DSALINK

Version 4.03

INSTALLATION and OPERATION

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INTRODUCTION

The purpose of the DSALINK Software is to provide a means of communication between DSA Modules and a PC. It is designed to give a user the tools necessary to be able to interface to a DSA Module. It is not intended to be an application software. It is designed to be operated in Microsoft Windows 95/98/NT/2000. It provides the following:

1. Easy setup of DSA Modules.
   DSALINK is menu driven. That is, it permits a user to simply select the function(s) to be modified from a pull down menu. Setup of a DSA Module usually requires only a few mouse clicks.

2. Command and configuration information may be sent to DSA Modules from a disk file.
   This permits a very fast setup of a DSA Module. This is especially helpful when a module is to be modified during a test.

3. Display pressure and temperature values as numbers and in bar graph format.
   This permits easy setup of a module or group of modules. All data are displayed.

4. Display “scrolled” data from DSA Modules.
   When this window is opened, all communications from the DSA Modules are displayed.

5. Write data from DSA Modules to a disk file.
   Permits storage of data in a format specified during setup.

6. Replace individual sensors.
   Install coefficients for one sensor. Also, move sensors from one module to another.

The DSALINK software is designed to be connected to, and communicate with, one module. If it is necessary to connect to more than one module at a time, then multiple copies of the program can be opened. The number of modules that can be supported at one time is dependant upon the Host PC. A fast processor with 128 Mb RAM can support 20 DSA modules or more. A slow processor wit minimum RAM may only be able to support 2 or 3 modules.

DSALINK SOFTWARE

The DSALINK Software is written in Visual Basic 6.0. It is a 32 bit application. It will function properly in Windows 95, Windows 98, Windows NT, or Windows 2000. It will not function correctly in Windows 3.1

INSTALLATION

Equipment required:

NE2000 Compatible Ethernet Card
Ethernet Card Utilities
DSALINK Software
DSA Series 3000 or Series 3200 Module
28 Vdc Power Supply
RG 58 or equivalent cable (10-Base2 only)
Two line terminators (10-Base2 only)
Two BNC tees (10-Base2 only)
Cat 5 Ethernet Cross Cable for 10Base-T connection from Host to DSA Module
Cat 5 Ethernet Straight Cable for 10Base-T connection from Hub to DSA Module

It is recommended that a user read and fully understand this procedure before attempting to install the DSALINK software.

Ethernet Board and Packet Driver Installation

NOTE: If an older version of DSALINK is installed, skip to the DSALINK Installation section.

1. Install the Ethernet board in the PC.

2. Configure and test the Ethernet board. For Windows 95 operation, it is best to use the "Plug and Play" feature.

   Do Not install the network software from the Ethernet Board manufacturer. Installation of this software will set up a network environment that will cause conflicts with the DSALINK software. This software is included only for board setup and test.

DSALINK Software Installation

1. Install the DSALINK software.
   Start Windows
   NOTE: Remove any old DSALINK program or program group icons before proceeding. The DSALINK installation program will create new icons.
   Insert The DSALink CD into a CD Drive.
   The installation program should autorun, if it does not:
   Select: Start
   Select: Run
   Enter: x:\setup.exe Where x is the designator of the CD-ROM Drive.

2. If the installation is successful, a new program group and icon named DSALINK will be installed in the Start Up Folder.

3. This completes the installation. Exit windows, reboot your computer and restart windows before attempting to operate the DSALINK program.

DSALINK Operation - Getting Started

Windows 95/98/NT/2000 Setup

Add Microsoft TCP/IP Properties to the Network Setup.

Select: Start
Select: Control Panel
Select: Network

Highlight the TCP/IP setup of the Ethernet card installed.
Select: Properties
Select: IP Address
Select: Specify an IP Address
Set the IP Address to 191.30.5.5
Set the SubnetMask to 255.255.0.0
Select: WINS Configuration
Disable WINS Resolution
Select: DNS Configuration
Disable DNS
Select: Advanced
No properties should be entered
Select: Gateway
Do not establish a Gateway
Select: Bindings
Check Client for Microsoft Networks
Click on OK
Select Windows Logon for the Primary Network Logon.

Click on OK

Windows will have to be restarted before these changes take effect.

DSALINK Operation - Connection Test

1. Connect the DSA module to the Ethernet card. For 10Base-2 operation, a line terminator must be used at both ends of the cable.

2. Connect the 28 Vdc to the DSA Module. **DO NOT** connect or disconnect power with the power supply energized.

3. Test the host.

   Windows 95/98/NT

Click:	Start	
Click:	Programs	
Click:	MS DOS Prompt	A DOS window will open
Type:	ping 191.30.5.5	This is the IP address of the host.

   This utility will test the socket. If the socket is functioning correctly, the program will display the turn around time. If not, an error will be indicated. The error could indicate that there is a problem with the Ethernet card, or the setup.

   To exit, Type exit<enter> at the prompt.

4. Test the module connection

   Windows 95/98/NT

Click:	Start	
Click:	Programs	
Click:	MS DOS Prompt	A DOS window will open
Type:	ping 191.30.yy.xxx	This is the IP Address of the module. Substitute the numbers entered on the module address label for yy and xxx.

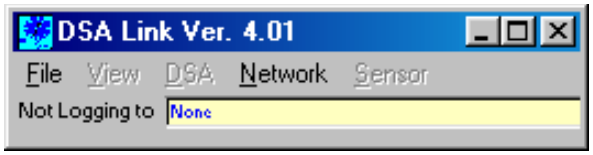
   This utility will test the network. If the network is functioning correctly, the program will display the turn around time. If not, an error will be indicated. The error could indicate that there is a problem with the Network connection, the Ethernet card, or the setup.

   To exit the Ping utility,

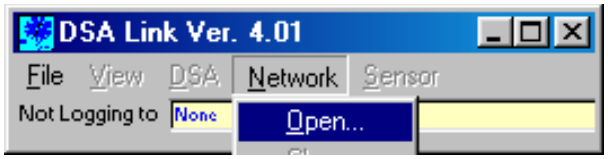
   Type exit<enter> at the prompt.

DSALINK Operation - Program Operation

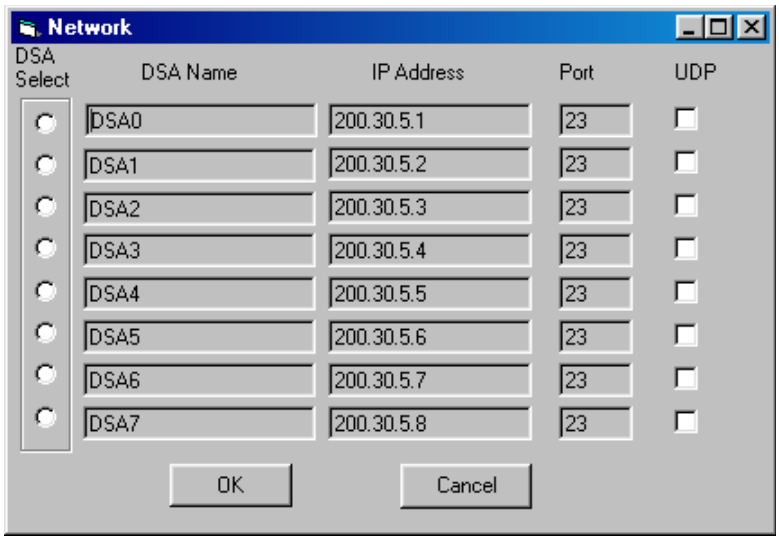
Select: Start
Select: Programs
Select: DSALINK A small window will open



