



# StarTalk™ DTM Help for StarPac 3 System

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## **StarTalk™ DTM Help for StarPac 3 System**

### **Welcome to the StarTalk DTM for StarPac 3**

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Welcome to the Flowserve StarTalk® DTM for StarPac 3 Systems. This package offers unparalleled functionality for configuring, calibrating, maintaining and diagnosing control valve operation.

This package follows the standard FDT 2.0 DTM specifications. The Frame application controls the menu bar at the top of the page and the Frame connection tree at the far left of the frame window.

The DTM application contains a menu tree on the left side showing the available pages for configuring, calibrating, maintaining and diagnosing control valve operation.

At the top of the DTM window, the device tag is shown, and some basic information for the actuator and valve that is currently connected to the system.





## StarTalk™ DTM Help for StarPac 3 System

### StarTalk DTM - Quick Start Guide

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#### GENERAL INFORMATION

##### This Document

This document details the installation and functions of the StarTalk® Device Type Manager (StarTalk DTM) for the StarPac 3 System.

##### Qualified Personnel

Qualified personnel are people who, on account of their training, experience and instruction and their knowledge of relevant standards, specifications, accident prevention regulations and operating conditions, have been authorized by those responsible for the safety of the plant to perform the necessary work and who can recognize and avoid possible dangers.

Additionally, product users and maintenance personnel should thoroughly review the StarPac 3 System Instruction, Operation, Maintenance and Safety Manual prior to installing, operating, or performing maintenance on the valve or positioner.

##### System Disclaimer

The installation instructions herein show an example of how to install, navigate, or commission the StarTalk DTM in a WINDOWS 7 64 bit operating system, using the fdtCONTAINER 3 FRAME Application. Any variation of operating system and/or FRAME application may result in a different procedure to install, operate, or commission the StarTalk DTM Software.

##### Terms Concerning Safety

The safety terms DANGER, CAUTION and NOTE are used in these instructions to highlight particular dangers and/or to provide additional information on aspects that may not be readily apparent.

To avoid possible injury to personnel or damage to valve parts, DANGER and CAUTION notes must be strictly followed. Modifying this product, substituting non-factory parts or using maintenance procedures other than outlined could drastically affect performance and be hazardous to personnel and equipment, and may void existing warranties.

**NOTE:** *indicates and provides additional technical information, which may not be very obvious even to qualified personnel.*

**CAUTION:** *Indicates that minor personal injury and/or property damage can occur if proper precautions are not taken.*

**DANGER:** *Indicates that death, severe personal injury and/or substantial property damage can occur if proper precautions are not taken.*

Compliance with other, not particularly emphasized notes, with regard to transport, assembly, operation and maintenance and with regard to technical documentation (e.g., in the operating instruction, product documentation or on the product itself) is essential, in order to avoid faults, which in themselves might directly or indirectly cause severe personal injury or property damage.



## StarTalk™ DTM Help for StarPac 3 System

### DTM Installation

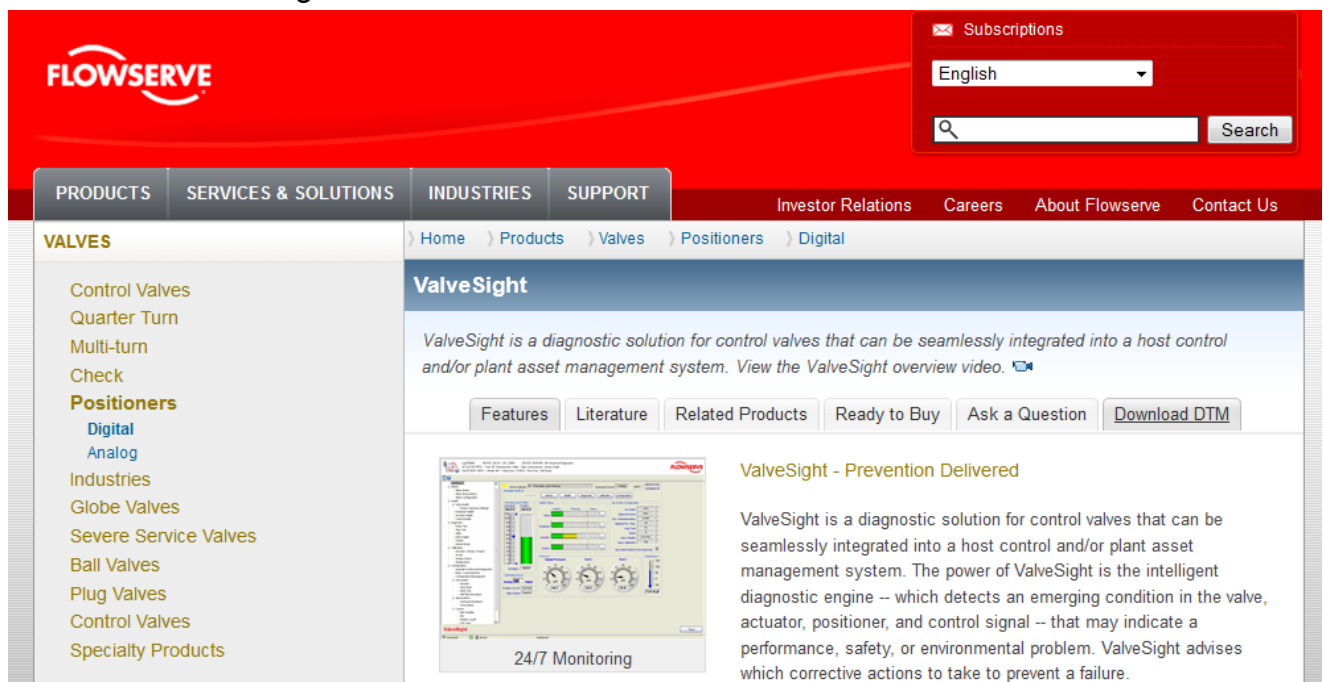
Please log in to the Flowserve site [www.valvesight.com](http://www.valvesight.com) or open the CD to download the StarTalk® DTM, fdtCONTAINER 3, and Schneider Electric Modbus Serial Communication DTM Installs. These installs will allow you to install the StarTalk® DTM, FRAME application, and COMM DTM respectively.

NOTE: This document will ONLY cover the installation of the StarTalk® DTM and assumes that the installation of the Frame and Modbus COMM DTM were successful.

Follow the installation instructions

Download and install the DTM:

1. Visit [www.ValveSight.com](http://www.ValveSight.com)



2. Click on the "Download DTM" tab

3. Register email

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## ValveSight

ValveSight is a diagnostic solution for control valves that can be seamlessly integrated into a host control and/or plant asset management system. [View the ValveSight overview video.](#)

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[Ask a Question](#)
[Download DTM](#)

### Download

If you have already registered, please enter your e-mail address to download. Otherwise click on "Register Now" to register and download Valvesight

[Register Now!](#)

E-mail:

4. Select "StarPac" as the product brand, then click "OK"

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[Ask a Question](#)
[Download DTM](#)

### Download ValveSight DTM

Please Select a Product Brand:

#### NEWS

5. Download the StarTalk DTM

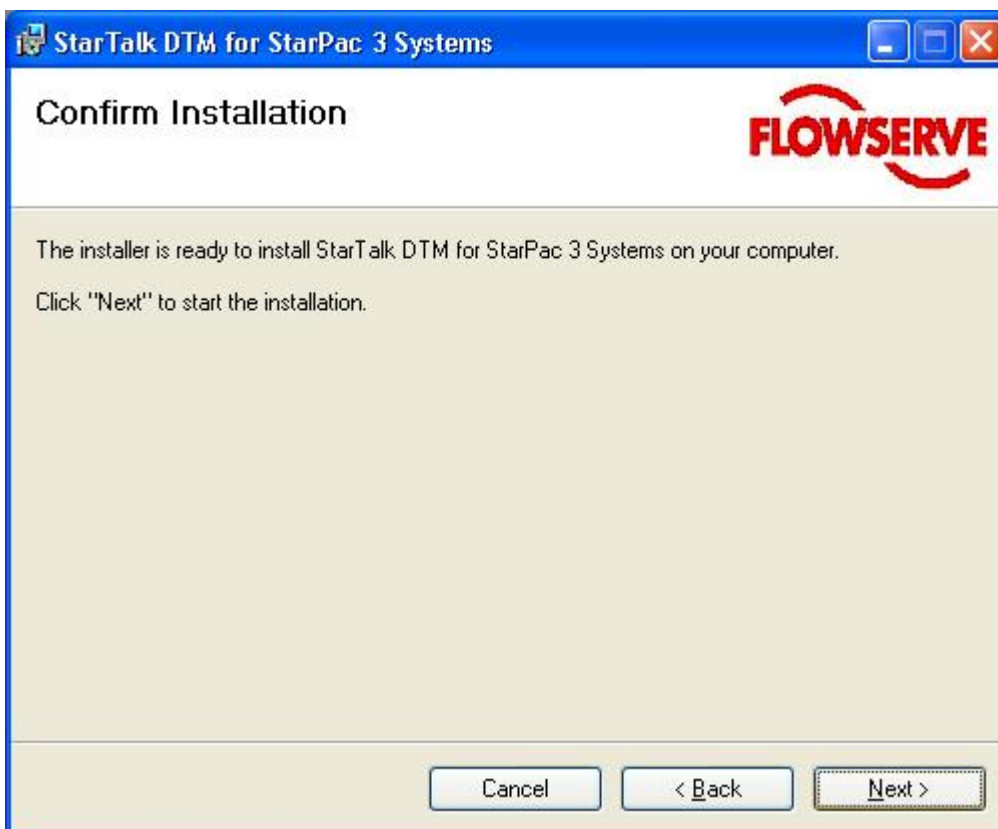
6. Download the fdtContainer 3 Frame and Modbus Communication DTM

Note: To use the StarTalk DTM you will need to install both the Frame and Communication DTM

7. Run the Setup Application and follow the steps below:

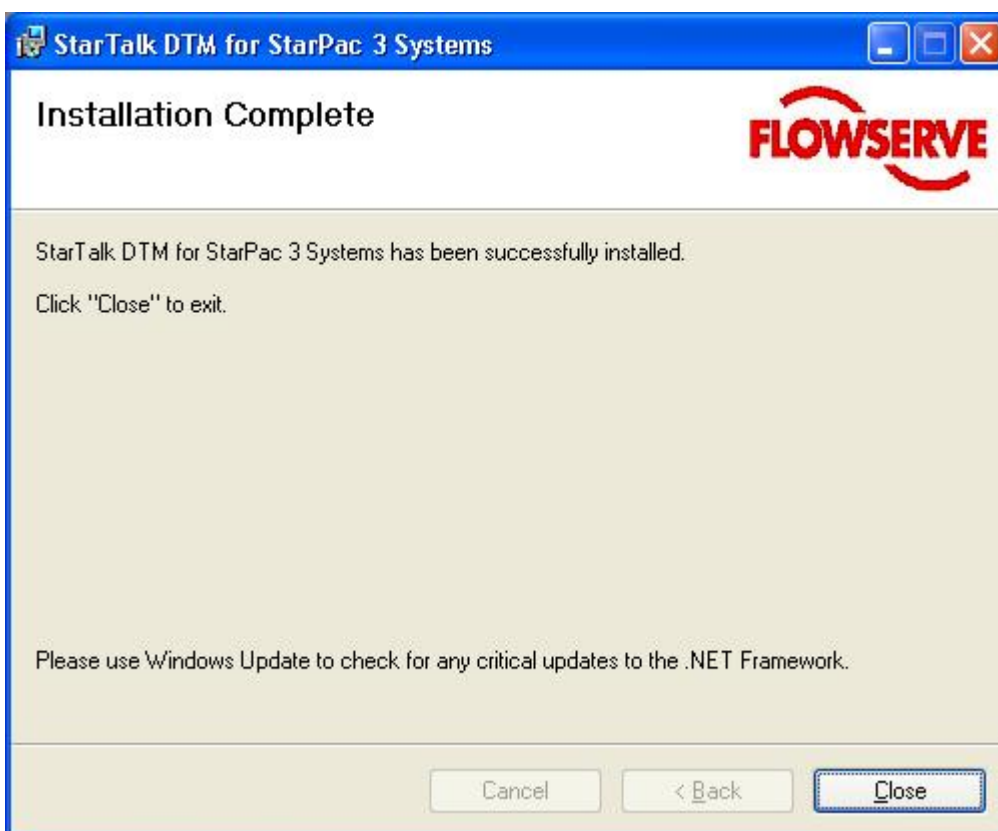
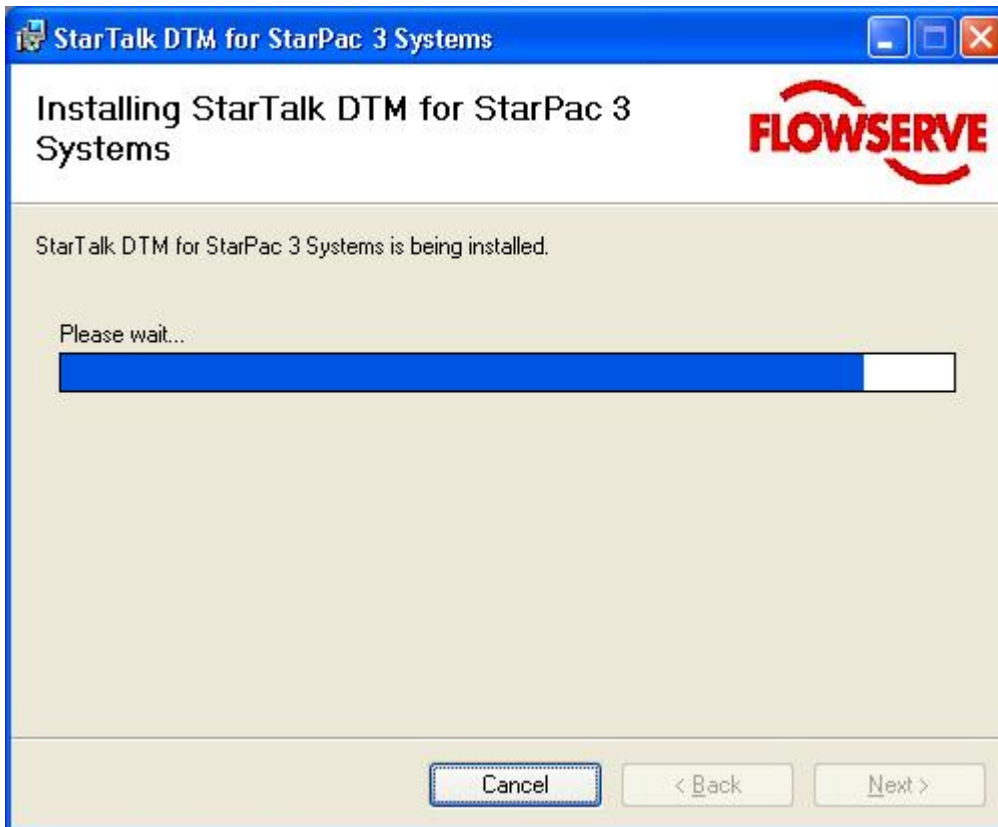


