packing is to place the instrument in a container, surrounded on all sides with at lease four inches of shock attenuating material such as Styrofoam peanuts.

IMPORTANT NOTICE

Please note that the product specifications and other information contained in this manual are subject to change without notice. Scanivalve Corporation makes an effort and strives to provide complete and current information for the proper use of the equipment. If there are any questions regarding this manual or the proper use of the equipment, contact Scanivalve Corporation.

CONTACT INFORMATION

If there are any questions or concerns regarding any Scanivalve product, please do not hesitate to contact us at the following:

Scanivalve Corp.
1722 N. Madson Street
Liberty Lake, WA 99019
Telephone: (800)935-5151   (509)891-9970
Fax: (509)891-9481
scanco@scanivalve.com
www.scanivalve.com

Scanivalve Corporation is an ISO9001:2015 certified company.

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SECTION 1: INTRODUCTION

ScanTel

ScanTel is a support program that can be used with any Ethernet enabled Scanivalve module. This includes Scaniavlve's DSA, MPS, DTS, DSM, ENCL, and ERAD modules.

ScanTel is a Windows Terminal based software that uses a TCP/IP connection to a single device using Telnet protocol. All communication is performed via a command-line based interface. All commands are terminated with a carriage return that can be executed using the <ENTER> key on your keyboard. It supports communications in ASCII and allows for data collection in ASCII or Binary formats.

ScanTel is designed to replace the legacy Binary Telnet program, BTEL.EXE.
It provides a basic way to interface with Scanivalve Ethernet devices. Its functions include:
> Setting and saving configurations settings
> Collecting data to the screen or to a file
> Converting Binary .DAT files to ASCII (.CSV format)
> Merging multiple binary files (MUBC only)
> Uploading coefficient files
> Troubleshooting and diagnostics

NOTE: A user should have good working knowledge of the hardware and software of the device used with this software. Please refer to the applicable hardware and software manuals for information on the scan speeds and data types available.

System Requirements

Supported Operating System:
> Windows 7 SP1
> Windows 8
> Windows 8.1
> Windows 10

Minimum Hardware Requirements:
> 1 GHz or faster processor
> 512 MB of RAM
> 2.5 GB of available hard disk space

NOTE: For computers operating on Windows XP, you must use an earlier version of ScanTel. ScanTel version 1.03 is the last known version that can be used in Windows XP. This version can be downloaded from our website, or can be provided by Scanivalve Techsupport.

NOTE: Upgrading from any version to version 1.05+ may cause an unhandled error when first opened. If this error appears, please click "Continue" and then click on "Configuration" and set the "Device Type" to any of the options in the Conversion Settings. The error will not be cleared and will not reappear.

SECTION 2: INSTALLATION

OVERVIEW

To use ScanTel, the software must be obtained from Scanivalve or downloaded from the Scanivalve website. This section covers the installation process in detail. If you encounter unexpected difficulties, contact your IT department or Scanivalve Technical Support.

DOWNLOAD

ScanTel can be downloaded from the Scanivalve website at no charge. Please visit:

www.scanivalve.com/support/software-downloads

Please use the link shown in Figure 2.1 to download ScanTel. Depending on the internet browser used, the browser should prompt you to save or open the ScanTel folder. Save the folder in a known location that can be easily accessed. The download should then begin automatically.
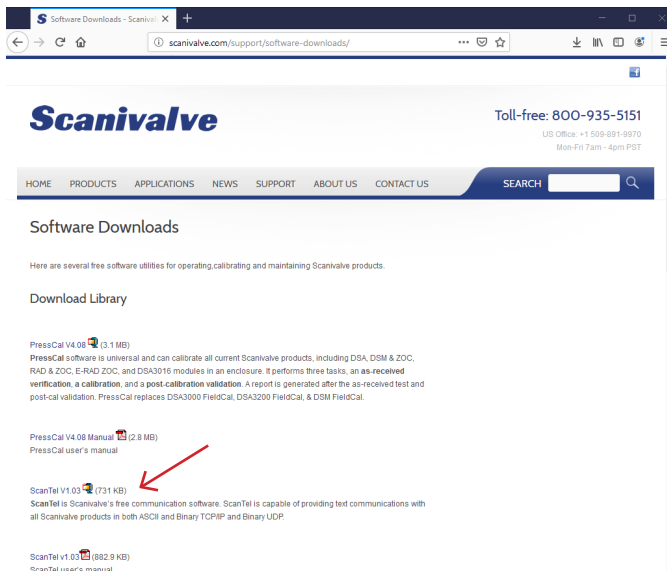

FIGURE 2.1 - SOFTWARE DOWNLOADS

If you are unable to download the installation files from the website, please contact Scanivalve Technical Support for an alternate method or a physical copy of the installation programs.

The installation files are contained in a compressed (.zip) folder that is titled Scantelv**XXX**.zip (where **XXX** is the software version). Unzip this folder to a temporary folder. The two files included in the zip file are:

BtuInstall.msi
Setup.exe

INSTALL

Once the files are unzipped, run the "Setup.exe" application. Follow the instructions as outlined by the setup wizard as shown in Figure 2.2.
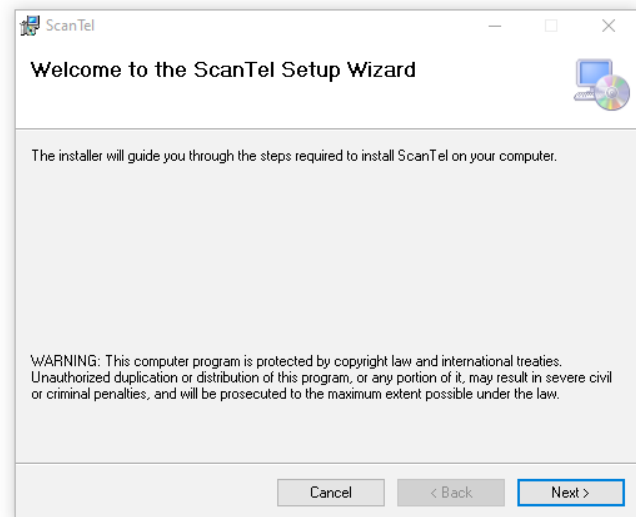

FIGURE 2.2 - SCANTEL INSTALL WIZARD

During this install, you may need to update the .NET Framework version used in your computer. The install wizard will prompt you if this update must be performed.

Once the installation is successful, a shortcut will appear on the desktop and ScanTel will be ready for use. Click on the desktop shortcut to open ScanTel.

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SECTION 3: OVERVIEW

SCANTEL HOME SCREEN

This section will provide a general overview of the ScanTel software interface. The ScanTel home screen is the first window that will appear when the application is started. This window is shown in Figure 3.1.
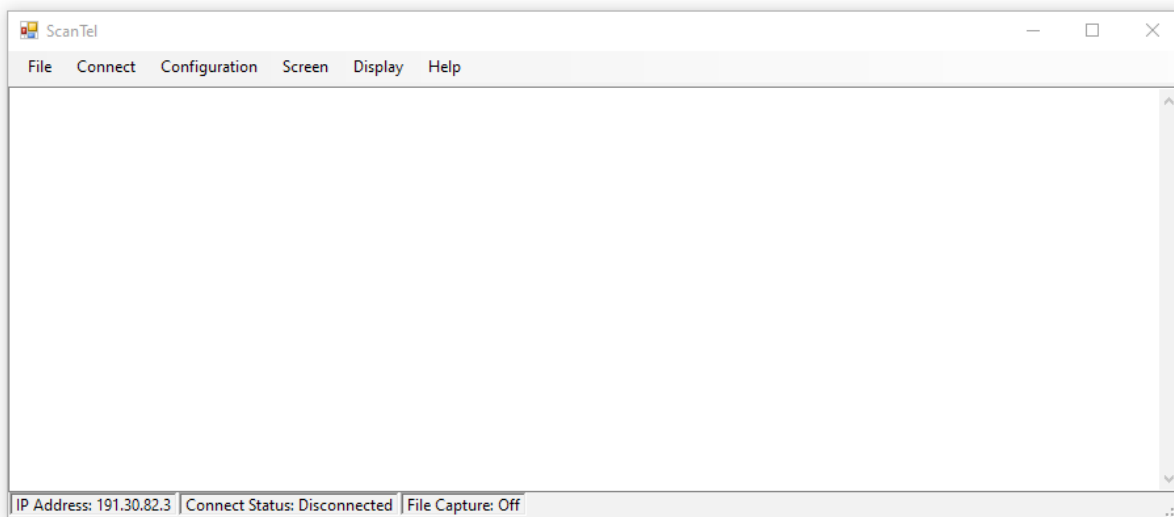