Select: Network, Open



A window labeled “Network” will open

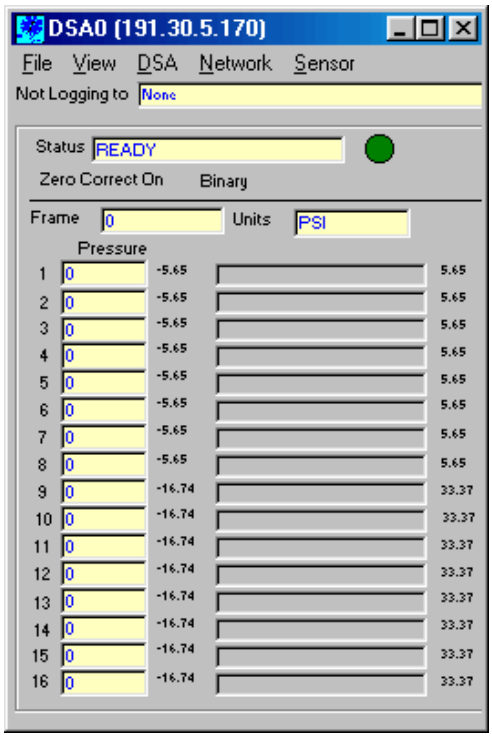


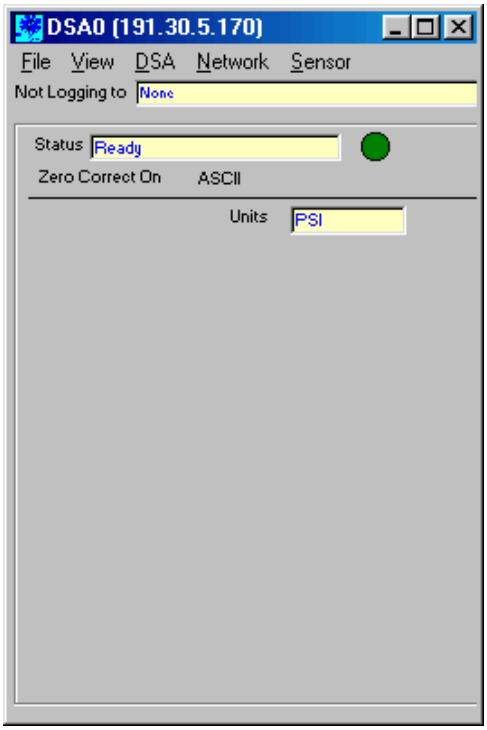
This program will store the addresses for 8 DSA modules. Select a DSA module by clicking on the DSA Select button. An IP Address must be entered for each module. The module IP address may be found on the IP address label on the side of the module. Set the IP address in the IP Address windows to match the IP Addresses of the DSA Modules connected.

Click on OK After a short delay the PC should connect to the DSA module.

When this is successful:

1. The DSA window will open. The IP address of the module connected will be displayed at the top of the window
2. A Green dot indicates a connection.
3. Status will be shown as: **READY**
4. The Maximum and Minimum pressure units and full scale values will be displayed in the Bar Graph windows. If EU is set to 0, then the displayed units will be in raw counts.

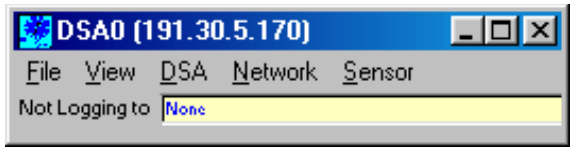




Refer to the next section for an explanation of the program commands.

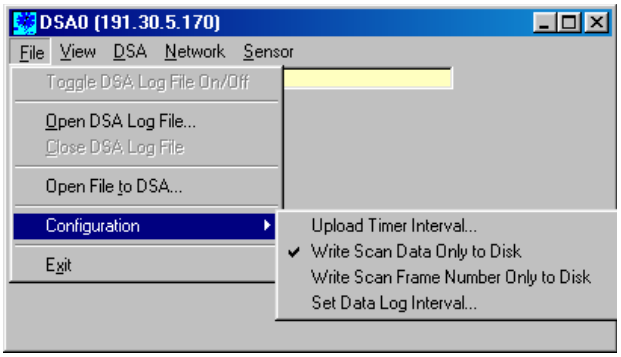
DSALINK Operation - Menu

The DSALINK Window has five menu options: File, View, DSA, Network, and Sensor.



File

This contains file activity options for a DSA Module.



Toggle DSA Log File On/Off

This function is only active if a log file has been opened. This permits on/off control of data logging without closing the log file.

Open DSA Log File...

This option will open a window which will prompt the user to name a destination file for DSA data. When a file is named, the file will be displayed Data will be logged to the file named when this option is selected.

Close DSA Log File

This option will close the data log file named in the option above.

Open File to DSA...

This option will allow a user to name a data file that will be downloaded into the DSA module. Generally this is a series of setup commands or sensor calibration data.

Configuration

This function contains three sub functions

Upload Timer Interval

Sets the pace of the file upload. The default is 100 ms. When clicked, the user will be prompted to enter the new value.

Write Scan Data Only to Disk

Scan data only will be written to the disk, commands and other data will be ignored.

Write Scan Frame Number Only to Disk.

Only the Scan Frame number will be written to the disk. This is a troubleshooting function not normally useful to a user.

Set Data Log Interval

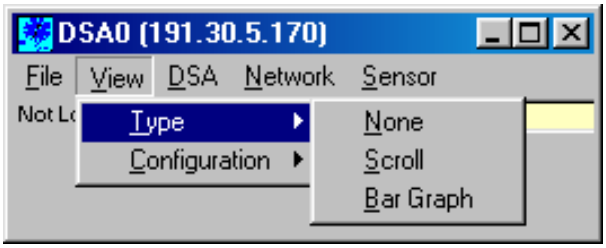
This is another troubleshooting function. The user can specify the number of frames to skip when writing data to a file.

Exit

Close all program activities and return to the desktop.

View

This contains commands to open or close activity windows and set the type of display.



Type

This option will allow the user to select the type of display

None

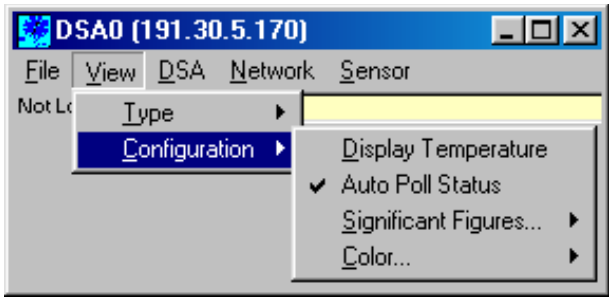
Only the Main Menu will be displayed. No screen activity will occur.

Scroll

This option opens a window that will echo all commands to and from the DSA module. Generally this would be opened to check the setup parameters of the DSA module prior to opening a scan function or to view the Temperature/Pressure coefficients.