## StarTalk™ DTM Help for StarPac 3 System





## StarTalk™ DTM Help for StarPac 3 System



## Create a Field Network

### Create a Field Network

Instructions on how to create a Field Network using the following Frame and DTMs:

- fdtCONTAINER 3 FRAME Application.
- Schneider Electric Modbus Communication DTM
- StarTalk DTM for StarPac 3 System

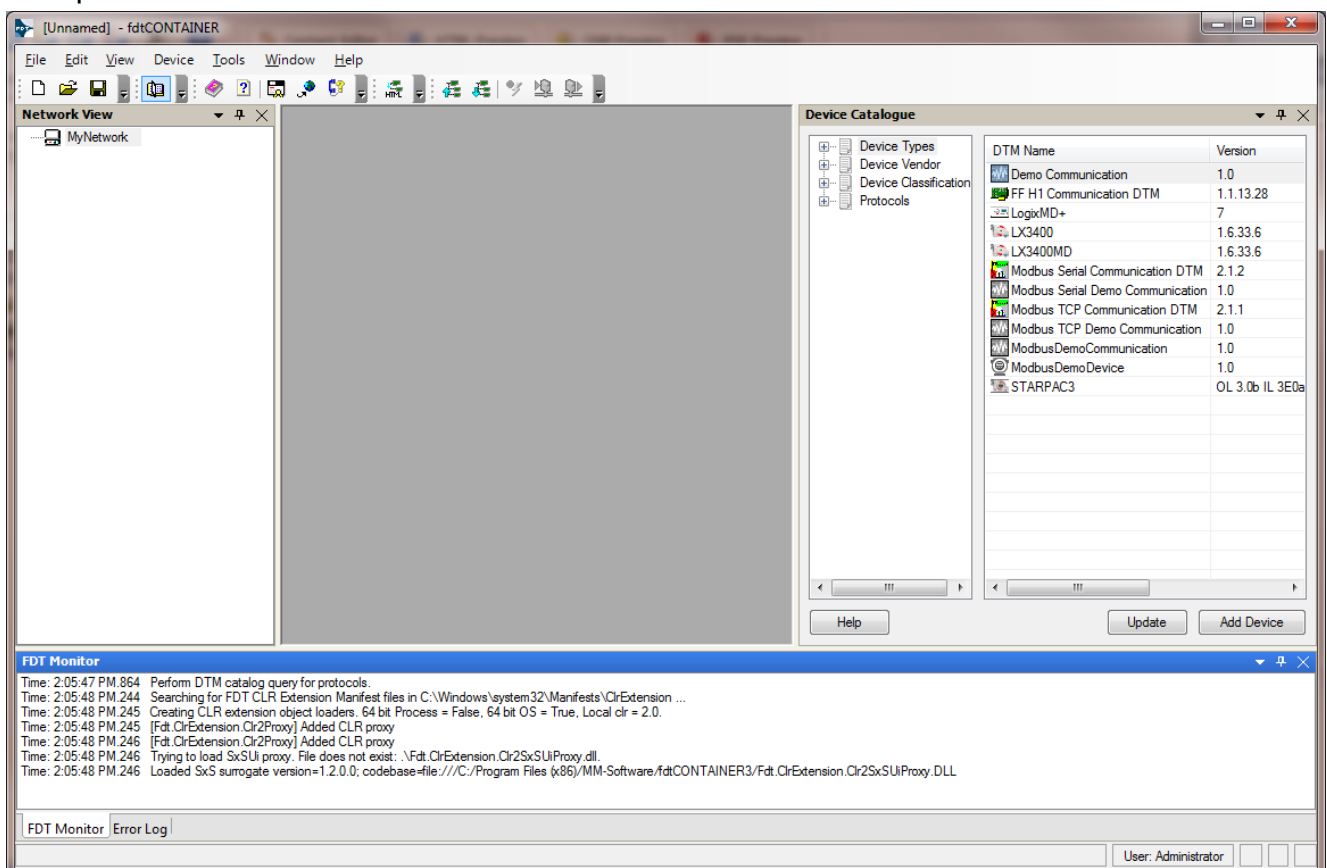
### Assumptions:

- Using fdtCONTAINER 3 or a Frame with mix topology (FDT 1.2.x and FDT 2.0 Specifications)
- Using Schneider Electric Modbus Communication DTM for FDT 1.2.x specifications (Comm DTM Version 2.1.2 or higher)
- StarTalk DTM for StarPac System (version 1.0 or higher)
- StarPac 3 (Version OL 3.0b IL 3E0a or higher)
- Windows 7 OS

Note: For older version of the StarPac 3, version 255055 b2.51 or older, the Communication DTM scan functionality does not find the StarPac 3. Manually add and create the field network setting the StarPac 3 address manually.

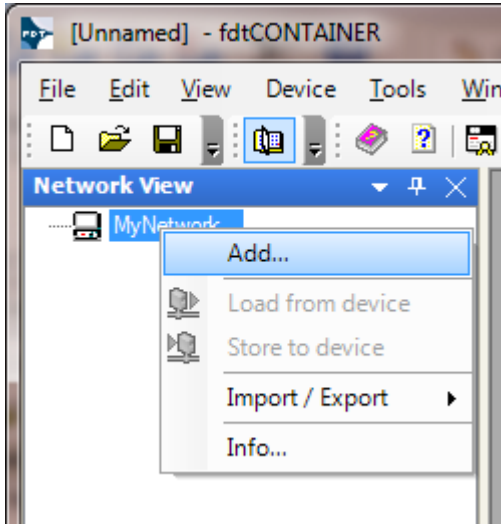
### Procedure:

1. Open the fdtCONTAINER 3



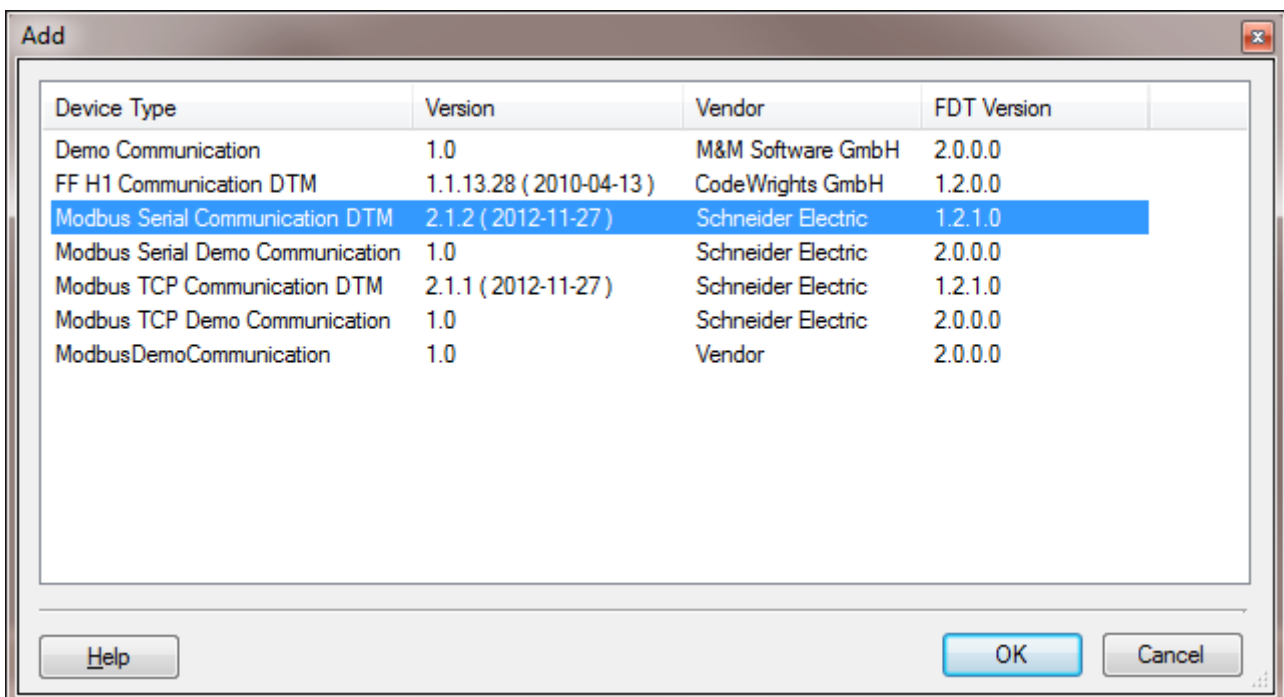
2. Update the "Device Catalog" to include the newly installed "Modbus Serial Communication DTM" and the STARPAC3 DTM (see above image)

3. Right click on the "MyNetwork" menu item and Select "Add"



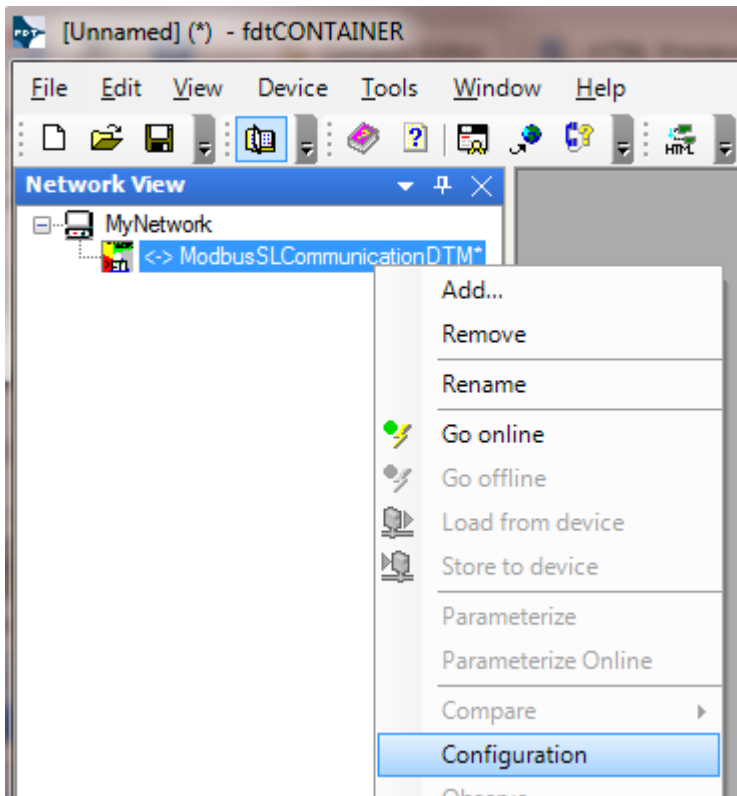
4. Select the "Modbus Serial Communication DTM" (version 2.1.2 or higher), then click "OK"