FIGURE 3.1 - SCANTEL HOME SCREEN

The ScanTel home screen has six options that can be selected:

File   This menu contains the commands for the main program tasks. This menu will be used to start and stop file captures, upload files, and convert binary data captures.

Connect   Click this to connect to the Scanivalve device. The device type and IP Address must be specified in the configuration window before Connect is selected.

Configuration   Click this to set the Device Type, IP Address, Binary Conversion settings, and UDP Receive Port (more detailed description of this window is found on page 5).

Screen   Click this to set the font size and color in the main window.

Display   This menu option contains the commands to clear the screen or to clear the byte counter.

Help   Click this to verify the ScanTel version number.

If "MPS" is selected in the Conversion Settings area of the Configuration window, one more option will be available:

Multiple Unit Control   Click this to use the Multiple Unit Binary Control feature to collect Binary data from one or more MPS4200 modules using the MPS Binary server. This feature is only applicable when using MPS4200 modules. This option can be seen in Figure 3.2.
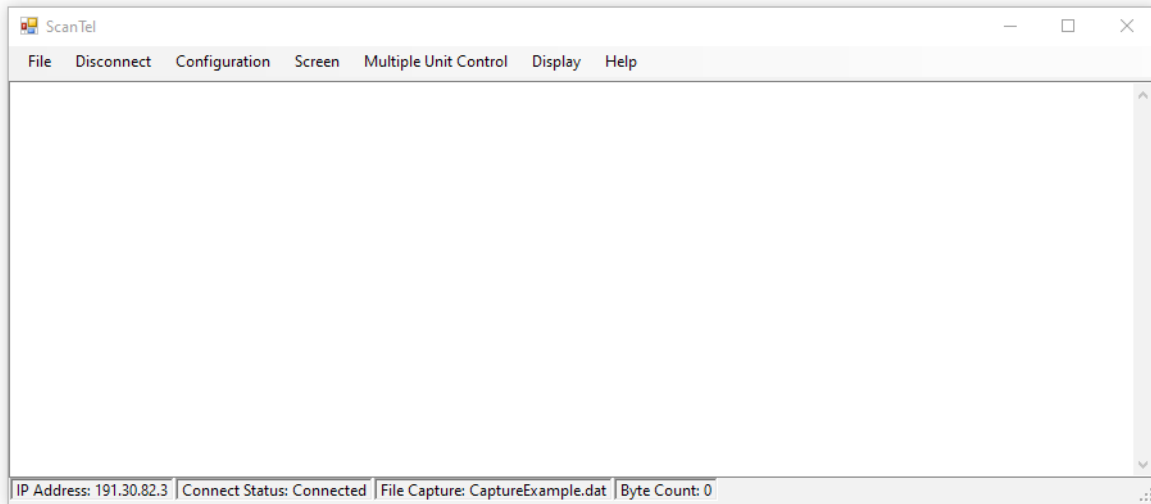
FIGURE 3.2 - SCANTEL HOME SCREEN WITH MULTIPLE UNIT CONTROL

The ScanTel home screen also has a status bar with the following information:

IP Address   The IP address of the Scanivalve device (set in the Configuration window)

Connect Status   The Connect status will show one of four statuses:
                        Connected   Successfully connected to the intended device
                        Disconnected No device connected
                        Timed Out   The connection to the device cannot be found
                        Connecting... Attempting to make a connection to the intended IP address

File Capture   The destination file name will be displayed when a file capture is started. This window will only show the file name and file extension. It will not show the path or the capture type.

Byte Count   Displays the number of Bytes collected during the current file capture
                        (this will only appear when you are collecting Binary data to a file).

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SCANTEL CONFIGURATION

This section explains the Configuration window that appears when "Configuration" is selected from the ScanTel home screen. This window is shown in figure 3.3.
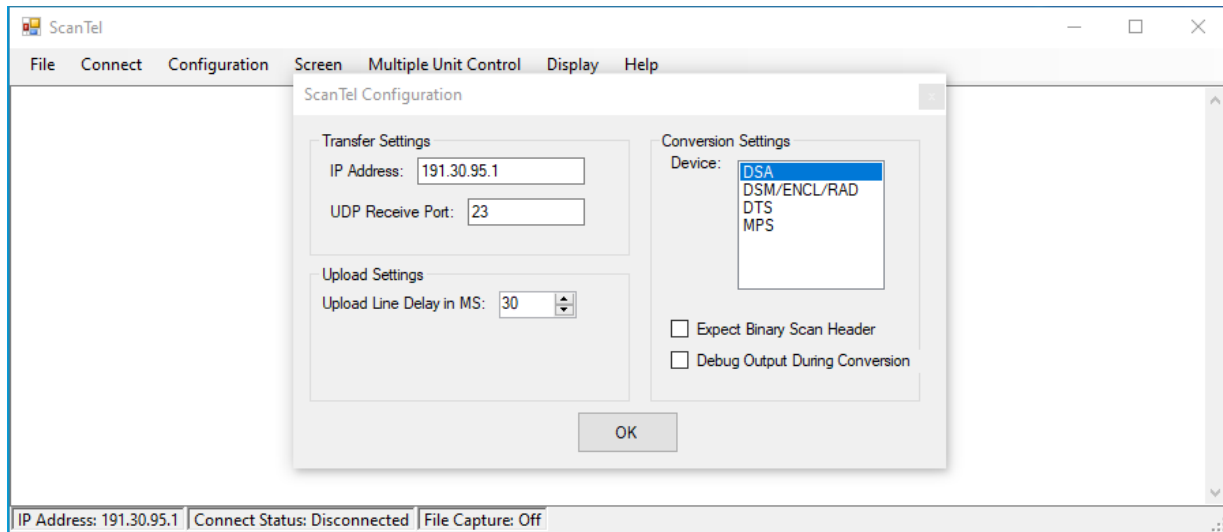

FIGURE 3.3 - SCANTEL CONFIGURATION WINDOW

The ScanTel Configuration window contains the following configuration options:

Transfer Settings

IP Address   The IP address of the Scanivalve device.
This field will save the last entered IP address.

UDP Receive Port   Identifies the port where the device will transmit Binary UDP data.
Default setting is 23.

Upload Settings

Upload Line Delay in MS   This should be set to regulate the transmission speed of a file upload to the device. This can be set from 0 to 100 milliseconds.
Default setting is 30.

Conversion Settings

Device   Select the Scanivalve device. This is very important when using the binary conversion functions as there are differences in the packets returned by each device.
Selecting MPS will enable the "Multiple Unit Control" option. This feature is only applicable with the use of MPS4200 modules.

Expect Binary Header   Check this box if a Binary header will be included in the data packet.

Debug Output During Conversion   Check this box if you experience a conversion failure, and please try again.