Bar Graph

This option opens a Pressure/Temperature window to display temperature and pressure data. Data are displayed in numerical and bar graph format.



Configuration

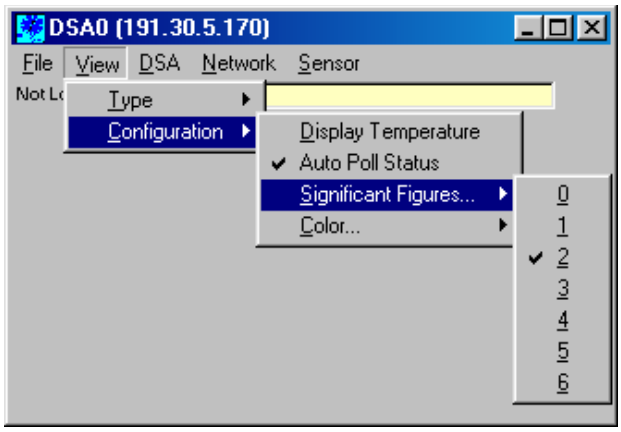
This option will permit the user to configure the data display.

Display Temperature

Click on this to display the transducer temperatures. This only functions in the Bar Graph mode. Transducer temperatures will be displayed in place of the numeric pressure values.

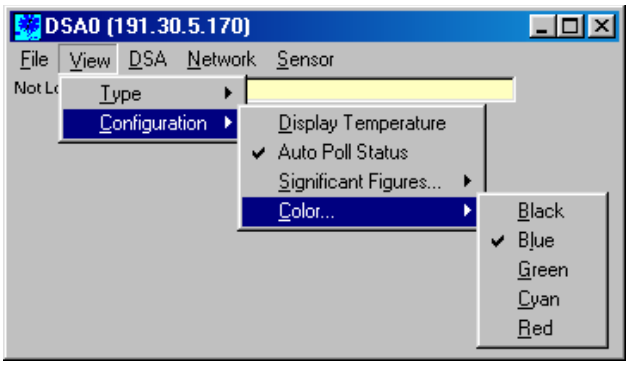
Auto Poll Status

When selected, the status display on the scan display functions will automatically update when the status changes..



Significant Figures...

This option allows the user to select the number of significant digits to be displayed in the pressure data. Temperature data are always displayed to the nearest whole number. Changes to this selection do not take effect until scan is enabled.

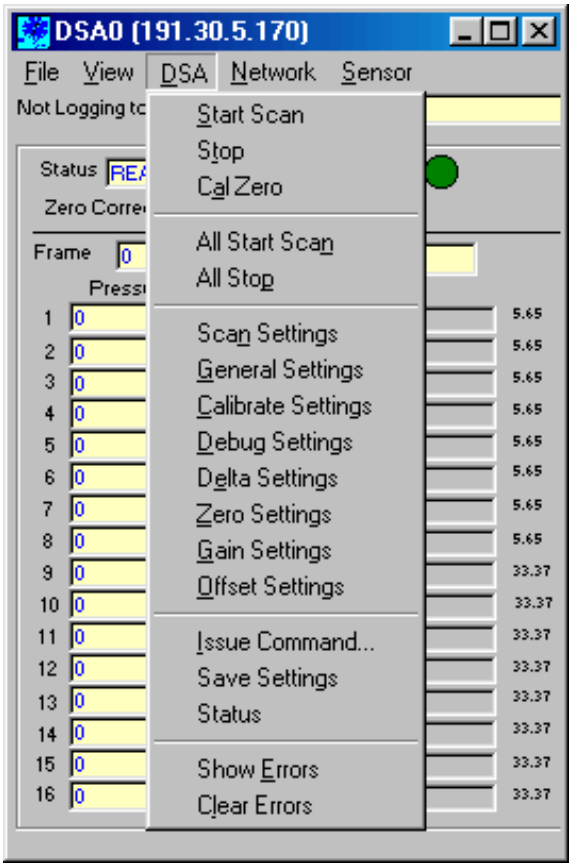


Color

This option allows the user to select the color of the bar graph display.

DSA

This option permits the user to select or modify module settings.



Start Scan

Initiate the scan function for the module in the active window.

Stop

Stop any function on the module in the active window.

Cal Zero

Perform a zero calibration and update the zero offset file.

All Start Scan

Initiate the scan function for all connected modules.

All Stop

Stop all functions for all connected modules

Scan Settings

This command will list the scan configuration variable settings in a Scroll Window.

General Settings

This command will list the network configuration variable settings in a Scroll Window.

Calibrate Settings

This command will list the calibration configuration variable settings in a Scroll Window.

Debug Settings

This command will list the debug configuration variable settings in a Scroll Window.

Delta Settings

This command will list the Delta zero values in a Scroll window.

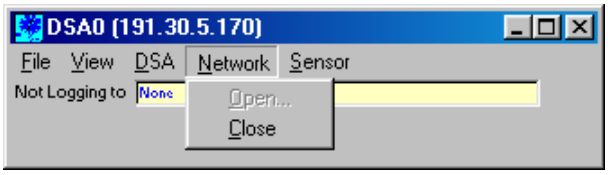
Zero Settings

This command will list the Zero Correction values in a Scroll Window.

Gain Settings
This command will list the temperature gain settings in a Scroll Window.
Offset Settings
This command will list the temperature offset settings in a Scroll Window.
Issue Command
This command will open a window to allow the user to set or modify a configuration variable.
Save Settings
Save all settings. This command must be issued to save a modified variable.
Status
Issues a status request to the connected module. This would be used if Auto Poll is disabled.
Show Errors
This command opens a window with a listing of errors.
Clear Errors
This command will clear the Error Buffer

Network

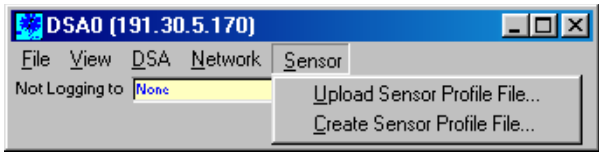
This option opens the Network window which permits the user to connect or disconnect a module.



Open...
Connects to the module selected in the Network Window.
Close
Disconnects the module.

Sensor

This option permits the user to create a sensor profile file so a sensor may be moved from one module to another or install a replacement sensor and merge the coefficients into the module coefficient file.



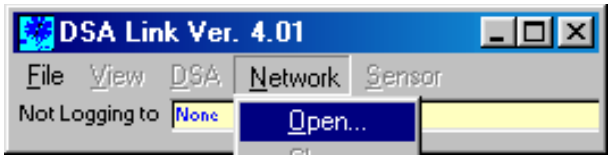
Upload Sensor Profile File...
Uploads coefficients for a replacement sensor to the module.
Create Sensor Profile FIle...
Creates a sensor profile file so a sensor may be moved to another module.