- The "Modbus Serial Communication DTM" will be added under the MyNetwork



5. Right Click on the "Modbus Serial Communication DTM" and select "Configuration"



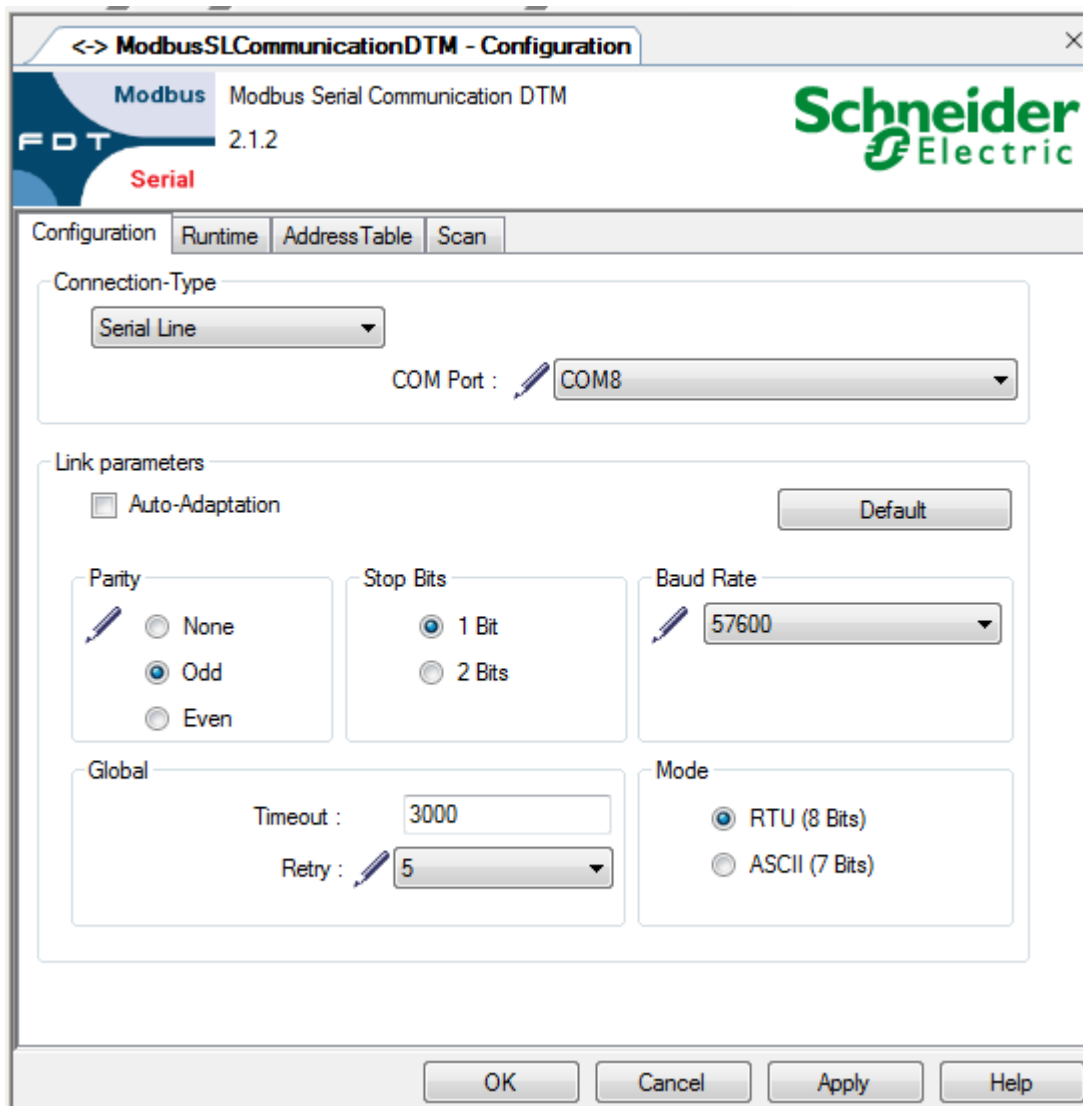


6. Configure the Communication as it is set in the StarPac 3 and computer communication port

- The Connection Type
  - The Default is "Serial"
  - The COM Port is assigned by the PC
- Link Parameter StarPac 3 Defaults are:
  - Parity - "Odd"
  - Stop Bits - "1 Bit"
  - Baud Rate - "57600"
- Global
  - Timeout - 3000
  - Retry - "5" (Recommended)
- Mode
  - RTU (8 Bits)

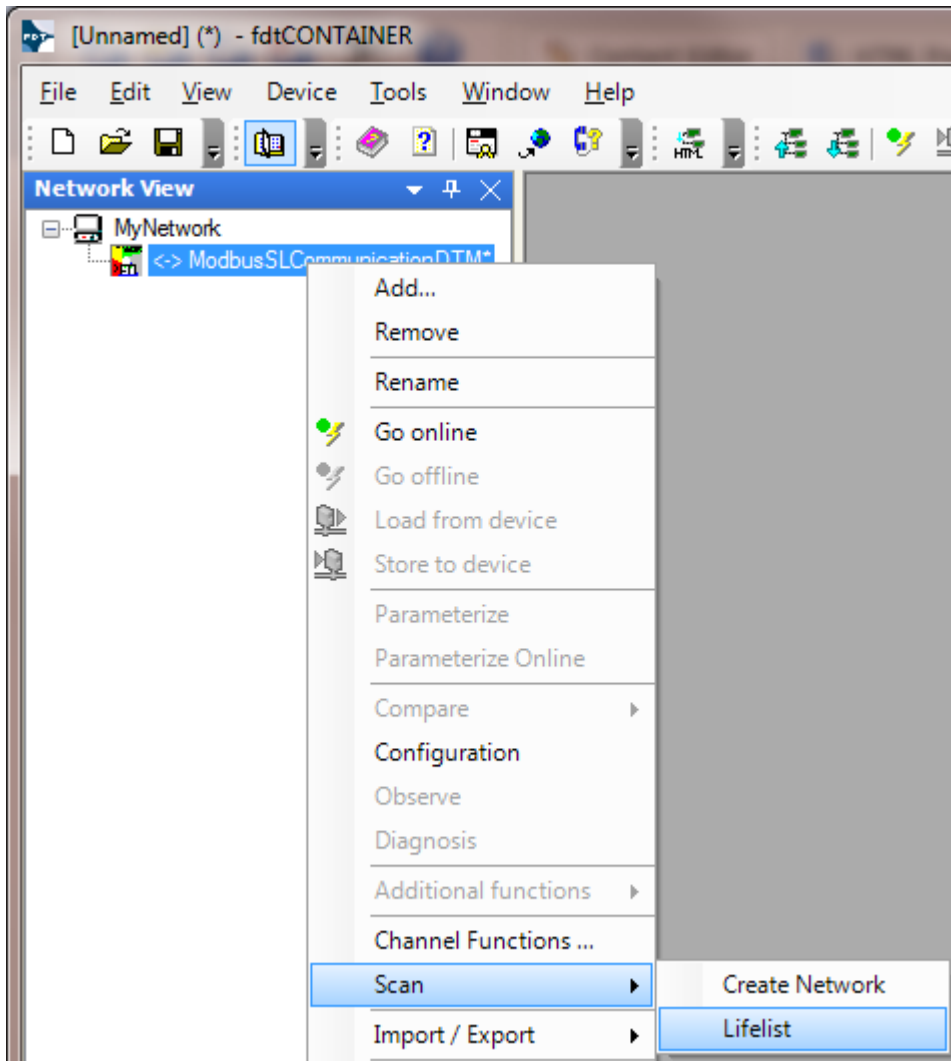
Click Apply or OK to save the Configuration settings



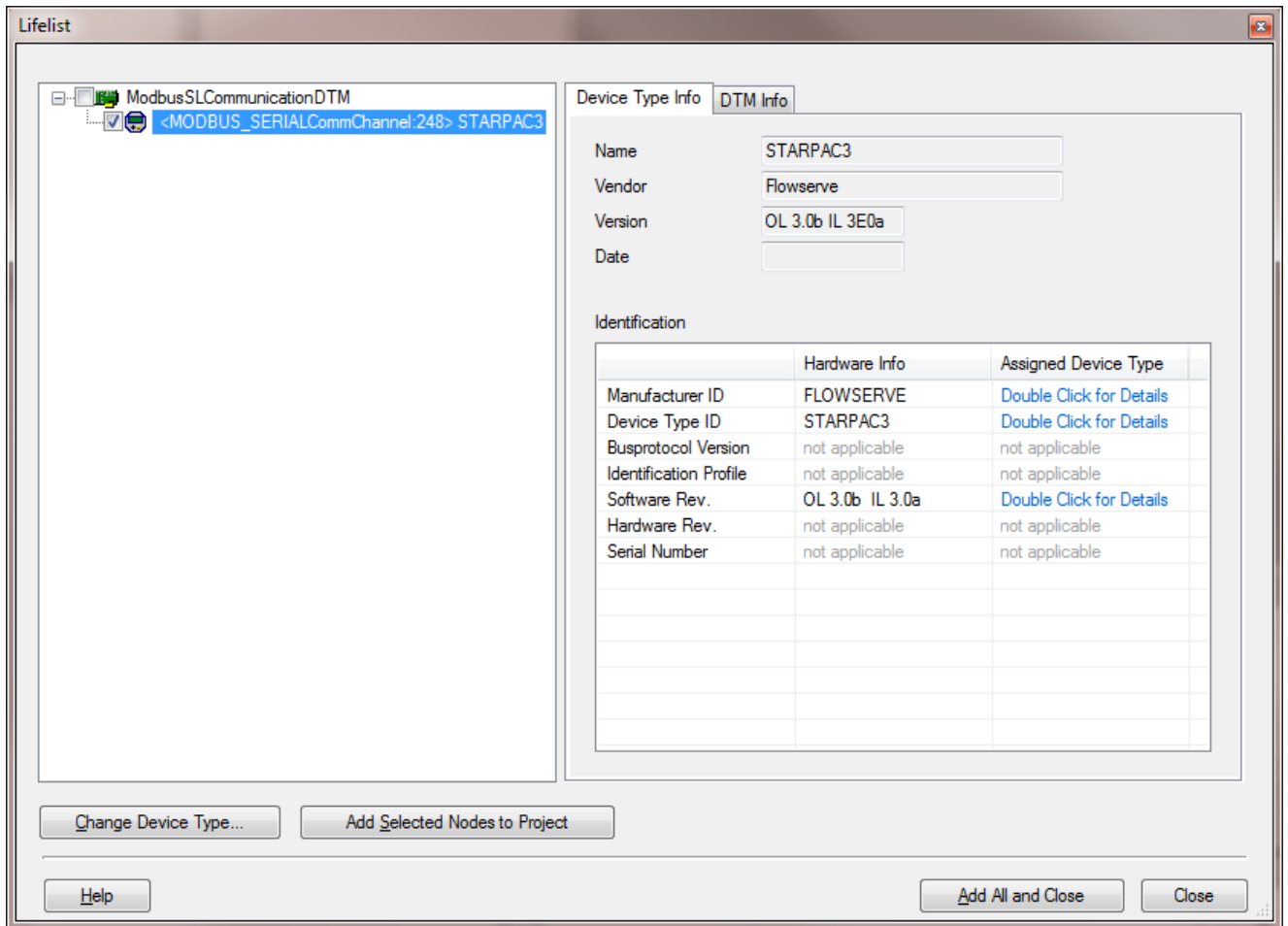


7. Right Click on the "Modbus Serial Communication DTM" and select "Scan" -> "LifeList"

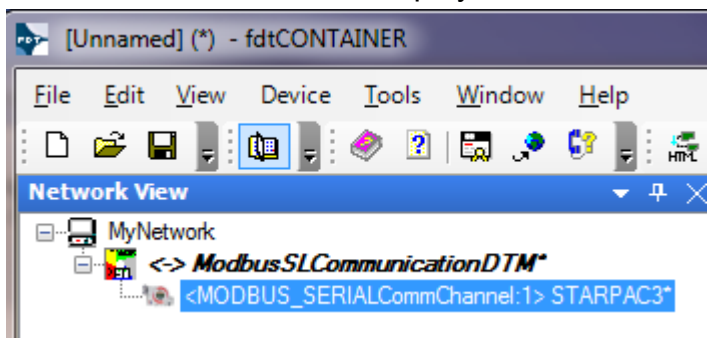
**Note:** When using an older version of StarPac 3 (255055 b2.51 or older) the scan will not work. Right Click on the "Modbus Serial Communication DTM" and select "Add". Then configure the address manually. The StarPac3 default is "1". To configure the StarPac3 DTM address, right Click on the "Modbus Serial Communication DTM" and select "Configuration". The address settings will be on the "Address Table" tab.