MULTIPLE UNIT CONTROL (MUBC)

This section explains the Multiple Unit Binary Control window that appears when "Multiple Unit Control" is selected in the ScanTel home screen. This window is shown in Figure 3.4. More information can be found in Section 5: Multiple Unit Binary Control.

Note: This option will only appear when the selected device type is MPS. This feature can only be used with MPS4200 devices.
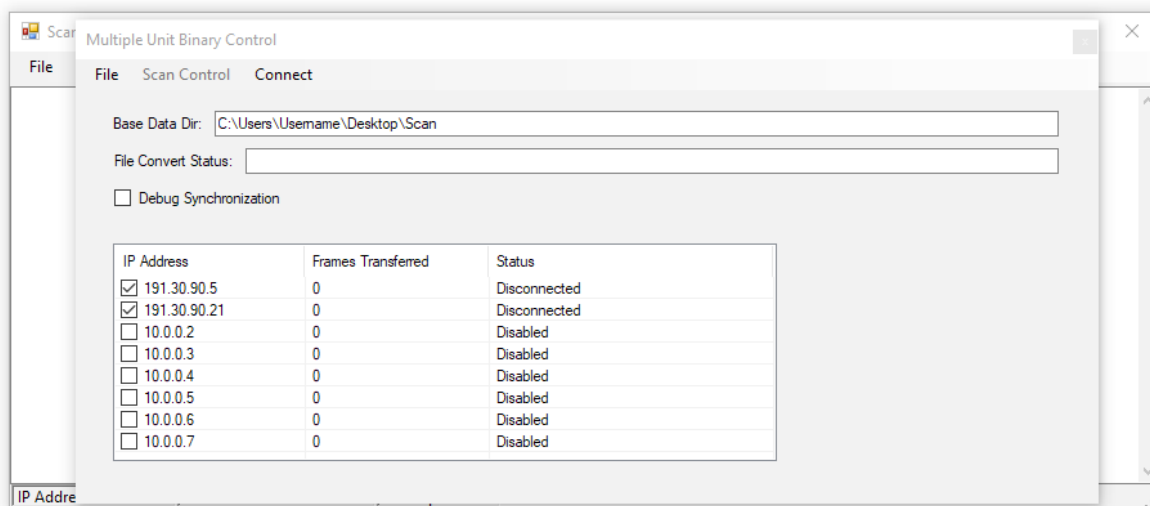

FIGURE 3.4 - MULTIPLE UNIT BINARY CONTROL WINDOW

The Multiple Unit Binary Control window contains the following options:

File	This menu contains the following options:	
	Merge Data Files..	Used to convert and merge multiple binary data files into a single .CSV file. Note: PTP must be used for this to be successful.
	Set Base Data Directory..	Click this to select a location for all scan data to be collected and stored.
	Close Binary Control	Close the Multiple Unit Binary Control window.
Scan Control	This menu contains the following options:	
	Start Scan	Begin a scan on all connected devices.
	Stop Scan	Stop the scan on all connected devices.
	(This menu will only be available if there is one or more devices successfully connected)	
Connect/ Disconnect	Connect or disconnect from all IP addresses that are enabled (check mark is enabled).	
Base Data Dir:	This field will display the Base Data Directory that is set by using "Set Base Data Directory" under the file menu.	
File Convert Status	This field will display the conversion status when using the "Merge Data Files.." options under the file menu. Error's in the conversion and merge process may be displayed here.	
Debug Synchronization	Check this box if you experience a conversion and merge data file failure, and please try again.	

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Below the "Debug Synchronization" check box contains the following items:

IP Address   This column is used to enter the IP addresses of the MPS4264 modules you intended to connect to and collect data from. A slow, double-click on the IP address will enable you to edit the IP address. Once an IP address has been entered, press <ENTER>. To "Enable" the IP address of the module, check the box next to the IP address. This will enable the IP address to be connected to. An Example of two IP address entered and enabled is shown in Figure 3.4. This does not establish a connection to the device. Up to 8 modules are supported.

Frames Transferred   This column displays the number of frames of data that are or have been collected by the MPS during or after a scan. This value will only update every one second, regardless of the scan rate.

Status   There are five statuses that can be shown in this column for each IP address:
        Disabled   This IP Address is Disabled. This device will not be connected to.
        Disconnected   This will show when a device is enabled, but has no established connection.
        Connected   The device has a successful connection and is ready to scan.
        Scanning   The device is currently in SCAN mode.
        Connection timed out The connection to the device could not be made or has been lost.

CRASH LOG

ScanTel version 1.04 added a "Crash Log" that will write debug information in the event that the application experiences an unhandled exception, causing ScanTel to terminate. In the event that an unexpected termination does happen, this file will be requested by Scanivalve Technical Support to help diagnose and resolve any issues.

The crash log will be written to a file in the following location:

      C:\Users\<username>\Documents\ScanTel\debug

The file name will be in the following format:

      ScanTel_crash_yyMMdd_HHmmss.log

Where:
      yy = year
      MM = month
      dd = day
      HH = hour
      mm = minute
      ss = second

If you experience an issue with ScanTel, please include this file in an email to techsupport@scanivalve.com

SECTION 4: OPERATION

This section explains general operation and proper use of the ScanTel software. It will also provide example configurations for multiple Scanivalve devices, as well as different types of data collection.

CONNECTING TO A DEVICE

To connect to a device, you must first configure the device settings in the "Configuration" window that was shown on page 5. Click on "Configuration" in the ScanTel home screen to begin.
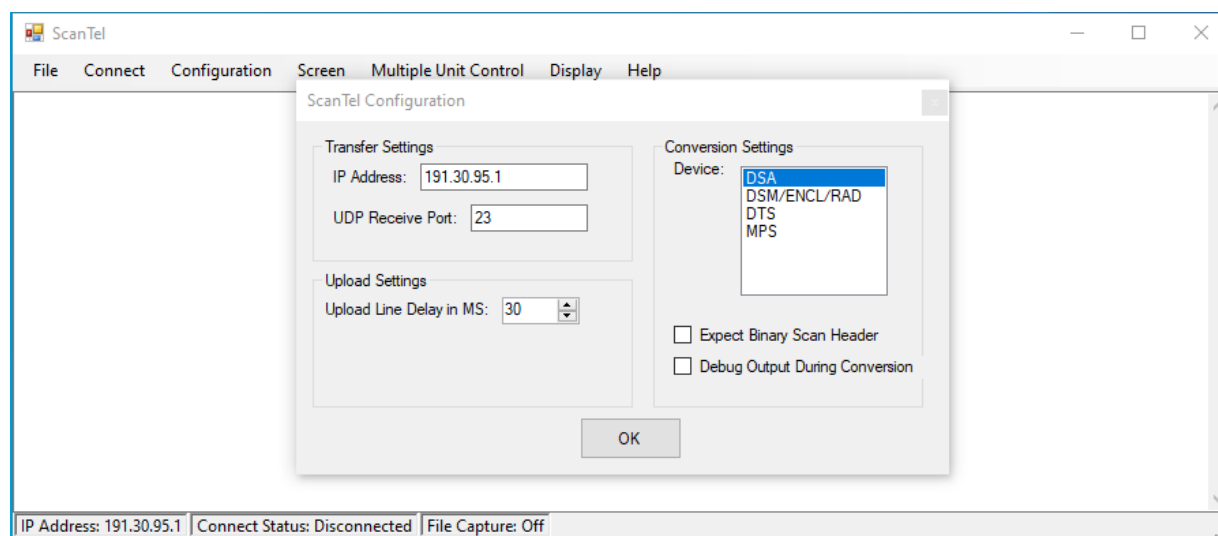

FIGURE 4.1 - SCANTEL CONFIGURATION WINDOW

1. Enter the IP address of the Scanivalve device you intend to connect to. Using figure 4.1 as an example, we are connecting to a Scanivalve device that has a known IP address of 191.30.95.1.