DSALINK Operation - Program Startup

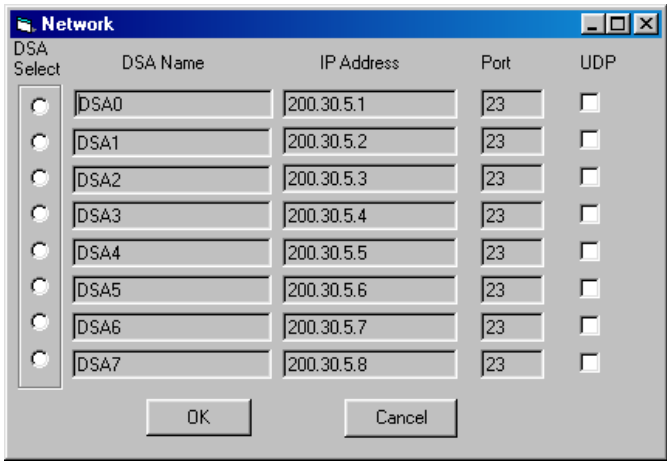
To start the DSALINK program, double click on the desktop icon or
Select: Start
Select: Programs
Select: DSALINK2

The DSALink window will open,

Select: Network
Select: Open



A DSA Select Window will open. The user will have the option of selecting one of eight DSA modules. The user should verify the IP address before clicking OK.



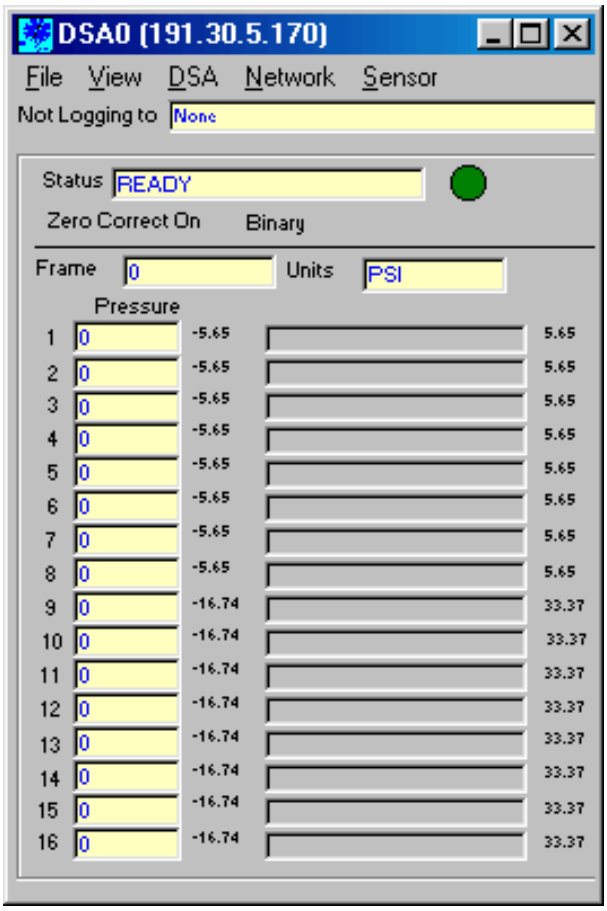
DSALINK Operation - Program Operation

When a DSA module is connected, and View is set to Bar Graph, the DSA Window may look similar to the box below.

The Window header contains the IP address of he DSA module.
The File status window shows that a log file has not been opened.
The Module Status window shows that the module is ready to accept a command.
The Frame window reads zero, indicating that a scan has not been initiated.
The Units window indicates that the pressure data will be output in PSI.
The Bar Graph indicates the module set up:

- Channels 1 - 8 have a maximum pressure of 5.65 PSI
- Channels 1 - 8 have a minimum pressure of -5.65 PSI
- Channels 9 - 16 have a maximum pressure of 33.37 PSI
- Channels 9 - 16 have a minimum pressure of -16.74 PSI

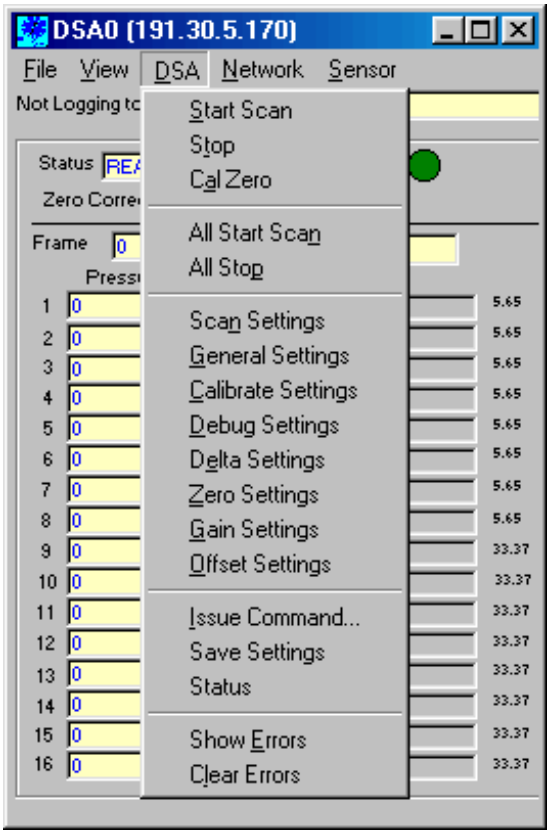
Zero Correction is enabled.
The data output format is Binary



DSA Operation - Verify Configuration

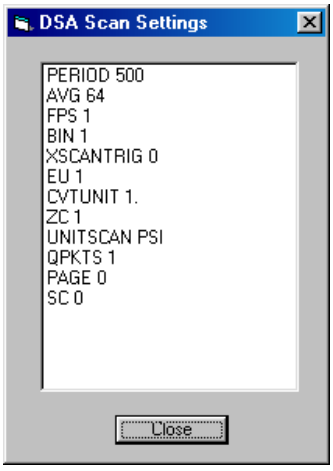
The module configuration should always be verified before operation. For more information on the configuration variables, please refer to the DSA Software Requirements Specification. To change any settings refer to the section named: DSA Operation - Modification of Variables.

The configuration verification will always start from the main window shown below.



Scan Settings

Select: **DSA**
Select: **Scan Settings**



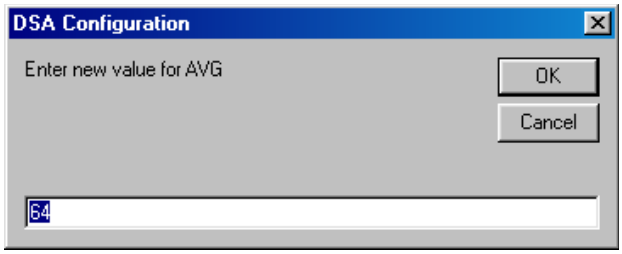
A Window will open displaying the Scan Settings
Refer to the DSA Software Requirements Specification for more information on each scan variable.

If the settings are correct, Click Close.

To change a setting, click on the variable. A window will open showing the current value of the variable. Enter the new value and click OK.
For example, To change the setting of AVG:

Click on AVG 64

A window prompting the user to enter the new value for AVG



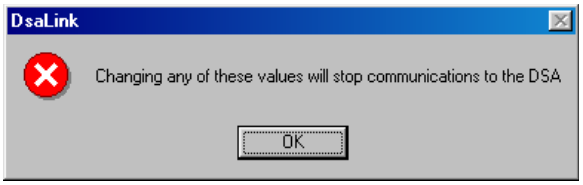
Enter the new Value and click OK.
The new value of AVE will be used by the module. To retain this value, a SAVE command will have to be issued.