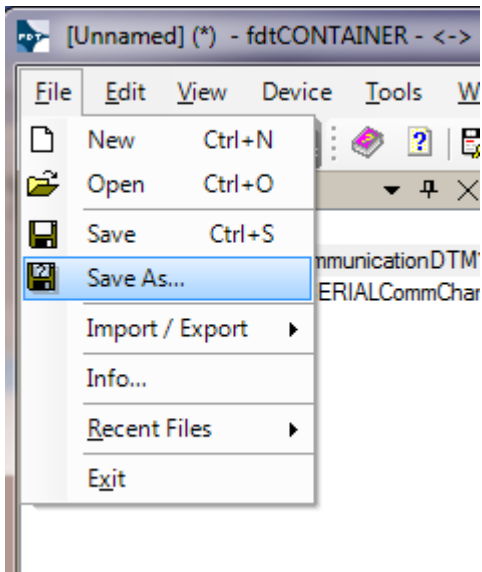
8. When the configuration of the Comm DTM and the StarPac 3 matches, the "LifeList" will display the STARPAC3 DTM on the List. Click on the MODBUS\_SERIALCommChannel:x. STARPAC3 to highlight and get the StarPac3 DTM information. Click "Add All and Close"



9. The Field Network will display as follow:

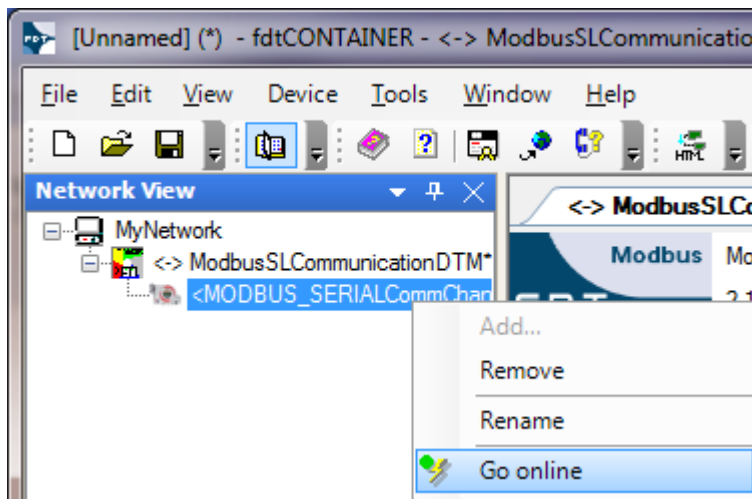


10. The field network is complete. Click on File - Save as... to save the project.

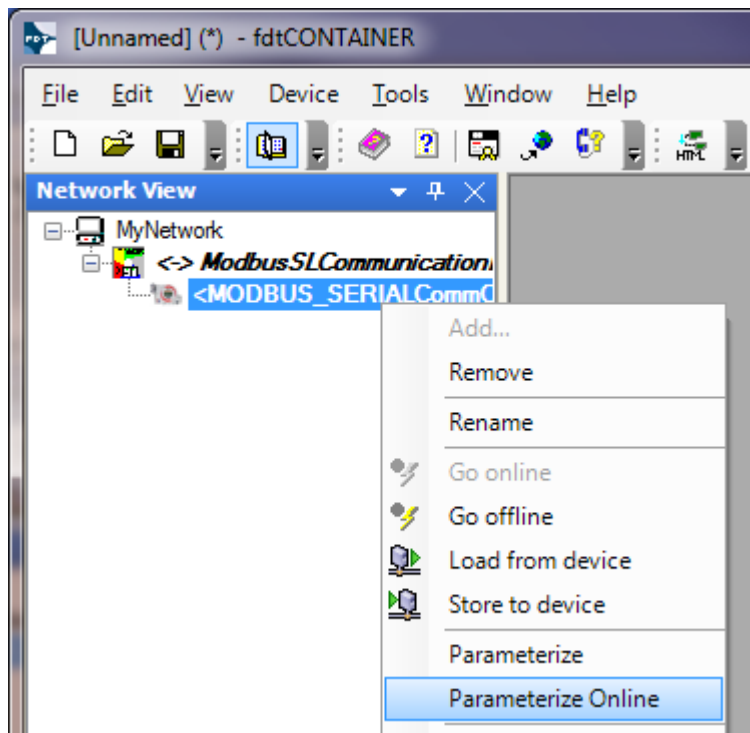


11. Open the Online version of the StarTalk DT.

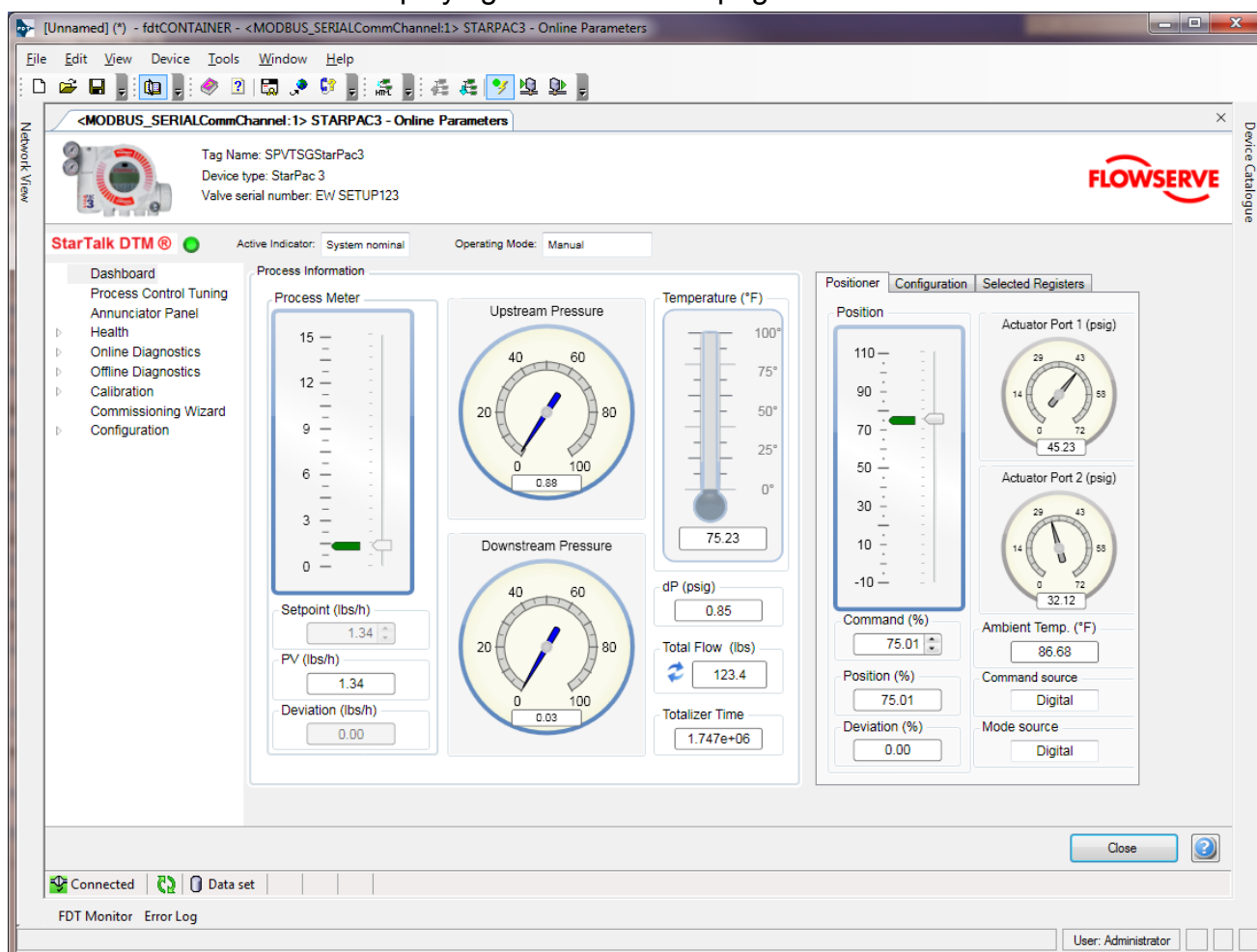
- Right Click on the "STARPAC3 DTM" and select "Go online"



- Right Click on the "STARPAC3 DTM" and select "Parameterize Online"



## 12. DTM will start displaying the Dashboard page as default





## ***StarTalk™ DTM Help for StarPac 3 System***

### **System Requirement**

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#### **Computer System**

The StarTalk® DTM has been successfully tested with the following Operating System with a minimum of 512 M RAM:

- Windows XP
- Windows 7

#### **Power Supply**

- The StarPac 3 system is designed to interface with a variety of DCS systems using analog, discrete, and digital communications.
- Because of the processing power of the StarPac 3 system, a separate 24 VDC power connection is required and connected to terminals 1 (+) and 10 (-). This power supply should have a minimum current capacity of 100 mA.

#### **Communication DTM**

- Schneider Electric Modbus Serial Communication DTM

#### **FRAMES**

The StarTalk® DTM has been successfully tested in the following FRAME Applications:

- fdtCONTAINER 3 FRAME Application (Mixed topology support FDT 1.2.x and 2.0 is required until a new FDT2.0 Comm DTM is available)

#### **System Assumptions**

- The FRAME Application and Communication DTM installed.
- The Frame application accepts mixed topology (FDT 1.2.x and FDT 2.0)



## **StarTalk™ DTM Help for StarPac 3 System**

### **StarPac 3 - Quick Start Guide**

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#### **Getting Started**

This manual is designed to help you become familiar with, and efficiently operate, the StarPac 3 Intelligent Control System.

While the information presented in this manual is believed to be accurate, it is supplied for informative purposes only and should not be considered to be certified or as a guarantee of satisfactory results by reliance thereon. Specific instructions for the installation, wiring, operation and maintenance of the StarPac 3 are contained in the StarPac 3 IOM manual. For information on Personal Computer software, see the StarTalk XP Manual.

Because Flowserve is continually improving and upgrading its product design, the specifications and information included herein are subject to change without notice.

Flowserve will continue to provide its customers with the best possible products and service available. Should you have any questions about these provisions, or about Flowserve products, contact your local Flowserve representative or the Advanced Product Development Group directly (801 489-8611). You can also access Flowserve information via the internet HTTP: // [www.flowserve.com](http://www.flowserve.com).

#### **Restrictions**

Copyright © 2009, Flowserve Corporation. All rights reserved. No part of this manual may be reproduced in any form without the written permission of the publisher. Due to product changes and periodic review, the information contained in this manual is subject to change without notice. All correspondence should be addressed to Flowserve Control Division Marketing, 1350 Mountain Springs Parkway, Springville, Utah 84663-0903.

**NOTE:** This manual is not intended to be a replacement for the many manuals already available for teaching and understanding instrumentation and process control (such as the Instrument Society of America's Instrument Engineers Handbook, Revised Edition, 1982, etc.). A copy of these manuals may prove valuable to the user in determining what StarPac 3 parameters need to be set with respect to a particular application or process.

### **Setting the Jumpers**

---

The StarPac II system has several jumpers that are used to configure the digital and discrete I/O. Two jumpers are on the personality card (the small card in the lower right-hand side) and are visible when the inner door is opened. The personality card must be removed to change the discrete jumpers located on the board below the personality card. To remove the personality card, remove the four small screws that hold the card in place and gently remove it by gripping the notch at the lower right-hand corner of the card.

**RS- 485 Termination** - On the personality card there are two termination jumpers for the COMM A and B for the RS-485 communications. These jumpers should only be installed on the two most remote devices on the network. Count the host computer as any other device. For example, a single StarPac system is communicating with a host PC in the control room. The StarPac unit and the RS-485 driver in the host computer would each require a termination jumper. Remove the termination jumpers in the devices not considered to be the most remote. Using more than two termination jumpers in a network may cause the RS-485 communications to fail.

**Alarm Relay Setting** - Under the personality card is a three position jumper labeled "Relay." This jumper, if set in the A-B position, configures the relay to Normally-open operation. If set to the B-C position, the jumper configures the relay to Normally-closed operation.

**Discrete Input Range Selection** - Under the personality card are two sets of three position jumpers labeled "DI1" and "DI2." DI1 refers to discrete input No. 1 and DI2 to discrete input No. 2. In the A-B position the input is set to trigger on 120V AC or DC. In the B-C position the input is set to trigger on 24V AC or DC. These jumpers must be moved in pairs for each individual relay, but each relay may be setup differently.





## StarTalk™ DTM Help for StarPac 3 System

### Initial Startup

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The StarPac 3 system is designed to interface with a variety of DCS systems using analog, discrete, and digital communications. Because of the processing power of the StarPac 3 system, a separate 24 VDC power connection is required and connected to terminals 1 (+) and 10 (-). This power supply should have a minimum current capacity of 100 mA.