2. Enter the UDP port number if using ScanTel for UDP Binary data collection (default value is 23).

3. Select the Device Type in the Conversion Settings area. Using figure 4.1 as an example, the device we intend to connect to is a DSA. This device type is selected.

4. If a binary header will be included in the data packet, click the box next to Expect Binary Header box.

5. Click OK to apply the settings. The Configuration window will close, and the IP address entered will be shown in the Status bar.

6. On the ScanTel home screen, click Connect. Monitor the status bar to see if the connection was successful. If the connection is successful, the Connect Status will display "Connected". If the Connect Status displays "Connection timed out" or "Disconnected", communication with the device will not be possible. Please diagnose the connection before attempting to reconnect. Possible causes for no connection are:

    The device is not connected to the computer.
    The device is not powered on or has not finished booting (this may take up to 1 minute depending on the device).
    The IP address of the host computer is not compatible.
    The IP address entered in the Configurations Window is not correct.
    The IP address of the device is not correct.
    A firewall or anti-virus program is blocking the connection.

SENDING COMMAND STRINGS

Once a connection has been established with a Scanivalve device, the main screen can be used to transfer command strings to the Scanivalve device i.e., Host to Server. The text-mode interface allow for any accepted command to be sent to the device, terminating each line with a <CR> or carriage return, which is generated by striking the ENTER key on the keyboard.

One command that is universally accepted by each Scanivalve device is the STATUS command. This command will cause the Scanivalve device to respond with it's current status. To send this command, type STATUS in the window and hit the ENTER key. If the connection is valid, the Scanivalve device should generate a response that is displayed on the screen.

From here, any command accepted by the module you are working with can be sent to the Scanivalve device. For a list of accepted commands, please refer to the Scanivalve device's user or software manual.

The next section will provide simple configurations for basic data collection. These are only examples, which can be modified. Due to the extreme amount of configurations and options, not all methods of data collection will be mentioned.

DEVICE CONFIGURATIONS

The following section will outline example configuration settings for different Scanivalve devices. Included in these examples will be ASCII TCP and Binary UDP data transfers.

ASCII DATA TRANSFERS

In order for the ScanTel program to acquire ASCII TCP/IP data from a DSA, MPS, RAD, Enclosure, DSM, or DTS module, the module must be configured correctly. Changes to the module configuration may be made in the ScanTel window after the connection is made. The recommended settings for each type module are listed below. The settings for PERIOD and AVERAGE or RATE reflect a scan speed that should work in most systems.

DSA5000 SERIES
  RATE 10
  FORMAT A
  SSEP 1
  ENFTP 0
  ENUDP 0

MPS4200 SERIES
  SET RATE 10
  SET FORMAT T A
  SET ENFTP 0
  SET ENUDP 0
  SET SVRSEL 1
  SET SIM 0
NOTE: When the SVRSEL variable is modified, a SAVE and reboot must happen before the change takes effect.
      This variable is only applicable to the MPS4264s. It can be ignored with MPS4232s.

DSA3200 & DSA-PTP SERIES
  SET PERIOD 250
  SET AVG 16
  SET BIN 0
  SET FORMAT 0
  SET PAGE 0
  SET TIME 0
  SET PORT 23
  SET HOST 0.0.0.0 0 T
NOTE: When the HOST variable is modified, a SAVE and reboot must happen before the change takes effect.

DTS3250 & DTS4050 SERIES
   SET PERIOD 7812
   SET AVG 4
   SET BIN 0
   SET FORMAT 0
   SET PAGE 0
   SET TIME 0
   SET HOST 0.0.0.0 0 T
NOTE: When the HOST variable is modified, a SAVE and reboot must happen before the change takes effect.

RAD4000, DSM4000/3200/3000, & DSAENCL4000 SERIES
   SET PERIOD 250
   SET AVG1 4
   SET BIN 0
   SET FORMAT 0
   SET PAGE 0
   SET BINADDR 0 0.0.0.0
NOTE: When the BINADDR variable is modified, a SAVE and reboot must happen before the change takes effect.

DSM3400 & DSAENCL3200 SERIES
   SET PERIOD 250
   SET AVG 4
   SET BIN 0
   SET CONOUT 2
   SET FORMAT 0
   SET PAGE 0
   SET BINADDR 0 0.0.0.0
NOTE: When the BINADDR variable is modified, a SAVE and reboot must happen before the change takes effect.

RAD3200 SERIES
   SET PERIOD 250
   SET AVGn 4
   SET BIN 0
   SET FILEOUT 0
   SET FORMAT 0
   SET PAGE 0
   SET BINADDR 0 0.0.0.0
NOTE: When the BINADDR variable is modified, a SAVE and reboot must happen before the change takes effect.

DSA3000 SERIES
   SET PERIOD 250
   SET AVG 16
   SET BIN 0
   SET FORMAT 0
   SET PAGE 0
   SET NETTYPE TCP
NOTE: When the NETTYPE variable is modified, a SAVE and reboot must happen before the change takes effect.

ASCII DATA COLLECTION

1. Using a valid connection, configure the Scanivalve device for ASCII TCP/IP data transfer using the previous section. For additional settings and configurations, refer to the device software manual for more information.

2. Select File from the ScanTel home screen, and then select "Start ASCII Capture File" from the drop-down window.

3. Enter the file name desired and select a location that is read/writable. Click OK.

4. The ScanTel status bar will show the file capture is on and will show the file name entered.

5. Issue the command: SCAN
   This will begin data collection. NOTE: If FPS is set to anything other than 0, the data collection will stop when the FPS value has been met. If FPS is set to 0, the data collection must be stopped by issuing a STOP command or using the <ESC> key.

6. Once the SCAN has been completed, select File, and then "Close ASCII Capture File".

UPLOAD ASCII FILE

ASCII files may be uploaded to any of the devices supported in this program. Generally, this feature would be used to upload configuration files to a DSM, RAD, or Enclosure. It most likely would be used to upload calibration coefficients to a DSA3200 Series module. Below is an example of using the "Upload ASCII File" option in ScanTel to load coefficients to a DSA3200 series scanner.

Before uploading a coefficient file to a DSA module the existing coefficients must be deleted.

1. Open ScanTel:
   Select Configuration
   Enter the IP Address of the scanner
   Select DSA/DSA-PTP in the conversion settings.
   Click OK when finished

2. After a valid connection is made, Type: DELETE 0 72. This will delete all existing master planes from RAM in the module.

3. Select File, and then select "Upload ASCII File"

4. The file Open window will appear. Browse to the folder where the coefficient file is stored. Highlight the correct file and click Open.

5. The upload will start immediately. The upload is complete when the last channel in the last temperature plane is displayed (the DSA may need time to process the information and may be slow to respond).

6. Type: SAVE to save the coefficients to the device.

7. Click Disconnect.

8. Cycle power to complete the process.

BINARY UDP DATA TRANSFERS

In order for the ScanTel program to acquire UDP Binary data from a DSA, MPS, RAD, Enclosure, DSM, or DTS module, the module must be configured correctly. Changes to the module configuration may be made in the ScanTel window after the connection is made. The recommended settings for each type module are listed below. The settings for PERIOD and AVERAGE or RATE reflect the maximum possible scan rate per each module. This speed may not be obtained in all systems.