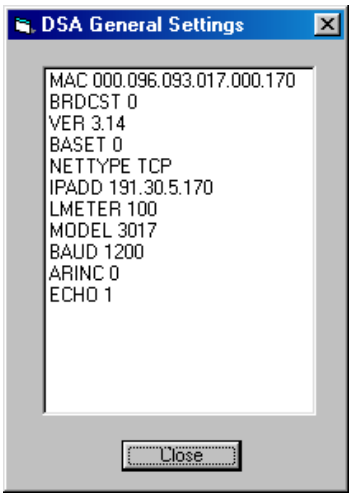
General Settings

Select: **DSA**
Select: **General Settings**

A warning window will open. A user must be very careful not to change these settings. The General Settings window will not open until the user has acknowledged the warning.box. Modification of these settings may have a detrimental effect on the operation of the module.

After viewing the settings, Click Close.



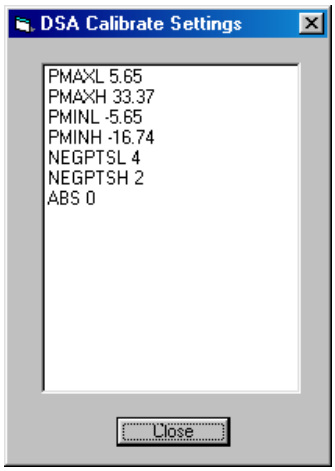


Calibrate Settings

Select: **DSA**
Select: **Calibrate Settings**

A window will open containing the Calibration Settings. Modification of these settings may have a detrimental effect on the operation of the module.

After viewing the settings, Click Close.

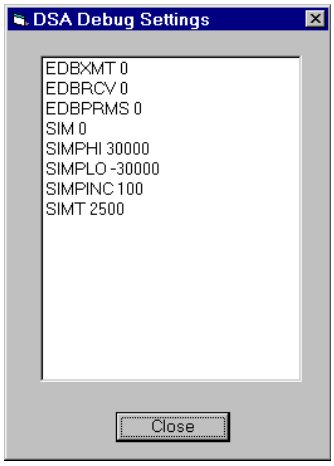


Debug Settings

Select: **DSA**
Select: **Debug Settings**

A Window will open displaying the Debug Settings. These settings are used for module troubleshooting and test.

If the settings are correct, Click Close.

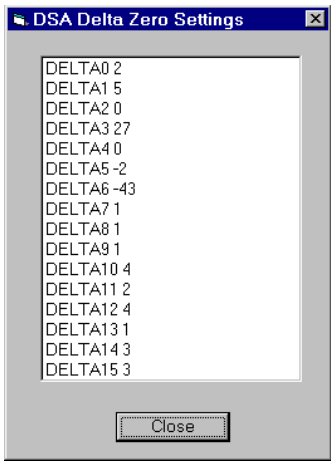


Delta Settings

Select: **DSA**
Select: **Delta Settings**

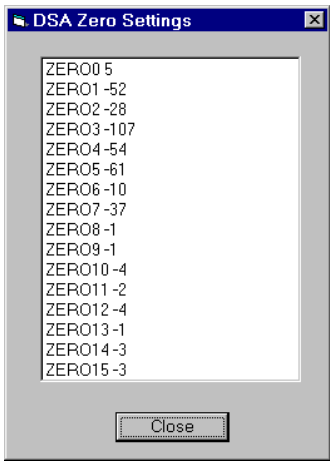
A Window will open displaying the Delta Zero Settings. These values should not be modified by the user. The display should be used for reference only.

To close the window, Click Close.



Zero Settings

Select: **DSA**
Select: **Zero Settings**

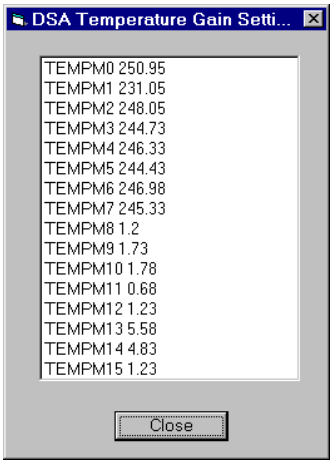


A Window will open displaying the Zero Settings. These values should not be modified by the user. The display should be used for reference only.

To close the window, Click Close.

Gain Settings

Select: **DSA**
Select: **Gain Settings**

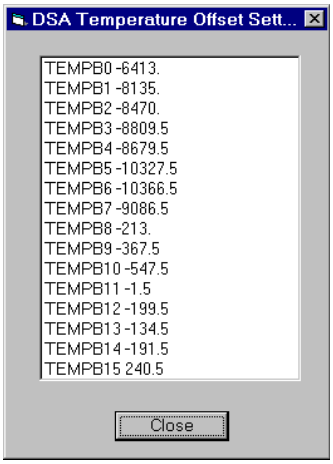


A Window will open displaying the Temperature Gain Settings. These values should not be modified by the user. The display should be used for reference only.

To close the window, Click Close.

Offset Settings

Select: **DSA**
Select: **Offset Settings**



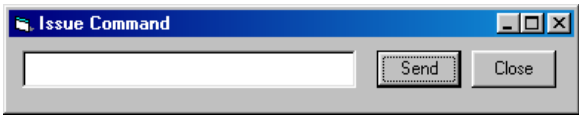
A Window will open displaying the Temperature Offset Settings. These values should not be modified by the user. The display should be used for reference only.

To close the window, Click Close.

Issue Command

Select: **DSA**
Select: **Issue Command**

A Window will open which will permit the user to enter a command. The only valid commands are those contained in the Software Requirements Specification. To issue a command, Click on the window and type the command. The command will be sent to the DSA module when Send is clicked. This window will not display the response from the DSA module.



To close the window, Click Close.

Save Settings

Select: **DSA**
Select: **Save Settings**

No Window will open. The current configuration variable settings will be saved.

Status

Select: **DSA**
Select: **Status**

No Window will open. The current status of the DSA module will be displayed in the Status window..

Show Errors

Select: **DSA**
Select: **Show Errors**

A Window will open displaying the last 15 Errors that have occurred since the last Error Clear. If no errors have been logged, the window will display:

ERROR: No Errors

Click Close to close the window.

Clear Errors

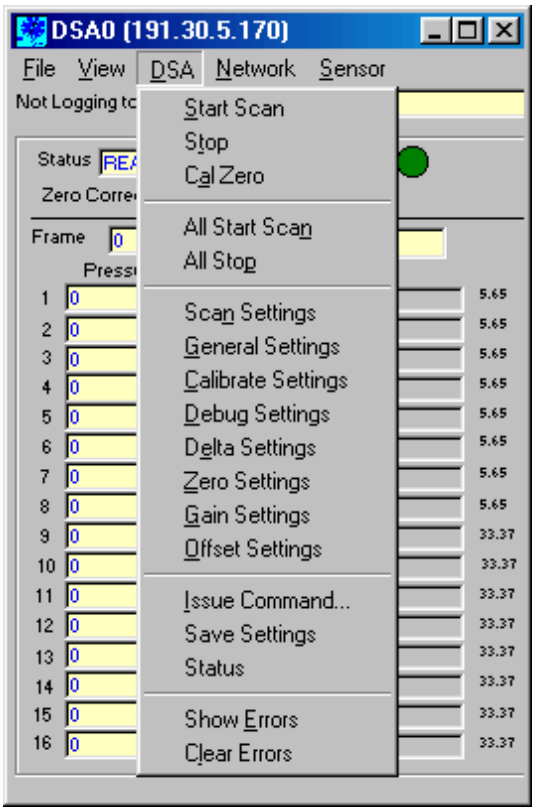
Select: **DSA**
Select: **Clear Errors**

No Window will open. The Error log buffer will be cleared. The only way to insure that the buffer is cleared is to use the Show Errors command.