**Before powering up the unit** - Read the section "Setting the System Jumpers" and set them according to the instructions and particular application.

**Powering up the unit on the bench** - When the unit is first powered up, the display will show the version number of the firmware for two seconds before beginning operation. The StarPac 3 system sensors are calibrated at the factory and the fluid data is entered as specified on the order. However, due to the differing nature of installations, the units and ranges of the analog and discrete I/O are not configured at the factory.

The suggested process for setting up a new system on the bench is:

1. In the CONFIGURE menu, select the engineering units you will be using.
2. If you will be using analog I/O signals, use the CONFIGURE menu to set up the analog channels to indicate the proper process variables and ranges you will be using. Note that the StarPac 3 system treats gas flow and liquid as different variables and they must each be specified.
3. Connect the instrument air supply (40-150 psi) to the ¼-inch NPT air supply port located on the back of the unit.
4. Use the STATUS menu and set the Row Two variable to "valve position."
5. Use the TUNE menu to put the unit in to Manual mode with a digital command.
6. Using the "Command %" option in the TUNE menu, enter a 0 percent command and verify that the position follows to within 0.5 percent. NOTE: Command is a term with two meanings. For a traditional control valve, the command is the signal a controller sends to the I/P. to position the stem. For the StarPac 3, this meaning refers to the signal sent to the positioning module. When the StarPac 3 is in Manual mode, Command also refers to the signal sent to the StarPac 3 via analog input No. 1, a digital Modbus channel, or the front keypad. These commands may differ due to the internal stroke calibration and an inverted signal for air to close valves.
7. Using the Command % option in the TUNE menu, enter a 100 percent command and verify that the position follows to within 0.5 percent.
8. If the unit fails either of the tests above, perform a QUICK-CAL in the CALIBRATE menu.
9. Use the STATUS menu and set the Row Two variable to be "ISA upstream pressure."
10. Verify that the unit is correctly indicating the ambient pressure.
11. Use the STATUS menu and set the Row Two variable to be "ISA downstream pressure."
12. Verify that the unit is correctly indicating ambient pressure.
13. If the unit fails the above tests, re-zero the transducers using the P1 & P2 option in the CALIBRATE menu. You may also need to pressurize the sensors and verify the Span if the calibration is suspect.
14. Use the STATUS menu and set the Row Two variable to be "process temperature."
15. Verify that the unit is correctly indicating ambient temperature.



## ***StarTalk™ DTM Help for StarPac 3 System***

16. If the unit fails the above test, re-calibrate the transducer using the thermocouple option in the CALIBRATE menu. (This calibration requires a Type-K thermocouple simulator or a temperature bath.)
17. Use the CALIBRATE menu to check the analog channels that you will be using.
18. Finally, use the TUNE menu to select the process variable that you will be controlling and set the range.

Putting The Unit Online - menu to configure the setpoint signal to the proper source for your DCS system. If you will be using the system in the Automatic mode, adjust the Proportional-Integral-Derivative (PID) parameters so the loop responds satisfactorily.

Backing up the system - When you have your unit calibrated and working according to your needs, back up the configuration into the safe memory area. This is done in the Save Backup choice in the Tech option of the CONFIGURE menu.

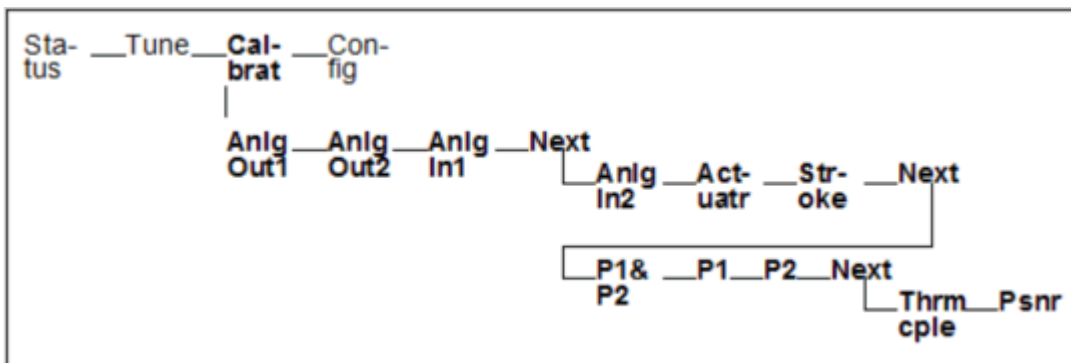
## Calibration Menu

The Calibrate menu is used to calibrate the analog inputs and outputs, process pressure and temperature sensors, as well as the actuator position and pressure sensors. Before entering the Calibrate menu, the display will indicate that the system will be taken off-line and will ask the user to accept the condition.

**WARNING:** Taking the StarPac unit off line may cause the valve to stroke unexpectedly. Notify personnel working nearby that the valve may stroke.

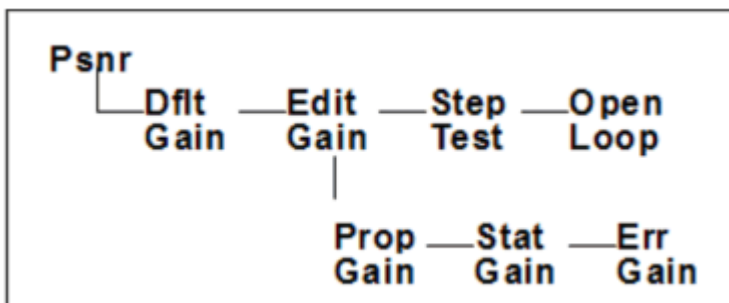
While the Calibrate menu is open, the system is in Test mode and will not respond to control signals. To put the unit back on line you must press the LAST OPTION key until the display prompts you, and then press ACCEPT. While you are in the Calibrate menu, the letter "T" will flash on the right side of the display, indicating that the unit is in Test mode. The unit may also change the valve position during some of the calibration processes that could affect the process if it is not properly isolated. The Calibrate menu is arranged as shown.

### Calibration Menu Tree



**Positioner** - This option is used to set the control gains for the positioner and also test for proper response.

### Positioner Menu Tree



**Default Gain** - This option sets the default gain for the positioner. Select the correct actuator size from the list using the NEXT and PREVIOUS function keys on the menu. Default selections exist for 25, 50, 100, and 200 square-inch actuators.

**Edit Gain** - This option allows you to change the gains from the default value to customize the response of the system.



## ***StarTalk™ DTM Help for StarPac 3 System***

Proportional Gain - Controls the overall speed of response of the system. Larger values will speed up the response of the system.

Static Gain - Controls the response to steps of less than two percent. Larger values will speed up the response of the system to small steps (the effect of static gain is more evident on larger actuators).

Error Gain - This is a dynamic gain variable that increases the gain with error size to speed the response in larger actuators. Note that smaller values increase the gain.

Step Test - Allows you to monitor the response of the system to any step size that you input after pressing the function key. (Be aware that this operation will cause the valve to stroke.) The system reports the overshoot and rise time (Tr) for each step. Pressing ACCEPT will continue to stroke the system up and down and report on the response for each step. To quit the positioner tuning press CANCEL.

Open Loop- This test is a diagnostic test to check the mechanical operation of the positioner module. During this test the valve is forced to full open and full closed by driving the positioner output to its maximum and minimum values.

**WARNING:** Notify personnel working nearby that the valve will stroke during this procedure; otherwise, serious injury may occur.



## StarTalk™ DTM Help for StarPac 3 System

### Changing or Viewing Fluid Specification

---

The StarPac system must be configured for the exact fluid that you have in your process. The factory configures the system with fluid data for your system using the information supplied with the order. Verify that the fluid data is correct for your process. The StarPac system requires the following fluid data for accurate flow calculation:

Fluid Information	StarPac 3 Registers
Antoine's A coefficient	register 70499
Antoine's B coefficient	register 70501
Antoine's C coefficient	register 70503
Critical Pressure in psia	register 70511
Critical Temperature in °R	register 70513
FK coefficient (=K/1.4)	register 70515
Molecular Weight	register 70517
Specific Gravity Reference temp in °R	register 70519
Specific Gravity at reference temp	register 70521
Viscosity A	register 70523
Viscosity B	register 70525

The Antoine coefficients are used to calculate the vapor pressure of the fluid at the temperature measured by the K thermocouple in the StarPac according to the following equation:  
where VP is the vapor pressure in psia, T is the temperature in °R, and A, B, and C are the Antoine coefficients.

Viscosity is calculated according to the following equation:

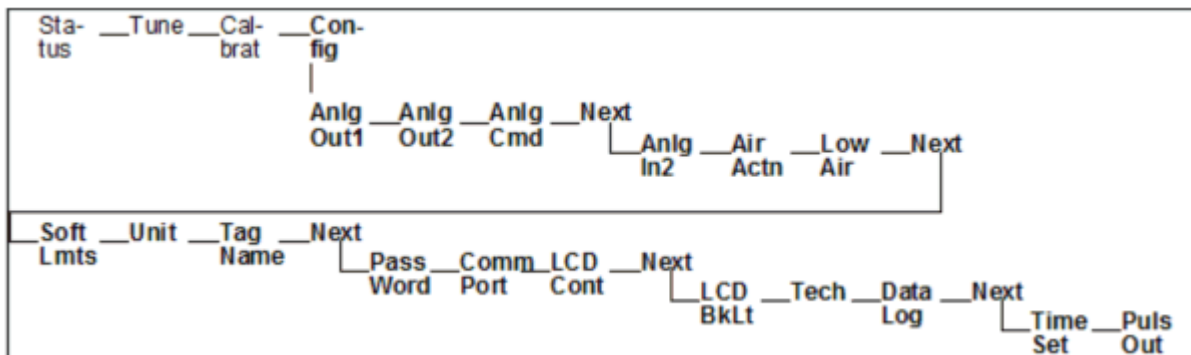
Where Visc is the fluid viscosity in centipoise, T is the process temperature measured by the thermocouple in °F, and A and B are the viscosity coefficients.

These registers can be checked using either the View option of the Status menu or the View selection in the Tech option of the Configure menu. They can be changed using the Edit selection in the Tech option of the Configure menu.

## Configuration Menu

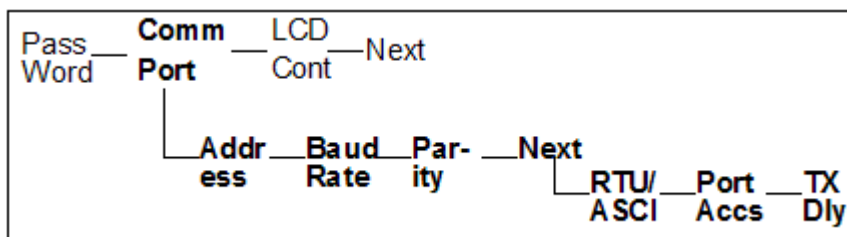
The Configure menu is used to set up the variables and scaling for the analog inputs and outputs, actuator configuration, air supply and trip limits, units, Tagname, communications, LCD controls, and individual register editing and viewing. Before entering the Calibrate menu, the display will indicate that the system will be taken off-line and ask you to accept that condition. While the CONFIGURE menu is open, the system is in Test mode and will not respond to control signals. To put the unit back on line, press the LAST OPTION key until the display asks, "Do you want to put the unit back on line," and press ACCEPT. When you are in the Calibrate menu, a flashing "T" on the right side of the display will indicate that the unit is in Test mode. Certain functions may cause valve position to change unexpectedly that could affect the process if the unit is not properly isolated. The Configure menu is arranged as shown.

### Configuration Menu Tree



**Communication Settings** - This option configures the communication settings for the Modbus communications ports on the StarPac system. Both COMM port A and COMM port B use the same settings, they cannot be set independently. The communication settings are set in the Comm Port menu.

### Comm Port Menu



**Address** - This option sets the Modbus address of the StarPac system. Both the A and B COMM ports have the same address; therefore, they cannot be hooked together on the same network and must be connected to different networks. The default address for a StarPac is "1" after an initialization. Use the Up or Dn function keys to select the proper address. Note: StarPac I must have the address selected from the DIP switches.

**Baud Rate** - This option sets the Baud Rate for the Modbus communications. Available Baud Rate settings are: 1200, 2400, 9600, 19200, 31250, 38400, and 57600. The default setting is 19200 Baud after an initialization. Use the Up or Dn function keys to select the desired Baud Rate. Note: StarPac I must have the baud rate selected from the DIP switches.

**Parity** - This option sets the Parity for the Modbus communications. Available Parity settings are: None, Even, and Odd. The default setting is Odd after an initialization. Use the NEXT or PREVIOUS function keys to select the proper Parity. Note: StarPac I must have the parity selected from the DIP switches.

**RTU / ASCII** - This option sets the communication mode for the Modbus communications. Available communications mode settings are: ASCII and RTU. The default setting is RTU after an initialization. Use the NEXT or PREVIOUS function keys to select the proper communication mode. Note: StarPac I must have this option selected from the DIP switches.