DSA5000 SERIES
  RATE 5000
  SSEP 1
  ENFTP 0
  ENUDP 1
  IPUDP <IP Address> <Port>
      <IP Address> is the IP address of the host computer
      <Port> is the UDP Data Port

MPS4200 SERIES
  SET RATE 850
  SET FORMAT F B
  SET ENFTP 0
  SET ENUDP 1
  SET IPUDP <IP Address> <Port>
  SET SVRSEL 3
NOTE: When the SVRSEL variable is modified, a SAVE and reboot must happen before the change takes effect.
      This variable is only applicable to the MPS4264s. It can be ignored with MPS4232s.
      <IP Address> is the IP address of the host computer
      <Port> is the UDP Data Port

DSA3200 & DSA-PTP SERIES
  SET PERIOD 125
  SET AVG 1
  SET BIN 1
  SET FORMAT 0
  SET PAGE 0
  SET TIME 0
  SET PORT 23
  SET HOST <IP Address> <Port> U
NOTE: When the HOST variable is modified, a SAVE and reboot must happen before the change takes effect.
      <IP Address> is the IP address of the host computer
      <Port> is the UDP Data Port
      SET PERIOD value on DSA-PTP can be 74

DTS3250 & DTS4050 SERIES (16TX)
  SET PERIOD 781
  SET AVG 1
  SET BIN 1
  SET FORMAT 0
  SET PAGE 0
  SET TIME 0
  SET HOST <IP Address> <Port> U
NOTE: When the HOST variable is modified, a SAVE and reboot must happen before the change takes effect.
      <IP Address> is the IP address of the host computer
      <Port> is the UDP Data Port
      Scan rates are limited in 32 and 64 channel modules

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RAD4000, DSM4000, & DSAENCL4000 SERIES

SET PERIOD 25
SET AVG1 1
SET BIN 1
SET FORMAT 0
SET PAGE 0
SET BINADDR <Port> <IP Address>
NOTE: When the HOST variable is modified, a SAVE and reboot must happen before the change takes effect.
<IP Address> is the IP address of the host computer
<Port> is the UDP Data Port
SET BIN 4 if a header is to be added to the file. If this is set, ensure that the "Expect Binary Scan Header" box in the ScanTel configuration window is checked before the binary data file is converted.

DSM3000/3200 SERIES

SET PERIOD 50
SET AVGn 1
SET BIN 1
SET FORMAT 0
SET PAGE 0
SET BINADDR <Port> <IP Address>
NOTE: When the HOST variable is modified, a SAVE and reboot must happen before the change takes effect.
<IP Address> is the IP address of the host computer
<Port> is the UDP Data Port

DSM3400 & DSAENCL3200 SERIES

SET PERIOD 30
SET AVG 1
SET BIN 1
SET CONOUT 2
SET FORMAT 0
SET PAGE 0
SET BINADDR <Port> <IP Address>
NOTE: When the HOST variable is modified, a SAVE and reboot must happen before the change takes effect.
<IP Address> is the IP address of the host computer
<Port> is the UDP Data Port

RAD3200 SERIES

SET PERIOD 30
SET AVGn 1
SET BIN 1
SET FILEOUT 0
SET FORMAT 0
SET PAGE 0
SET BINADDR <Port> <IP Address>
NOTE: When the HOST variable is modified, a SAVE and reboot must happen before the change takes effect.
<IP Address> is the IP address of the host computer
<Port> is the UDP Data Port

BINARY UDP DATA COLLECTION

1. Using a valid connection, configure the Scanivalve device for Binary UDP data transfer using the previous section. For additional settings and configurations, refer to the device software manual for more information.

2. Select File from the ScanTel home screen, and then select "Start Binary Capture File" from the drop-down window.

3. Enter the file name desired and select a location that is read/writable. Click OK.

4. The ScanTel status bar will show the file capture is on and will show the file name entered. The Byte Counter will appear and will be pre-set at 0.

5. Issue the command: SCAN
   This will begin data collection. NOTE: If FPS is set to anything other than 0, the data collection will stop when the FPS value has been met. If FPS is set to 0, the data collection must be stopped by issuing a STOP command or using the <ESC> key. It is recommended, however, that the FPS variable be set to a finite number when using a fast scan rate.
   The Byte Counter will show the total number of bytes captured.

6. Once the SCAN has been completed, select File, and then "Close Binary Capture File".

CONVERT BINARY FILE

When the Binary File Capture is complete, the file can be converted to a .CSV file that can be imported into any spreadsheet program. If the Binary File was captured from a RAD4000, DSM4000, or DSAENCL4000, the file may have a header. If the file has a header, the Expect Binary Scan Header Box in the Configuration Window must be checked before the conversion process is started. Headers may only be added to RAD4000, DSM4000, or DSAENCL4000 devices when using this software. To convert a binary file to a .CSV file:

1. Select File from the ScanTel home screen, and then select "Convert Binary File" from the drop-down window.

2. The File Open Window will open

3. Highlight the file to be converted and click Open.

4. The file will be converted. A window will open to show the progress

5. The converted file will be written to the same folder where the binary file was located. The file will have the same name as the binary file with the .CSV extension. If a header was included in the binary file, the header data will be written to a file with the same name as the binary file, but with a .txt extension.

NOTE: A Scanivalve Module does not need to be connected in ScanTel to convert Binary data.

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DATA COLLECTION EXAMPLES

DSA3200 SERIES UDP BINARY HIGH SPEED

A DSA3217/16Px at address 191.30.80.144 is to be configured to send binary data at 500Hz (samples/channel/sec) over the UDP port 23 to a host computer with an IP address of 191.30.80.100. The data are to be logged to a binary file named data.dat in a folder named: Scan Data. The test requires 30 seconds of data to be collected (15,000 frames of data). After the data are logged, they are to be converted to ASCII format.

1. Click on the ScanTel icon to launch ScanTel.
2. Open the Configuration Window.
3. Select the Device Type
        DSA
4. Enter the IP Address of the device
        191.30.80.144
5. Set the UDP Port - Port 23 is the default
6. Click OK
7. Click Connect on the ScanTel home screen
8. Configure the module for UDP Binary Data Transmission by issuing the following commands:

   SET PERIOD 125
   SET AVG 1
   SET BIN 1
   SET FPS 15000
   SET FORMAT 0
   SET PAGE 0
   SET TIME 0
   SET PORT 23
   SET HOST 191.30.80.100 23 U
   SAVE

9. Wait for 15 seconds and then click Disconnect
10. Cycle the power to the module
11. Click Connect to reconnect to the module
12. Select File, and then select Start Binary Capture File
13. Browse to the correct folder, and enter the file name (scan.dat) and click OK
14. Issue the command: SCAN
     The data collection will start and last 30 seconds.
15. When the scan is complete; select File, and then Close Binary File
16. Select File again, and then select Convert Binary File
17 Highlight the file to be converted and click Open
18. Close the Convert Status Window.

DTS4050 SERIES UDP BINARY HIGH SPEED

A DTS4050/16Tx at address 191.30.100.146 is to be configured to send binary data at 40Hz (samples/channel/sec) over the UDP port 23 to a host computer with an IP address of 191.30.100.100. The data are to be logged to a binary file named data.dat in a folder named: Scan Data. The test requires 15 seconds of data to be collected (600 frames of data). After the data are logged, they are to be converted to ASCII format.

1. Click on the ScanTel icon to launch ScanTel.
2. Open the Configuration Window.
3. Select the Device Type
        DTS
4. Enter the IP Address of the device
        191.30.100.146
5. Set the UDP Port - Port 23 is the default
6. Click OK
7. Click Connect on the ScanTel home screen
8. Configure the module for UDP Binary Data Transmission by issuing the following commands:

   SET PERIOD 1562
   SET AVG 1
   SET BIN 1
   SET FPS 600
   SET FORMAT 0
   SET PAGE 0
   SET TIME 0
   SET PORT 23
   SET HOST 191.30.100.100 23 U
   SAVE

9. Wait for 15 seconds and then click Disconnect
10. Cycle the power to the module
11. Click Connect to reconnect to the module
12. Select File, and then select Start Binary Capture File
13. Browse to the correct folder, and enter the file name (scan.dat) and click OK
14. Issue the command: SCAN
     The data collection will start and last 15 seconds.
15. When the scan is complete; select File, and then Close Binary File
16. Select File again, and then select Convert Binary File
17 Highlight the file to be converted and click Open
18. Close the Convert Status Window.