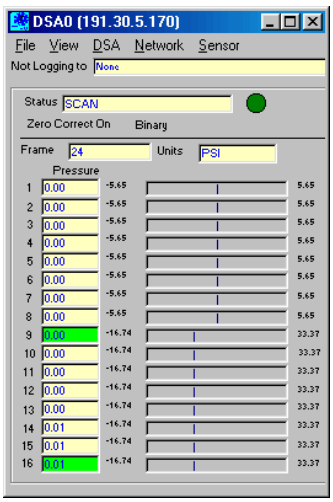
DSA Operation - Commands

The DSALINK software allows commands to be executed from the menu. This section explains how to execute these commands with the DSALINK software. For more information on the software commands, please refer to the DSA Software Requirements Specification.

The software commands will always start from the main window shown below.



Start Scan



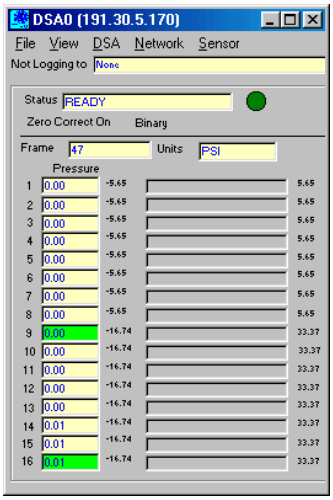
Select: **DSA**
Select: **Start Scan**

The Status window will show SCAN, Frame will count up, and the pressure values will be displayed .

To Stop Scanning,

Select: **DSA**
Select: **Stop**

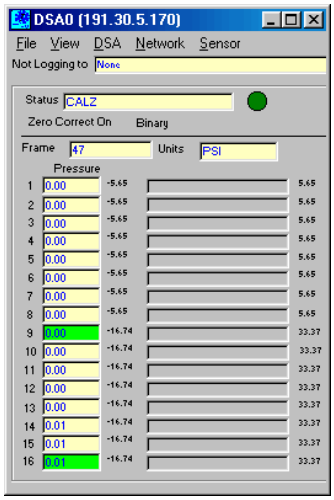
Stop



Select: **DSA**
Select: **Stop**

This will terminate any DSA function in progress. The window at the right shows the display after a Stop command was issued during a Scan. The Frame window displays the last frame acquired. The Status window indicates Ready.

Cal Zero



Select: **DSA**
Select: **Cal Zero**

This command will switch the control valves to the CAL mode and read the zero offset of each channel. The new offset data will be stored in the Zero Offset file. The window at the right shows the DSA performing a CALZ command. When the command is complete, the DSA will be in the Ready mode.

All Start Scan

Select: **DSA**
Select: **All Start Scan**

This command functions the same as the Scan command. It will Initiate the Scan function for all DSA modules connected on the network.

All Stop

Select: **DSA**
Select: **All Stop**

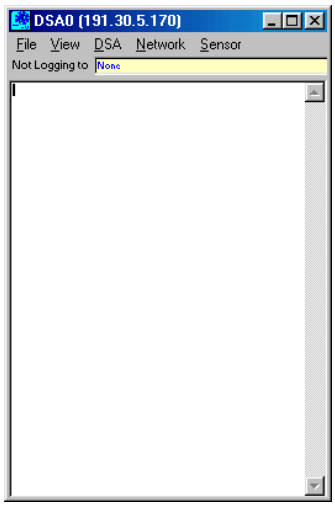
This command will terminate the current function on all DSA modules connected on the Network.

Issue Command

Select: **DSA**
Select: **Issue Command**

This command opens a window that permits a user to enter any valid command to the DSA module .It is especially useful when verifying the calibration coefficients. To view the calibration coefficients for a channel or range of channels, it is best to switch to the View/Scroll mode.

Select: **View**
Select: **Type**
Select: **Scroll**



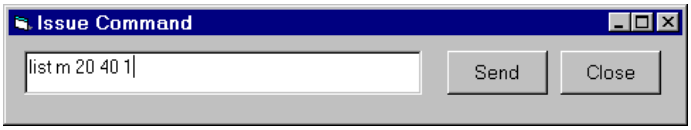
The display window will switch to the scroll mode.

When the scroll window is displayed:

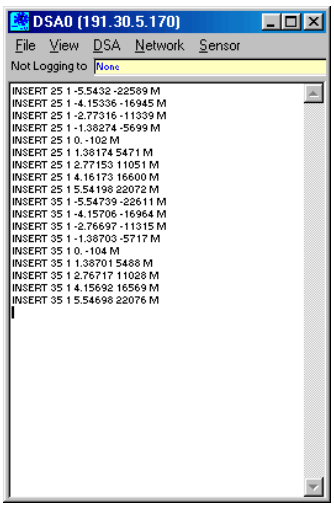
Select: **DSA**
Select: **Issue Command**

The Issue Command window will open. Click the cursor into the open window. Enter the command: **LIST M 20 40 1** and Click **Send**.

This will list the Master coefficients for channel 1 between 20 and 40°C



The Master points for channel 1 between 20 and 40 degrees C will be displayed in the Scroll window.

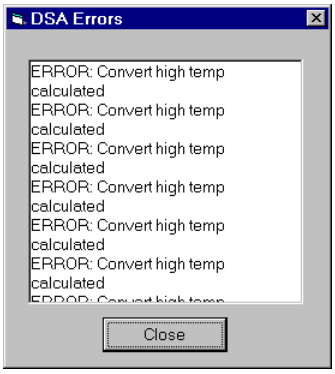


Save Settings

Select: **DSA**
Select: **Save Settings**

This command will change any saved settings.

DSA Operation - Error Checking



Show Errors

Select: **DSA**
Select: **Show Errors**

A Window will open displaying the current Error List. Only the last 15 errors will be displayed.

To close the window, Click Close.

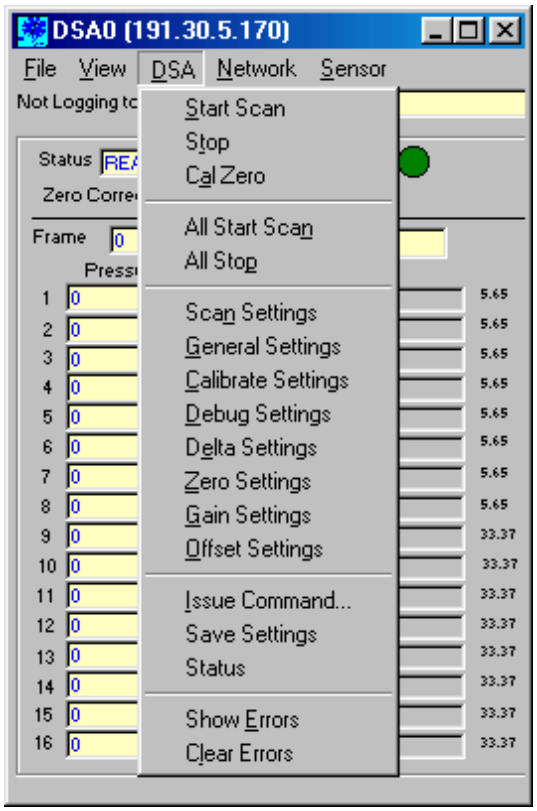
Clear Errors

Select: **DSA**
Select: **Clear Errors**

This command will clear the Error Buffer.