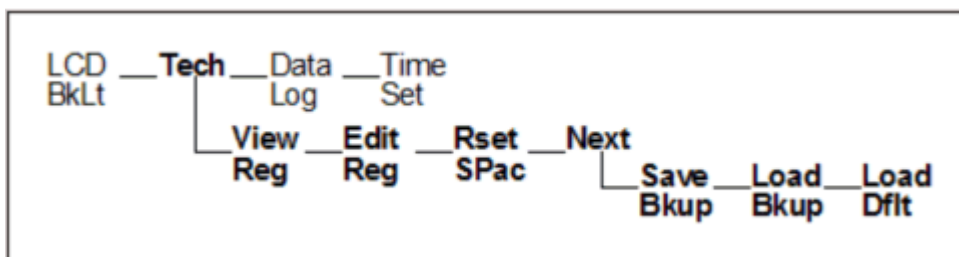
**Transmit Delay** - This setting controls the time that the StarPac II system will wait before answering a Modbus request. The 3.5 character setting provides the best performance for most systems. Available transmit delays are: 3.5 characters, 50 millisecond, 75 millisecond, 100 millisecond, 150 millisecond, 250 millisecond, 500 millisecond, and 1 second.

**LCD Contrast** - This option adjusts the viewing angle of the LCD. Use the Up and Dn function keys to adjust the viewing angle.

**LCD Backlight** - Use this option to set the time that the back light in the LCD will stay on after the last pressed key. Available options are: Always Off, 10 Seconds, 30 Seconds, 1 Minute, 5 Minutes, 15 Minutes, 1 Hour, and Always On. The LCD back light has a rated 5000 hour life; therefore, selecting the Always On option may cause the display back light to burn out prematurely.

**Technician** - This option allows you to view and manipulate internal Modbus registers, backup a configuration in non-volatile RAM and reset the system operation. These options are selected from the Technician menu.

### Technician Menu



**View Register** - This option allows you to view any integer or floating point Modbus register. A register map is located in the appendix. (String registers cannot be viewed with this function; however, they can be viewed by using the StarTalk software.)

**Edit Register** - This option allows you to view and change any read/write integer or floating point Modbus register. A register map is located in the appendix.

**Caution:** Changing register values will affect the operation of the system. String registers cannot be edited with this function. You must use the StarTalk software to Edit string registers.

**Save Backup** - This option will backup the current configuration to a safe area in the non-volatile RAM. Flowserve suggests that you use this option before attempting to reconfigure your system to ensure that you can restore the configuration should something go wrong.



## ***StarTalk™ DTM Help for StarPac 3 System***

**Load Backup** - This option allows you to restore a known configuration to the system by working registers from the backup NVRAM.

**Load Default** - This option will overwrite the complete register map in the StarPac II with default data. If you choose this option all of the flow characterization data, configuration data and calibration data will be lost. This option should only be used in the rare case that the configuration of a system has become so corrupt that all of the data will be re-entered from scratch. It is recommended that you use the StarTalk XP software to reload your system information from the factory supplied disk.

**Data Logger** - This option sets the interval between data points on the internal data logger.  
NOTE: You must use StarTalk software to download a data logger file from the StarPac system.





### **Local Interface vs. LC/DCS Conflicts**

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The StarPac 3 allows the user the ability to control and program a field device remotely through a PLC or DCS interface. Since the StarPac 3 has a local interface, it is important to remain cognizant of who has command of the StarPac 3 control system. If the StarPac 3 is being commanded by a PLC or DCS it is possible that any calibrations or mode changes being made at the local user interface will be overwritten by the supervisory PLC or DCS.

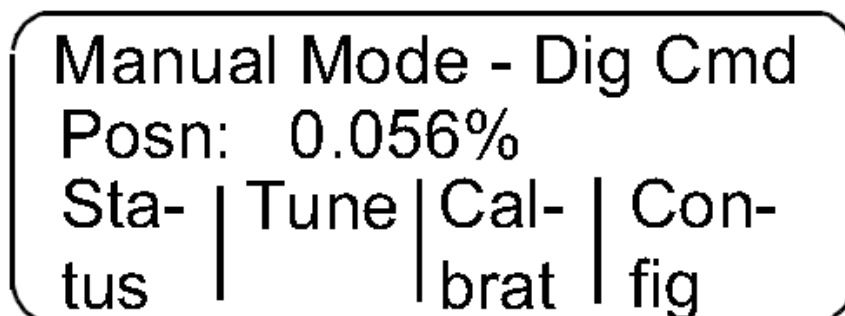
Be sure to disable or suspend communications with the supervisory system while using the local user interface. It is recommended that an "off line" feature be programmed into the supervisory system to only monitor the system so that the local user interface can be used. This will prevent someone from modifying the StarPac 3 without permission of the control room.

## Local Interface Structure & Operation

The StarPac 3 local user interface allows complete user access to configure and calibrate a StarPac 3 Intelligent Control Valve System. The interface consists of a Liquid Crystal Display (LCD) and a membrane-covered keypad. The LCD is a 4 X 20 character display with the top two lines user configured for normal operation, or for displaying instructions or options during configuration. The bottom two lines are used to indicate menu options that are selected with the four function keys. To the right of the menu options, on the bottom two lines, are two normally blank spaces that indicate Alarm or Error conditions, indicated by a flashing "A" and/or "E". A flashing "T" on the right side of the display indicates that the unit is in Test mode and will not respond to commands until the unit is set to Manual or Auto mode in the **TUNE** menu.

The keyboard has three types of keys; the menu control keys (which consist of the LAST OPTION, F1, F2, F3, and F4 keys); the alphanumeric keys; and the colored shift keys. The F1, F2, F3, and F4 keys refer to the menu options listed in the LCD of the interface. The LAST OPTION key is used to move back through the menus. The alphanumeric keys are used to enter data requested in various options. The red, blue and green shift keys are used to select the corresponding colored letter on the alphanumeric keypad.

The various menu options have three basic forms. The first type is a list that is scrolled through by using the F1 and F2 keys labeled NEXT and PREVIOUS. The second type uses the F1 and F2 keys to adjust a value up or down, and the third type uses the F1 and F2 keys to move the cursor to a position. The keypad is used to enter characters. In all of the options, the F3 key is used to cancel the operation. If the F3 key is pressed before the system returns to the menu, then all variables are returned to their old values. The F4 key is used to accept the current values in the display and continue.



The HOME menu has selections of **STATUS**, **TUNE**, **CALIBRATE**, and **CONFIGURE**. Each of these menus has several submenus. The bottom two lines define the function keys that control the individual menus. The top two lines in the display are user configurable and may not look like the figure above.

The menus shown in the figures in this manual represent how the information is laid out in the local display menu tree. The top row of the figures shows the bottom two rows of the display. One of the fields is in **Bold** type. Press the F key under this field to bring up the choices shown on the bottom row. If you see the word 'Next,' then push the F4 button to bring up the continuation of that row. To move back up the menu tree, push the button labeled 'Last Option' to see the preceding row.



## ***StarTalk™ DTM Help for StarPac 3 System***

### **Detailed StarPac 3 Register Menu**

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This reference will aid you in understanding the configuration of the StarPac 3 register table. Registers are described and notes are provided that give the range and more detailed information.

The StarPac 3 register table consists of three different types of information: integers, IEEE floating point numbers and strings. These types can have a read only (RO) access attribute or a read/write (RW) access attribute. You can only read RO registers. Writing to a RO register will generate an exception error. You can both read and write to RW registers.

The register numbering is as follows: a 30000 base indicates RO integers, a 40000 base indicates RW integers, a 70000 base indicates floating point numbers, and a 50000 base indicates strings. For example, a register number of 30003 indicates a RO integer.

Two contiguous integer registers make up a floating point register. You will get an exception response if you try to access into the middle of a floating point register.

Registers making up bit fields follow the MSB/LSB (Most Significant Byte/Least Significant Byte) format.

Internally, Flowserve calculates the StarPac 3 variable numbers by taking the module of the register number and 10,000 and subtracting

1. For example, register number 30001 would become variable number 0.



## **StarTalk™ DTM Help for StarPac 3 System**

### **StarPac 3 System Setup Checklist**

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#### **A. Power**

- (24) VDC Power at least 100 mA.
- Polarity correct.
- Local display ON. If not, check power supply.

#### **B. System Communications (if connected to a remote computer)**

- RS-485 converter properly installed or attached to computer.
- Signal polarity correct.
- Modbus device address set in StarPac 3 device; refer to StarPac3 IOM.
- Start StarTalk software.
- Configure communications in software and hardware to match. Refer to Communications section of this manual and the on board Help in the StarTalk XP software.
- Communications work. If not, recheck settings.

#### **C. Calibration Checks**

- Air supply turned on.
- Check status screens to verify system calibration; refer to software section.
- Valve stroke calibration to remove installation and handling offsets; refer to calibration section.
- Verify process sensor calibration; re-calibrate if needed.

#### **D. System Configuration; refer to Configure StarPac section for details**

- Set or verify failure modes.
- Set or verify analog output.
- Set or verify command and mode source.
- Set or verify stroke limits
- Set or verify LCD display options.
- Check positioner response and set gain to control speed.
- Set units.
- Set or verify tag name.

#### **E. Automatic PID Operation; refer to Tune PID section**

- Select process variable.
- Input full scale range.
- Set initial PID parameters.
- Begin Automatic mode and tune system.

#### **F. Other Options; refer to Monitor Operation section**



## ***StarTalk™ DTM Help for StarPac 3 System***

- Reset Totalizer

### G. Other Options; refer to Data Acquisition section

- Set and start Data Logger function.
- Collect and save installed signature, if desired.

### H. Save Installed Configuration

- Save configuration.
- Make backup copy and archive.



# **StarPac 3 Wiring and Grounding Guidelines**

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### **StarPac Wiring and Grounding Guidelines**

This guideline will help you in achieving maximum noise rejection and performance with a StarPac Intelligent Control System. This guide must NOT be used to supersede local electrical code or plant safety wiring practices.

### **Shielding Versus Grounding**

All signals to the StarPac system should be in shielded cables. Shields must be tied to a ground at only one end of the cable to provide a place for environmental electrical noise to be removed from the cable. A ground wire, unlike a shield, is attached at both ends to provide a continuous path for electrical conductivity.

### **Grounding Screw**

The grounding screw by the user interface terminal block should be used to provide the unit with an adequate and reliable earth ground reference. Either one of the mounting screws holding the terminal block may be used as a grounding screw. This ground should be tied to the same ground as the electrical conduit. Additionally, the electrical conduit connecting to the StarPac unit should be earth grounded at both ends of its run. The StarPac 3 grounding screw should not be used to terminate any signal shield wires.

### **24 VDC Power**

The 24 VDC connection points will work best with shielded twisted pair wire with the shield wire connected only at the source. The input power is isolated within the StarPac 3 system and may be referenced to whatever level is necessary. For best performance the 24 VDC power supply should not be connected to earth ground.

### **RS-485 Communication**

RS-485 wiring requires shielded twisted pair wire. Maximum performance will be attained when using cable with a characteristic impedance of 120 ohms. The shield should be connected only at the source, not in the StarPac unit. The StarPac 3 internal system ground is isolated and not earth ground referenced. The RS-485 port can float to whatever common mode voltage appears at its input terminals. These signals are referenced to the StarPac internal system ground, and because of this it is the main fault path when one of the isolation points fail. For this reason special care must be taken to ensure that the RS-485 cable is wired correctly. The RS-485 allows only a -7 to 12V common mode voltage differential between stations. This means that an RS-485 network connected to multiple devices must not have more than one grounding point. Flowserve's RS-232/RS-485 converter is not a grounded connection; it is fully isolated and is not a ground point. However, PC's with internal RS-485 cards are often earth grounded and if another communication device is on the network that also has an earth ground, a fault condition will almost certainly exist due to transient and steady state differences in ground potential.

### **4-20 mA Command Input, Auxiliary Input, and Feedback Output**

These signals are isolated but shielded twisted pair wire should be used to reduce crosstalk from other signals. Again, the shield should be connected only at the source.

### **Discrete Input and Output**

These signals are isolated, yet because they are frequently used to switch high voltage (120 VAC); they should be run in separate shielded wire paths away from the other StarPac signals.



## StarTalk™ DTM Help for StarPac 3 System

### StarPac 3 Temperature ADC Factors

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If a temperature calibrator is not available, the following table can be used to enter the calibration ADC factors for the temperature sensing of StarPac. This is one of the advantages of using a K-type thermocouple and the linearization circuit as we do. You can obtain an acceptable temperature calibration by simply entering these values into the StarPac 3 calibration factors.