RAD4000 SERIES UDP BINARY HIGH SPEED

A RAD4000 at address 191.30.40.106 is to be configured to send binary data at 625Hz (samples/channel/sec) over the UDP port 23 to a host computer with an IP address of 191.30.40.100. The data are to be logged to a binary file named data.dat in a folder named: Scan Data. The test requires 60 seconds of data to be collected (37500 frames of data). After the data are logged, they are to be converted to ASCII format.

1. Click on the ScanTel icon to launch ScanTel.
2. Open the Configuration Window.
3. Select the Device Type
        RAD
4. Enter the IP Address of the device
        191.30.40.106
5. Set the UDP Port - Port 23 is the default
6. Click OK
7. Click Connect on the ScanTel home screen
8. Configure the module for UDP Binary Data Transmission by issuing the following commands:

    SET PERIOD 25
    SET AVG1 1
    SET BIN 1
    SET FPS1 37500
    SET FORMAT 0
    SET TIME 0
    SET PORT 23
    SET BINADDR 23 191.30.40.100
    SAVE

9. Wait for 15 seconds and then click Disconnect
10. Cycle the power to the module
11. Click Connect to reconnect to the module
12. Select File, and then select Start Binary Capture File
13. Browse to the correct folder, and enter the file name (data.dat) and click OK
14. Issue the command: SCAN
       The data collection will start and last 60 seconds.
15. When the scan is complete; select File, and then Close Binary File
16. Select File again, and then select Convert Binary File
17 Highlight the file to be converted and click Open
18. Close the Convert Status Window.

Note: this procedure will also apply to a DSM4000 or DSAENCL4000. Ensure that the channel configuration under LIST SG 1 is properly configured.

DSA5000 SERIES ASCII TCP/IP

A DSA5000 at address 191.30.130.144 is to be configured to send ASCII data at 10Hz (samples/channel/sec) using ScanTel to collect the data into a file. The data are to be logged to an ASCII file named data.txt in a folder named: Scan Data. The test requires 45 seconds of data to be collected (450 frames of data). The data will be collected in ASCII format.

1. Click on the ScanTel icon to launch ScanTel.
2. Open the Configuration Window.
3. Select the Device Type
        DSA
4. Enter the IP Address of the device
        191.30.130.144
5. Click OK
6. Click Connect on the ScanTel home screen
7. Configure the module for ASCII Data Transmission by issuing the following commands:

    RATE 10
    FPS 450
    FORMAT A
    TRIG 0
    CALZ 1
    SSEP 1
    ENFTP 0
    ENUDP 0

8. Select File, and then select Start ASCII Capture File > Device Output Only...
9. Browse to the correct folder, and enter the file name (data.txt) and click OK
10. Issue the command: SCAN
       The data collection will start and last 45 seconds.
11. When the scan is complete; select File, and then Close ASCII File

The data may be viewed in a text editor. If intended to be used with a spreadsheet program, use FORMAT C, and after step 11, change the extension of the file from .txt to .csv.

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MPS4264 SERIES UDP BINARY HIGH SPEED

A MPS4264 at address 191.30.90.224 is to be configured to send binary data at 850Hz (samples/channel/sec) over the UDP port 23 to a host computer with an IP address of 191.30.90.100. The data are to be logged to a binary file named data.dat in a folder named: Scan Data. The test requires 30 seconds of data to be collected (25500 frames of data). After the data are logged, they are to be converted to ASCII format.

1. Click on the ScanTel icon to launch ScanTel.
2. Open the Configuration Window.
3. Select the Device Type
        MPS
4. Enter the IP Address of the device
        191.30.90.224
5. Set the UDP Port - Port 23 is the default
6. Click OK
7. Click Connect on the ScanTel home screen
8. Configure the module for UDP Binary Data Transmission by issuing the following commands:

    SET RATE 850
    SET FPS 25500
    SET FORMAT F B
    SET SVRSEL 3
    SET ENFTP 0
    SET ENUDP 1
    SET IPUDP 191.30.90.100 23
    SAVE

9. Wait for 15 seconds and then click Disconnect
10. Cycle the power to the module and wait up to 1 minute
11. Click Connect to reconnect to the module
12. Select File, and then select Start Binary Capture File
13. Browse to the correct folder, and enter the file name (data.dat) and click OK
14. Issue the command: SCAN
     The data collection will start and last 30 seconds.
15. When the scan is complete; select File, and then Close Binary File
16. Select File again, and then select Convert Binary File
17 Highlight the file to be converted and click Open
18. Close the Convert Status Window.

Note: this procedure will also work with MPS4232, however does not require that the SVRSEL variable is set and does not need to be power cycled.

MPS4232 SERIES ASCII TCP/IP

A MPS4232 at address 191.30.95.156 is to be configured to send ASCII data at 10Hz (samples/channel/sec) over the TCP port 23 to a host computer with an IP address of 191.30.95.100. The data are to be logged to a binary file named data.txt in a folder named: Scan Data. The test requires 5 minutes of data to be collected (3000 frames of data). The data will be collected in CSV format.

1. Click on the ScanTel icon to launch ScanTel.
2. Open the Configuration Window.
3. Select the Device Type
        MPS
4. Enter the IP Address of the device
        191.30.95.156
5. Click OK
6. Click Connect on the ScanTel home screen
7. Configure the module for ASCII Data Transmission by issuing the following commands:

    SET RATE 10
    SET FPS 3000
    SET FORMAT T C
    SET ENFTP 0
    SET ENUDP 0
    SET SIM 0
    SAVE

8. Select File, and then select Start ASCII Capture File > Device Output Only...
9. Browse to the correct folder, and enter the file name (data.txt) and click OK
14. Issue the command: SCAN
     The data collection will start and last 5 minutes.
15. When the scan is complete; select File, and then Close ASCII File

The data may be viewed in a text editor or spreadsheet program.

Note: this procedure will also work with MPS4264.

MULTIPLE UNIT BINARY CONTROL

When "MPS" is selected as the Device in the Configuration window, an option for Multiple Unit Binary Control may appear on the ScanTel home window. The Multiple Unit Binary Control allows a user to connect to multiple devices, initiate a scan, collect scan data, and merge the scan data to a single file. This feature requires the user to set one device as a PTP master, and the others as slaves. Alternatively, a "Grand Master" clock can be used with all modules configured as slaves. The following section will explain the setup procedure for Multiple Unit Binary Control using MPS4264's.

This procedure requires the following:
        MPS4264 software version 2.05 or higher
        ScanTel software version 1.03 or higher

To use MPS4232's with this feature, SIM must be set to 64 in the MPS4232's only.

If you need information about updating your current software, please contact techsupport@scanivalve.com

CONFIGURING MPS MULTIPLE UNIT BINARY CONTROL

1. Connect power and Ethernet cables to each MPS to be used. Power on each MPS and allow approximately 2 minutes for the MPS to complete their boot cycle.