DSA Operation - Modification of Variables

The DSALINK software allows configuration variables to be modified from the menu. This section explains how to modify a configuration variable with the DSALINK software. For more information on the configuration variables, please refer to the DSA Software Requirements Specification.
The example shown is typical for all configuration variable modifications.

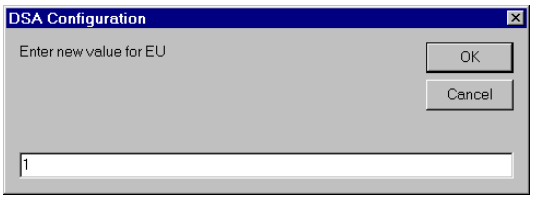


For this example, the setting for EU will be modified from 0 to 1. This will change the data output from raw counts to Engineering Units.

Select: **DSA**
Select: **Scan Settings**

When the Scan Settings window is displayed, Click on EU. Another window will be displayed asking for the new value of EU.

Enter the new value for EU - In this case 1(the only other valid value for EU). Click OK to enter the change.



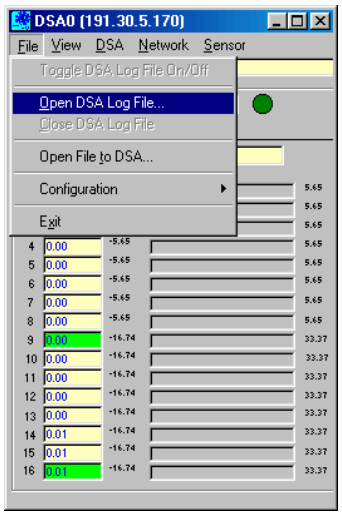
The Scan Settings Window will show the new value. To make the change permanent, use the Save Settings Command.

DSA Operation - File Handling

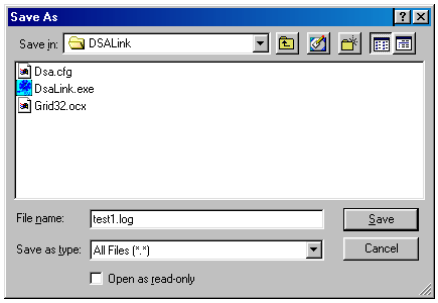
The DSALINK software has some limited control of files. They may be used to save data or upload new coefficients. For more information on file handling, please refer to the DSA Software Requirements Specification.

Open DSA Log File

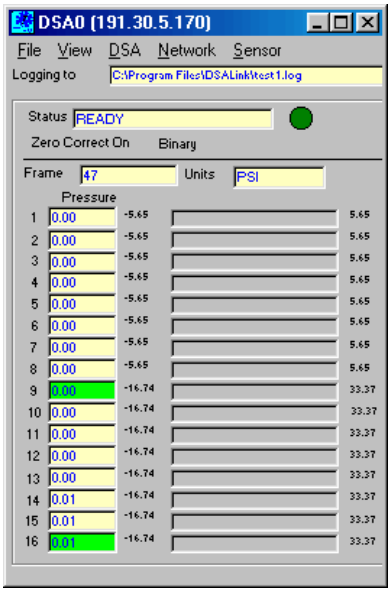
Select: **File**
Select: **Open DSA Log File**



A window similar to the one below will open. The destination and name of the program may be specified. But, the extension must be **.log**. The default destination will be the DSALink folder in the Program Files folder. Click **Save** to complete the step.



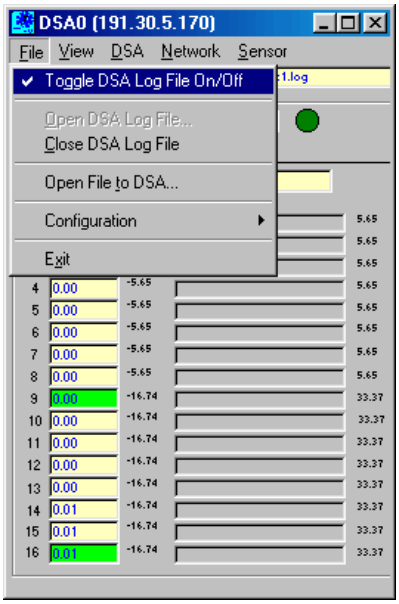
The log file name and destination will be displayed in the Logging To window in the main display window.

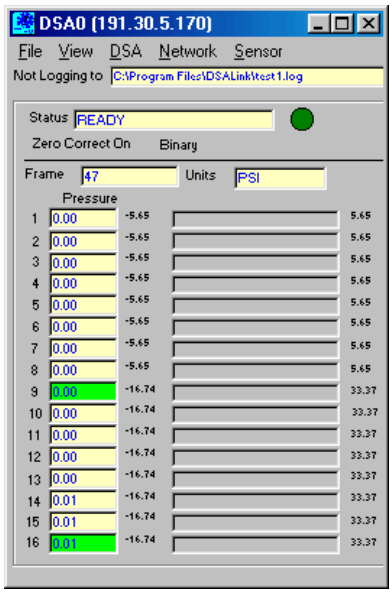


Toggle DSA Log File On/Off

Select: **File**
Select: **Toggle DSA Log File On/Off**

This command permits a Log File to be opened and Log data as required, without having to close the file. Data logging may be turned on and off as required. This is especially useful during field calibrations and tests. The image on the right shows the display when logging is toggled off.

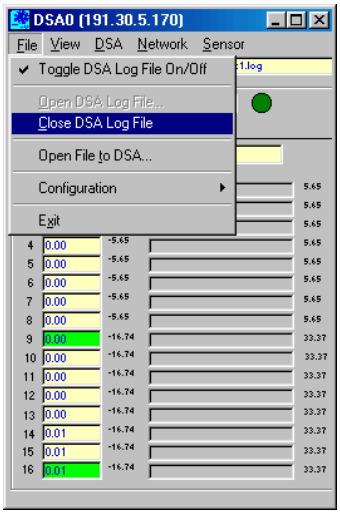




Close DSA Log File

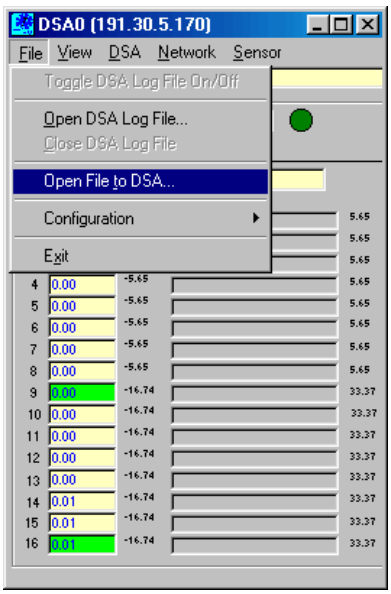
Select: **File**
Select: **Close DSA Log File**

This will close the open DSA Log File.