#### StarPac 3 Temperature ADC Calibration Factors

Ref. Temperature(°F)	StarPac 3
-40	2515
0	2745
32	2935
100	3350
200	3980
212	4055
300	4600
400	5210
500	5825
600	6455
700	7090
800	7735
900	8380
1000	9030
1100	9680

Use the **EDIT REGISTER** (either StarTalk XP software or local user interface) functionality. You must first calculate the calibration slope for the thermocouple. Use the information from the table above in the equation:

$$\text{CalSlope} = \frac{(\text{Tspan (°F)} - \text{Tzero (°F)})}{(\text{ADC span} - \text{ADC zero})}$$

The result from this calculation is entered in register **70487**. Next, enter the Minimum ADC value in register **40070** and the corresponding temperature value in register **70687**.

The StarPac 3 uses the following equation to calculate the process temperature:

$$T_{\text{process}}(\text{°F}) = (\text{ADC read}(\text{register } 30009) - \text{ADC min}(\text{register } 40070)) \times \text{CalSlope}(\text{register } 40487) + T_{\text{zero}}(\text{°F})(\text{register } 40687)$$

NOTE: You must use the F values for these calculations, as those are the native units the StarPac 3 first calculates. It then converts this calculation to the desired units and outputs the result to register **30403** in user units.



## ***StarTalk™ DTM Help for StarPac 3 System***

If you want to 'fine tune' the reading make small adjustments to the slope value in register 40487. Increasing the value will increase the reading and decreasing the value will decrease the reading.





# Primary Control Registers and Modes for StarPac 3 Systems Using Modbus

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## Introduction

This document covers the basic knowledge of the operating mode and key control registers when a host device such as a PLC or DCS is being used to directly access a StarPac intelligent control system. For complete access to the StarPac system, both integer and floating point registers must be accessed. However, basic operation can be accomplished using only integer registers if necessary.

This paper describes some of the basic registers and how to use them for general operation. All of the registers described here are supported in StarTalk for Windows™ software. Most applications could have the scaling and control registers setup using StarTalk for Windows and then have the host device only responsible for working with those registers necessary for the process.

## Operating Modes

The StarPac system has three operating modes: Manual, Automatic and Test. The mode is set as described in the mode source section below. In Manual mode the unit operates as a normal control valve, positioning the valve according to its current command signal that can be received digitally via Modbus or from a 4-20 mA signal. In Auto mode the unit operates as a controller, using the PID settings, process variable and control action currently configured. The setpoint can be received digitally via Modbus or from a 4-20 mA signal.

Test mode takes the unit off-line and the system *does not* update the indicated pressures, temperatures, flow, or PID values; nor does it respond to any setpoint or command changes. Test mode is the beginning mode after an initialization and is used during calibration. If power is lost during a calibration setup, the unit remains in Test mode and the mode has to be reset to Auto or Manual for proper operation. Any time the unit is in Test mode, the letter 'T' flashes on the right side of the display for StarPac 3.

## Base Mode Source

The base mode source controls where the StarPac 3 unit receives the mode information. Integer register 40037 sets the mode source for how the unit is changed between Automatic and Manual modes. Valid values are: 0 = Digital, 1 = Discrete, 2 = Remote.

**Digital Mode Source** - Configures the unit so that Integer register 40038 sets the operating mode. Valid values are: 0 = Calibration, 1 = Manual, 2 = Auto.

**NOTE:** Every time that a 2 is written to register 40038, the StarPac system performs a bumpless transfer on the setpoint. It does this calculation even if the previous value was a 2 in register 40038. The bumpless transfer function sets the setpoint in register 40035 equal to the current PV. If the system needs to continuously update the mode register see remote mode source description below.

**Discrete Mode Source** - Configures the StarPac system so that an external signal applied to the discrete input terminals (9 and 18 for StarPac 3) will be used to switch the unit between Automatic and Manual modes. The definition is fixed with an energized state indicating Automatic mode.

**Remote Mode Source** - Configures the unit so that floating point register 40703 sets the operating mode. Valid values are: 0 = Manual, 100 = Auto. Remote Mode Source is used when a host system such as a PLC or DCS or a Flowserve StarPac Analog Interface Box (SPAIF) is used to set the mode via digital communications. The difference between Remote and Digital modes is that in Remote mode the only time that the bumpless transfer calculation is done is after the mode in register 40703 has *changed* from one value to another.

With a Digital mode source selected, every time that any value is written (even if it is not changed) to register 40038, the StarPac system executes a transfer algorithm that may impede control.



## StarTalk™ DTM Help for StarPac 3 System

### Setpoint source

This controls where the StarPac unit receives the valve command or controller setpoint information. Integer register 40041 sets the setpoint source for how the unit receives control information. Valid values are: 0 = 4-20 mA, 1 = Digital, 2 = Remote.

**Digital** - Configures the unit so that integer register 40035 sets the controller setpoint as a scaled integer if the StarPac unit is in Automatic mode. Integer register 40036 sets the valve position command as a scaled integer if the StarPac unit is in Manual mode. The scale for digital source using the integer registers is fixed for both position command and controller setpoint with 0 = -12.5 percent and 9999 = 112.5 percent. The valve command is defined as 0 percent = closed and 100 percent = open. The scaling for the process controller setpoint is shown in Table I.

**Analog** - Prompts the StarPac unit to use the 4-20 mA signal from the analog input as the valve position command or as the controller setpoint, depending on whether or not the unit is in Manual or Automatic mode. It can be set so that 4-20 mA = 0 to 100 percent or 100 to 0 percent, using integer register 40046 (1 = normal, 2 = inverted). The scaling for the process controller setpoint is shown in Table I.

**Remote** - Configures the unit so that floating point register 40705 sets the controller setpoint in percent of maximum (see Table I) or the valve position command in percent open, depending on the selected mode. Remote differs from Digital in that the remote register must be updated within the number of seconds set in integer register 40109 or the unit will go into a Loss of Command Trip mode. When the Loss of Command Trip occurs the system will initially hold the last setpoint if in auto, or the last position if in manual for the number of seconds specified in integer register 40047. When the timer expires the valve will then ramp open or closed at the rate set in floating point register 40491 (a negative rate will ramp closed and a positive rate will ramp open).

**Note:** When writing software to interface with the StarPac 3 where changes are being made to the operating modes and setpoints are being sent, it is important to program the software to change the mode prior to sending the setpoint. This is important because the bumpless transfer routine in the StarPac 3 may change the setpoint back to the previous value.

Table1: PID Action

Process Variable	Air-to-Open Valve	Air-to-Close Valve
Flow	Reverse	Direct
Upstream Pressure	Direct	Reverse
Downstream Pressure	Reverse	Direct
Differential Pressure	Direct	Reverse
Process Temperature	Depends on Installation	Depends on Installation
Auxiliary 4-20 Input	Depends on Installation	Depends on Installation

Note: If the PID action is not set correctly, the controller will hold the valve either full open or full closed and there will be no control.

### Process maximum

Setup for the controller setpoint using any setpoint or command source (Analog, Digital or Remote) is set in the floating point registers shown in Table I according to the selected control variable selected in integer register 40039.



## StarTalk™ DTM Help for StarPac 3 System

Control Variable Selection Table

Variable Number for Register 40039	Process Variable Scaling Register	Description
1	40425	Full scale liquid flow control range in selected engineering units. The minimum is fixed at zero flow.
2	40429	Full scale upstream pressure (P1) control range in selected engineering units. The minimum is fixed at zero pressure in engineering units.
3	40431	Full scale downstream pressure (P2) control range in selected engineering units. The minimum is fixed at zero pressure in engineering units.
4	40423	Full scale delta P control range in selected engineering units. The minimum is fixed at zero differential pressure.
5	40433	Full scale process temperature control range in selected engineering units.
5	40435	Minimum process temperature control range in selected engineering units.
6	40427	Full scale gas flow control range in selected engineering units. The minimum is fixed at zero flow.
7	40421	Full scale auxiliary input control range in percent (used if an external sensor is attached to the 4-20mA input as the process feedback). The minimum is fixed at zero percent.



## **StarTalk™ DTM Help for StarPac 3 System**

### **Cryogenic Usage**

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Because of how the type-K thermocouple reacts at cryogenic temperatures, we recommend calibrating the system at the working temperature. Use the actual ADC values read from register 30009 and the corresponding temperatures in the above equations to accomplish the calibration. The StarPac 3 will indicate correctly at the narrow operating temperature range but will not be correct at ambient temperatures due to the response curve of the thermocouple. This is normal operation for cryogenic applications. Please contact Flowserve Springville APD Engineering if you need more help with your application.

An Excel program is available from Flowserve Springville APD Engineering, which will calculate the amount of error you can expect.

The formula for converting to °C from °F is:

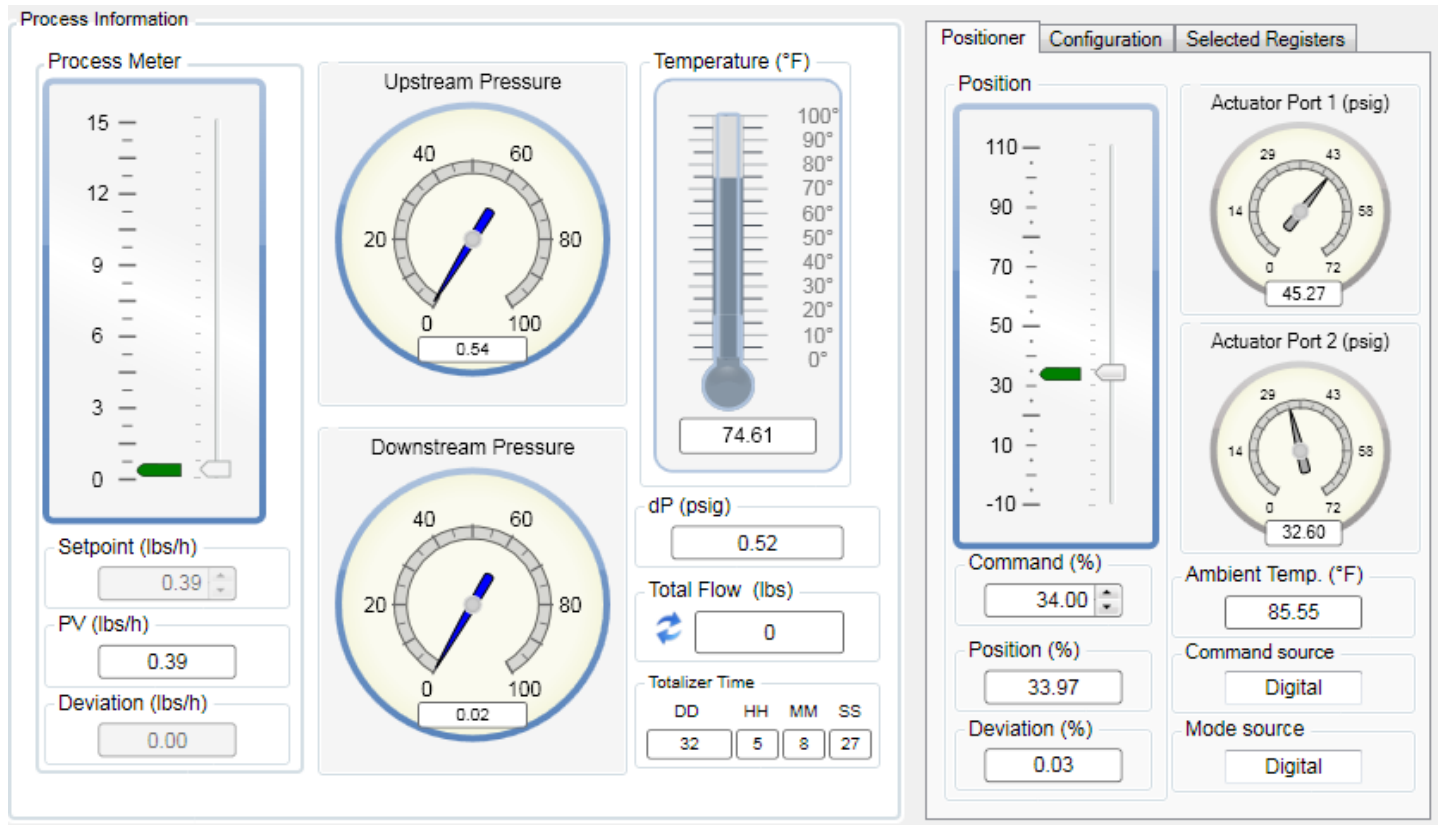
$$^{\circ}C = (^{\circ}F - 32) / 1.8$$

And from °F to °C is

$$^{\circ}F = 1.8^{\circ}C + 32$$

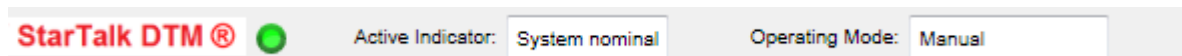
## Dashboard

The *Dashboard* view is the main view of the StarTalk® DTM.