2. Open a ScanTel instance for each MPS to be used.

3. In ScanTel, click "Help"-"About" to verify that ScanTel is version 1.03 or newer.

4. Connect to each MPS in their own ScanTel instance:
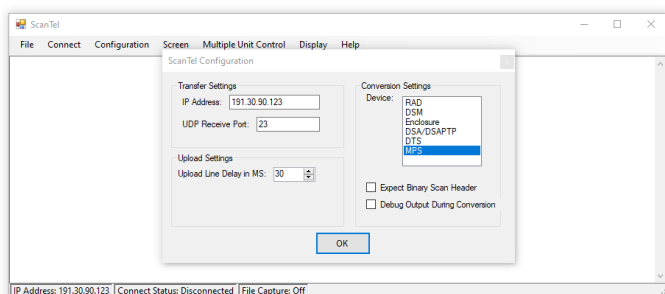   Select Configuration

FIGURE 5.1 - MPS CONFIGURATION

Enter the IP Address of the scanner
Select MPS in the conversion settings. See figure 5.1
Click OK when finished

5. Click Connect on the ScanTel home screen and make a valid connection to the scanner.

6. Adjust the LIST S settings of each scanner to be used. It is recommended that the LIST S settings be the same for all scanners being used.
In each ScanTel instance, type:
    LIST S
    SET RATE <desired scan rate in Hz>
    SET FPS <desired frames per scan>
    SET UNITS <desired units>
    SET FORMAT B B
    SET TRIG 0
    SET ENFTP 0
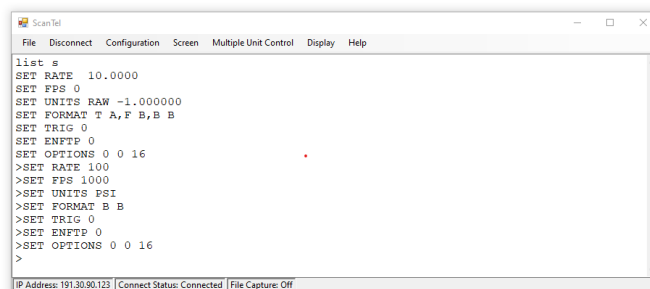   SET OPTIONS <desired options, default is 0 0 16>

FIGURE 5.2 - LIST S CONFIGURATION

An example configuration is shown in figure 5.2.

7. Adjust the LIST UDP settings of each scanner to be used. UDP must be disabled for all scanners being used.
In each ScanTel instance, type:
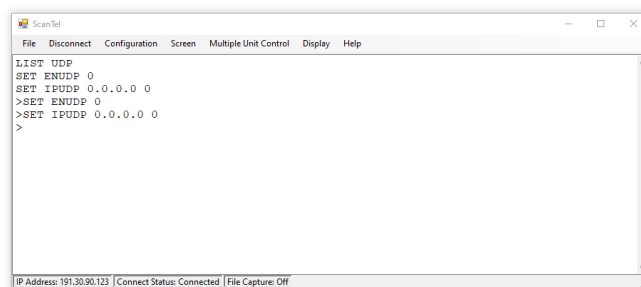   LIST UDP
    SET ENUDP 0

FIGURE 5.3 - LIST UDP CONFIGURATION

An example is shown in figure 5.3.

8. If no Grand Master clock is being used, you may configure a single MPS to act as a PTP Master. Adjust the LIST PTP settings of a single MPS only as follows:

LIST PTP
SET PTPEN 2
SET STAT 0
SET SST 0:0:0.0
SET SSD 1971/1/1
SET UTCOFFSET 0:0:0.0

NOTE: It is important that SST, SSD, and UTCOFFSET variables of all scanners being used are the same.
NOTE: Only one MPS can be set as PTPEN 2. All other modules being used must be set to PTPEN 1. If more than one MPS is set to PTPEN 2, you may experience issues.
NOTE: If a Grand Master is present, it is not necessary to configure one MPS as a PTP Master as other modules may ignore PTP information.
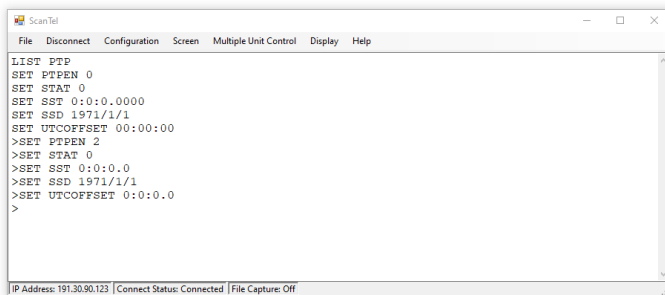

FIGURE 5.4 - LIST PTP CONFIGURATION (PTP MASTER)

An example configuration is shown in figure 5.4.

8. Adjust LIST PTP in all other MPS scanner that are to be used. If a Grand Master is present, apply these settings to all MPS modules:
    LIST PTP
    SET PTPEN 1
    SET STAT 0
    SET SST 0:0:0.0
    SET SSD 1971/1/1
    SET UTCOFFSET 0:0:0.0

NOTE: It is important that SST, SSD, and UTCOFFSET variables of all scanners being used are the same.
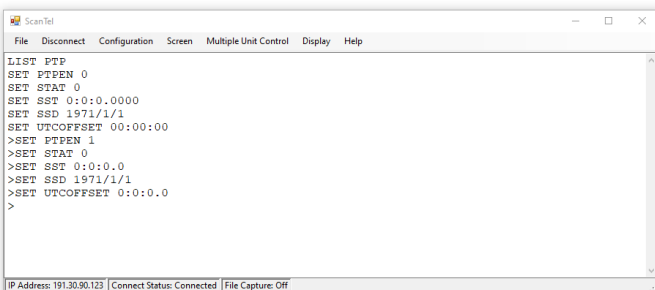

FIGURE 5.5 - LIST PTP CONFIGURATION (PTP SLAVE)

An example configuration is shown in figure 5.5.

9. Adjust the LIST M settings of each scanner to be used. Each MPS must have SVRSEL set to 2 to enable the binary server.
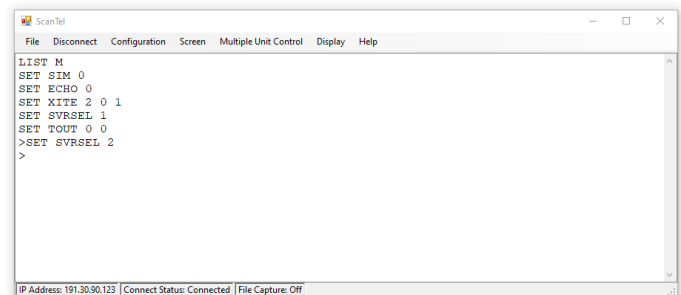In each ScanTel instance, type:
    LIST M
    SET SVRSEL 2

FIGURE 5.5 - LIST M CONFIGURATION

An example configuration is shown in figure 5.5.

For the MPS4232 only, SVRSEL is not an option as it is not needed. Instead, type the command:
    SET SIM 64

10. Save the changes to each MPS. A save is required if SVRSEL, ENUDP, or ENFTP are changed. After the initial save, subsequent Multiple Unit Binary scans will not require a SAVE or change to the variables set in the previous steps.
In each ScanTel instances, type:
   SAVE
    STATUS

Allow ample time for the save to be complete. The save may take over a minute. Issue a STATUS command until the MPS responds with STATUS: READY. Once this is true, proceed with the next step.