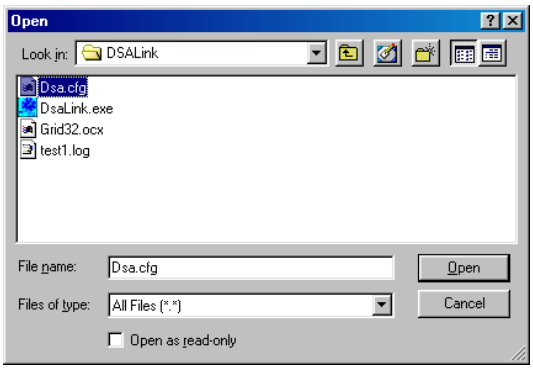
Open File to DSA

Select: **File**
Select: **Open File to DSA**



This command will permit the upload of a text or command file to the DSA module.

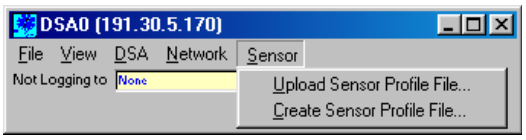
When the command is clicked, a window will open requesting that the user enter the name of the file to be uploaded. Enter the file name in the File Name window and Click **Open**. The file transfer will begin immediately



DSALINK Operation - Sensor Replacement

Upload Sensor Profile File.

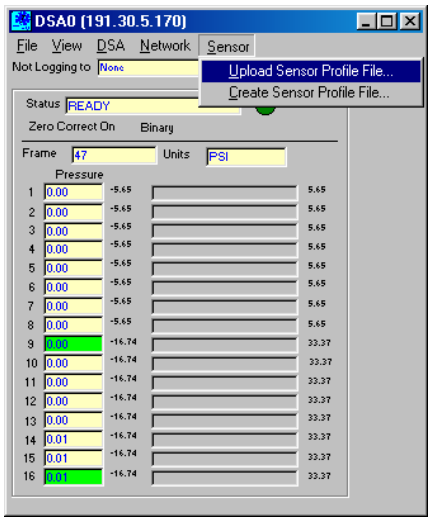
. The sensor menu allows the user to create or upload sensor profile files. Sensor profile files are generated when individual sensors are calibrated. When a replacement sensor is purchased, a sensor profile file is included with the sensor. This file must be uploaded to the module.



It is critical that a user carefully follow this procedure for upload. If all of th steps are not followed, the sensor coefficients could be corrupted.

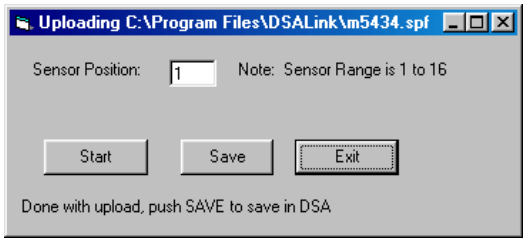
1. Replace the sensor and insure operation by reading the output of the new sensor in raw counts

2. Select: Sensor
   Select: Upload Sensor Profile File



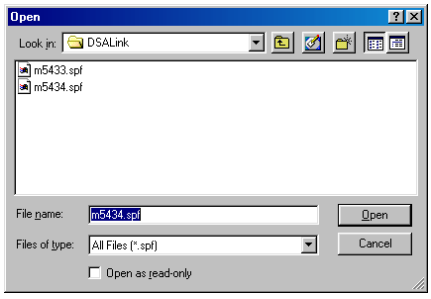
3. A window will open that will ask for the location and file name of the Sensor Profile File. The file must have the extension **.spf**.

4. Enter the location and name of the file and click Open.



5. The progress window will open. Enter the channel number where the replacement sensor is installed and Click Start.

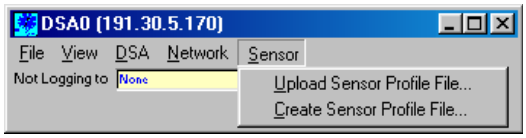
6. The software will delete the old coefficients, upload the new file, and execute a FILL command. The user will be prompted to save the new coefficients. Click SAVE. To complete the process.



Create Sensor Profile File

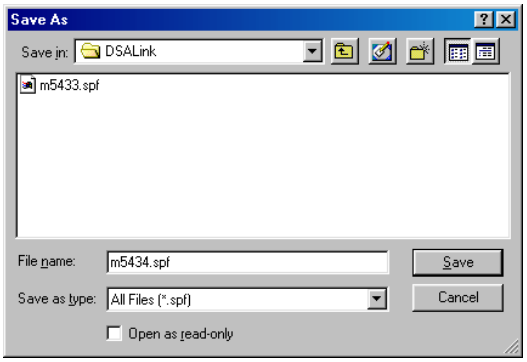
A user can also use this software to create a Sensor Profile File. This would be useful if a user needs to move a sensor from one module into another.

Select: Sensor
Select: Create Sensor Profile File

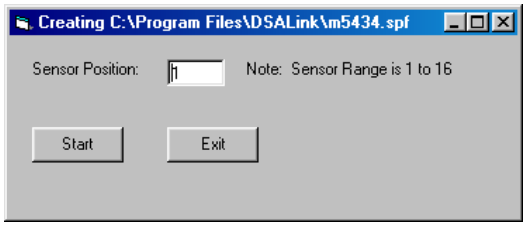


A window will open that will request the destination and name of the file to be created.

The destination may be any valid drive. The file extension must be **.spf**. Click Save to continue the process.



The SPF creating window will open. Enter the location of the sensor to be used to create the file. Click Start to initiate the process.



The software will extract the master coefficient points to the specified file. When the process is complete the phrase “Done creating file” will appear in the box. Click Exit to complete the process.

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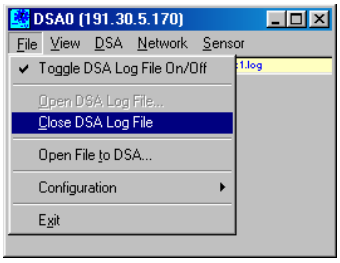
DSALINK Operation - Program Shutdown

To exit the program:

Select: **DSA**
Select: **Stop(or All Stop)**

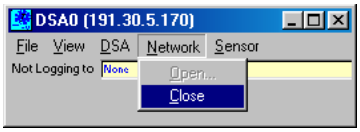
Close all file operations

Select: **File**
Select: **Close DSA Log File**

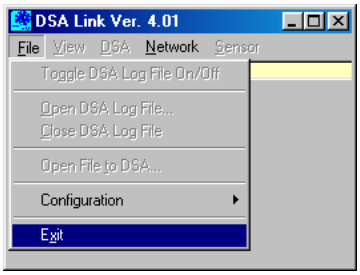


Close the Network Connection

Select: **Network**
Select: **Close**



Exit the Program
Select: **File**
Select: **Exit**



If you have any problems with this procedure or the operation of the DSALINK Software, please contact:

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