11. Select "Disconnect" from the ScanTel home screen and close each instance of ScanTel.

12. Power off each MPS and wait 10 seconds. Reapply power to each module.

MULTIPLE UNIT BINARY CONTROL OPERATION

1. Open a single instance of ScanTel.

2. Connect to one MPS in ScanTel:
    Select Configuration
    Enter the IP Address of the scanner
    Select MPS in the conversion settings.
    Click OK when finished

3. Select "Multiple Unit Control" from the ScanTel home screen. The Multiple Unit Binary Control window will open as show in figure 5.6.
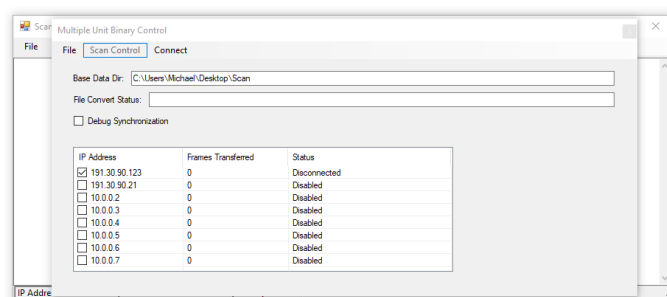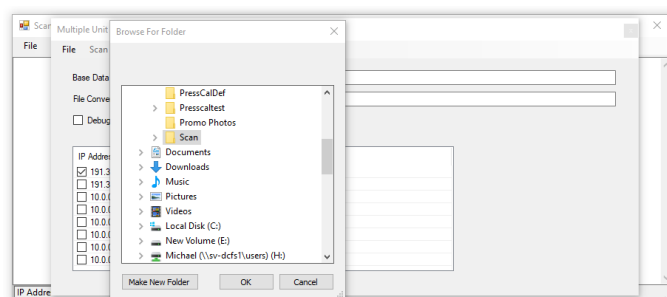

FIGURE 5.6 - MULTIPLE UNIT BINARY CONTROL

4. Set the Base Directory for the Multiple Unit Binary Control. This directory will become populated with a time-stamped folder with data from each MPS every time a scan occurs.
    Click "File"
    Click "Set Base Directory"
Select a suitable location and select OK

FIGURE 5.7 - SET BASE DIRECTORY

5. Set the IP Addresses of the scanners you want to collect data from.
    Click the empty IP Address to select it.
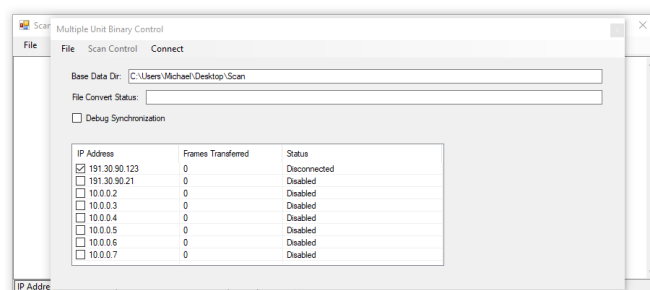   Click the IP Address again to get a cursor to change the IP Address.
    Input the IP Address of an MPS and hit ENTER.
    Check the box next to the IP Address to enable or

disable the scanner.
    Do this for each MPS, inputting their discreet IP Address.

Figure 5.8 shows two MPS IP addresses that have been entered. One is enabled, one is disabled.

FIGURE 5.8 - MPS IP ADDRESSES

6. Click "Connect" on the Multiple Unit Binary Control window. The "Status" for each enabled scanner should change from "Disconnected" to "Connected".

7. To start scanning:
    Cick "Scan Control"
    Click "Start Scan"
Scanning will begin. Note the status change from "Connected" to "Scanning". Also note the "Frame Transferred" climbs until the scan stops.

8. To stop scanning:
    Click "Scan Control"
    Click "Stop Scan"
Scanning will stop. Note the status change from "Scanning" to "Connected". The binary .dat files can be located in the timestamped folder in the Base Directory.

9. Merge data files.
    Click "File"
    Click "Merge Data Files"
Select the timestamped folder that you would like the .dat files converted and merged to a single .CSV.
    Click "OK"
Allow time for the files to be converted and merged.

NOTE: This step can be taken at a time convenient to the user. Files can be merged after testing if desired.

10. Access data.
Once the merge is complete, a data file titled Merged.csv will appear in the timestamped folder that was converted.

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APPENDIX

APPENDIX A: ENGINEERING UNIT CONVERSION CONSTANTS

UNITSCAN Setting	Engineering Unit	PSI to EU 1 psi =	EU to PSI 1 EU =
ATM	Atmospheres	0.068046 A	14.6960 psi
BAR	Bars	0.068947 b	14.5039 psi
CMHG	Centimeters of Mercury	5.17149 cmHg	0.193368 psi
CMH20	Centimeters of Water	70.308 cmH$_2$O	0.014223 psi
DECIBAR	Decibar	0.68947 db	1.4504 psi
FTH2O	Feet of Water	2.3067 ftH$_2$O	0.43352 psi
GCM2	Gram per square Centimeter	70.306 g/cm^2	0.014224 psi
INHG	Inch of Mercury @ 0°C	2.0360 inHg	0.491159 psi
INH2O	Inch of Water @ 4°C	27.0680 inH$_2$O	0.36127 psi
KGCM2	Kilogram per square Centimeter	0.703070 kg/cm^2	14.2235 psi
KGM2	Kilogram per square Meter	703.069 kg/m^2	0.0014223 psi
KIPIN2	kips per square inch (ksi)	0.001kip/in^2	1000.0 psi
KNM2	Kilonewton per square Meter	6.89476 kN/m^2	0.145038 psi
KPA	Kilopascal	6.89476 kPa	0.145038 psi
MBAR	Millibar	68.947 mb	0.014504 psi
MH20	Meter of Water	0.70309 mH$_2$O	1.42229 psi
MMHG	Millimeter of Mercury	51.7149 mmHg	0.0193368 psi
MPA	Megapascal	0.00689476 MPa	145.039 psi
NCM2	Newton per square Centimeter	0.689476 N/cm^2	1.45038 psi
NM2	Newton per square Meter	6894.76 N/m^2	0.000145038 psi
OZFT2	Once per square Foot	2304.00 oz/ft^2	0.000434028 psi
OZIN2	Ounce per square Inch	16.00 in/ft^2	0.062500 psi
PA	Pascal	6894.76 Pa	0.000145038 psi
PSF	Pound per square Foot	144.00 lb/ft^2	0.00694444 psi
TORR	Torr	51.7149 T	0.0193368 psi

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APPENDIX B: SOFTWARE CHANGE LOG

Version 1.00 - Initial Release - April 2011

Version 1.01 - August 2011
> Added ability to send the <TAB> character to the device.
> Corrected a bug that did not insert the time stamp into RAD, Enclosure, or DSM CSV files except when the packet types were 3, 4, 8 or 9.
> Changed the binary scan header from expecting a unsigned long to expecting a float when reading Period.

Version 1.02 - March 2015
> Added functionality to convert binary files of raw (non-engineering unit) data.
> Resolved a bug that sometimes prevented binary data from being captured.

Version 1.03 - January 2018
> Added Multiple Unit Binary Control
> Supports multiple MPS data collection and synchronization

Version 1.04 - July 2019
> Fixed handling issue when periods are in the binary path.
> Resolved issue with different connection failures.
> Combined DSA and DSAPTP option to one selection in Conversion Settings.
> Resolved time stamp issue when merging binary files in Multiple Unit Binary Control.
> Modified refresh rate of Frames Collected column in Multiple Unit Binary Control.
> Added crash log.

Version 1.05 - May 2022
> Added support for all MPS4232, and DSA5000 firmware v1.00 only.
> Added ASCII File Capture options to allow for Device Output Only (existing) or Output and Input.
> Allow UDP receive port to use range up to port 65535.
> Support full PTP resolution in binary conversions.
> Consolidated conversion module options (any DSA, any MPS, any DTS, any RAD/DSM/ENCL).

Version 1.06 - December 2022
> Modified binary packet conversion for DSA5000 to support DSA5000 firmware versions 1.01 and higher.

Version 1.07 - November 2023
> Added dynamic 5000 series binary conversion to support SSEP.

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