### Status Area

The *Active Indicator* area shows the status of the most relevant active indicator. The color of the "LED light" corresponds to the Active Indicator and the first color of the blink code sequence on the positioner. Generally green indicates no immediate issues. Yellow indicates a developing issue or Alert. Red indicates the ability to control may be compromised. The *Operating Mode* field indicates the positioner's command mode.



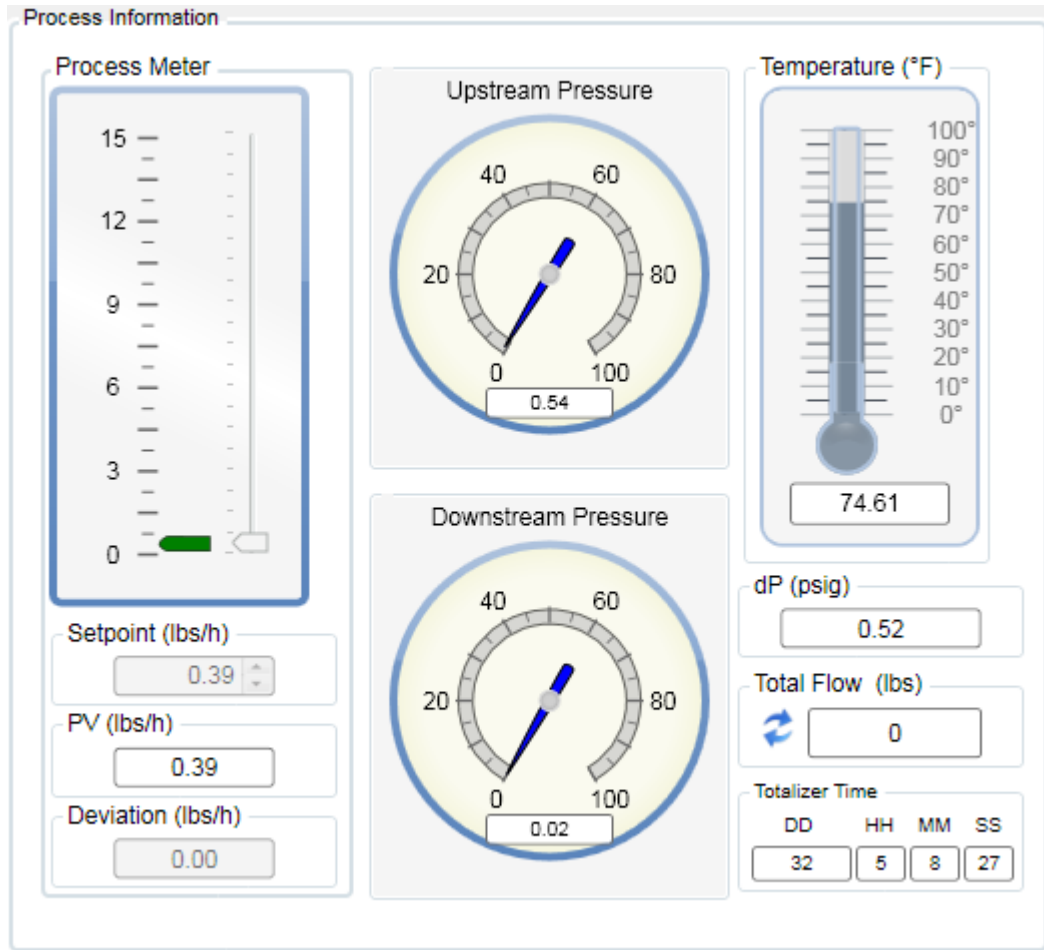
### Operating Mode

The StarPac system has three operating modes: Manual, Automatic and Test. The mode is set as described in the mode source section. In Manual mode the unit operates as a normal control valve, positioning the valve according to its current command signal that can be received digitally via Modbus or from a 4-20 mA signal. In Auto mode the unit operates as a controller, using the PID settings, process variable and control action currently configured. The setpoint can be received digitally via Modbus or from a 4-20 mA signal. Test mode takes the unit off-line and the system does not update the indicated pressures, temperatures, flow, or PID values; nor does it respond to any setpoint or command changes. Test mode is the beginning mode after an initialization and is used during calibration. If power is lost during a calibration setup, the unit remains in Test mode and the mode has to be reset to Auto or Manual for proper operation. Any time the unit is in Test mode, the letter 'T'

flashes on the right side of the display for StarPac II or the letters 'CAL' appear in the first line of the display for a StarPac.

### Process Information

This area will display the process information.



### Process Meter

The process meter area will display the Following:

- **Process Setpoint (units)**  
Current controller setpoint in user-defined units.
- **Process Value (PV) (units)**  
Current process variable in user-defined units.
- **Process Deviation (units)**  
The difference between the setpoint and the PV in user-defined units

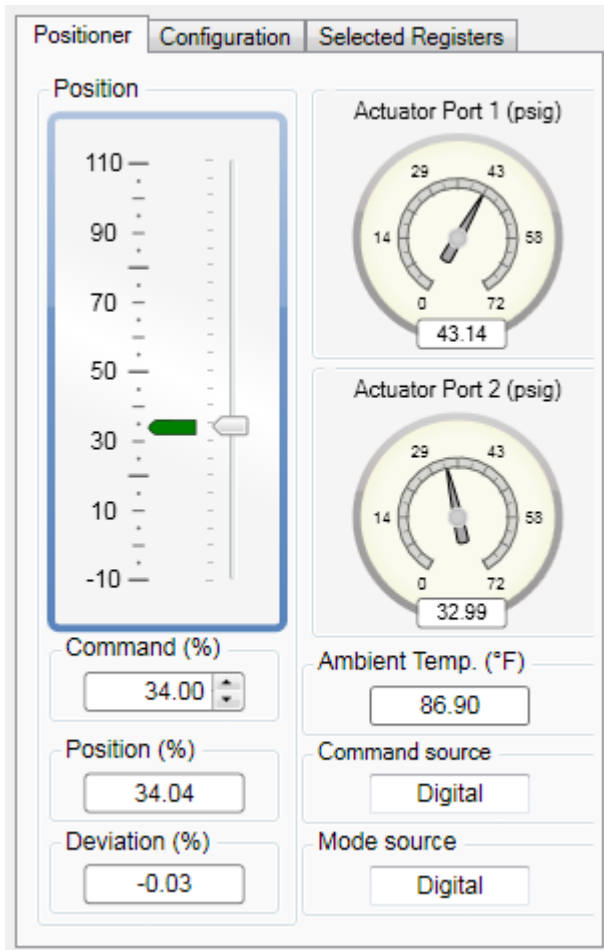
### Process Gauges

- Upstream and Downstream Pressure gauges will display the analog and digital value of the process pressure upstream and downstream.

- Temperature Pressure gauges will display the analog and digital value of the process temperature.
- dP (units) - Display the calculated differential pressure or the input dP Cell value.
- Total Flow (units) - Totalizes gas or liquid flow in user-defined units.
- Totalizer Time - Operating time since the totalizer was last reset.

### Command and Position

This area contains a graphical representations of the valve command and position.



### Positioner Command and Position

The gray arrow tracks the final command value (after adjustments for characterization curves). The green position bar indicates the current measured position of the valve.

### Positioner Deviation

The deviation from positioner command and actual position.

### Ambient Temperature

The temperature inside the positioner displayed in user selected units.

### Actuator Pressure

Port 1 and Port 2 actuator pressures are displayed in analog gauges and digital values (in user selected units)



## StarTalk™ DTM Help for StarPac 3 System

### Ambient Temperature

The temperature inside the positioner displayed in user selected units.

### Configuration

This area will display the basic configuration of the StarPac 3 system.

Setting	Value
Pressure Control:	Inactive
Custom Curve:	Inactive
Tuning Mode:	Manual
Gain Multiplier:	49
Air Action:	Air-to-open (ATO)
Analog Output 1 (AO1):	0
Analog Output 2 (AO2):	34.02151
Digital Input (DI):	On
Digital Output (DO):	Alarm

### Selected Register

This area will allow the selection of all the registers of the StarPac 3 in Six different combo boxes. The value of the selected register will be displayed to the right of the register.



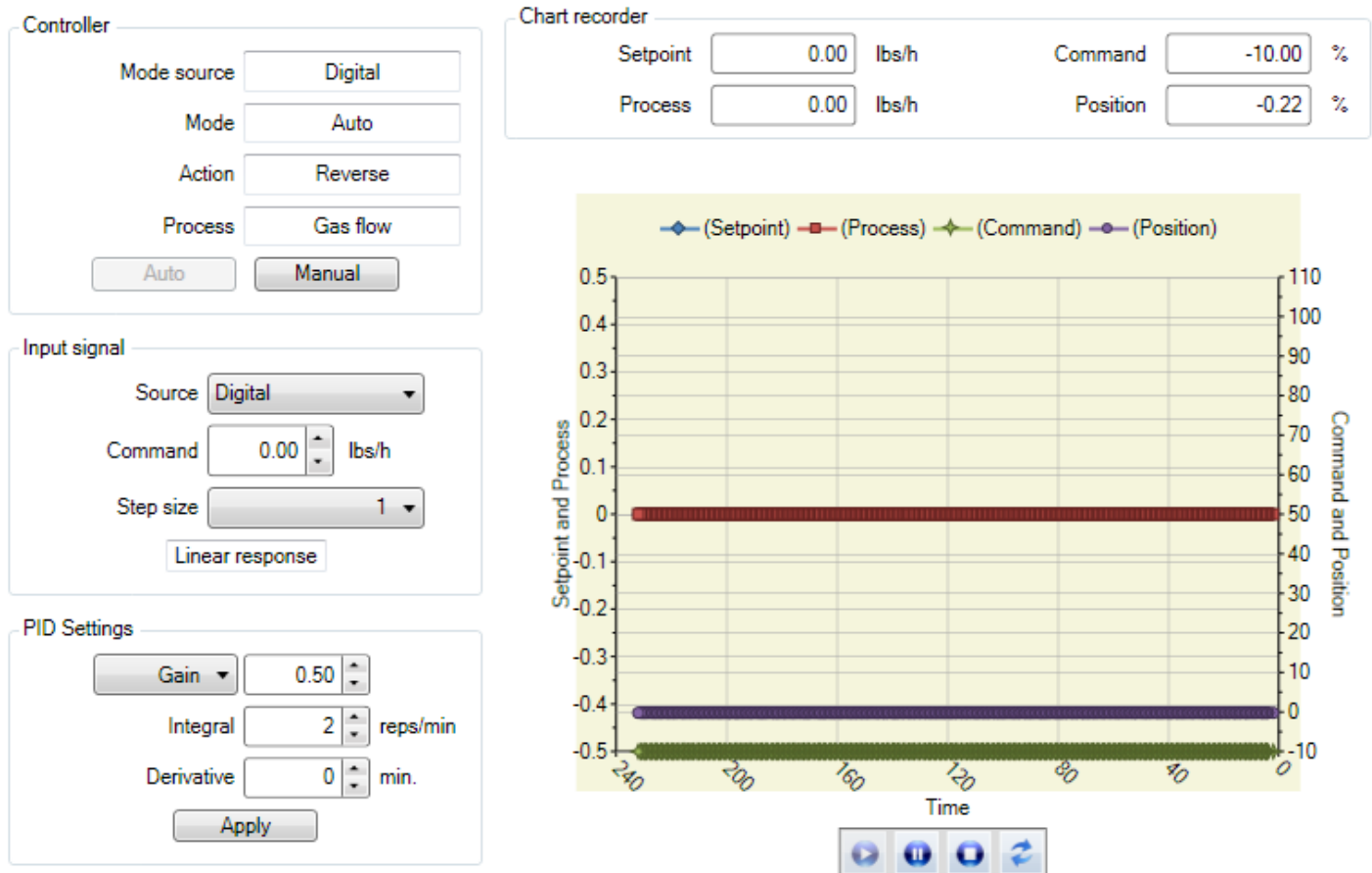


## StarTalk™ DTM Help for StarPac 3 System

Positioner	Configuration	Selected Registers
Register Description 1		
for cylinder Port 2 pressure		7950
Register Description 2		
0 - ADC value for cylinder F		7947
Register Description 3		
0 - ADC value for cylinder F		7947
Register Description 4		
0 - ADC value for cylinder F		7944
Register Description 5		
0 - ADC value for cylinder F		7944
Register Description 6		
0 - ADC value for cylinder F		7943

## Process Control Tuning

The Process control tuning page allows the user to adjust the process tuning manually.



## StarPac Loop Tuning

**Warning:** Each process is unique and knowledge of the process and implications of manipulating the process is the responsibility of the user. The following simple textbook tuning methods are not comprehensive and only provide some basic steps for tuning the controller of the StarPac. Flowserve does not warranty or accept any responsibility for their use in a particular process. Note that process gains can be significantly different at different operating conditions. A gain set that is stable at one set of conditions may not be stable at another set of conditions.

### Closed Loop Method using Rule of 2 – For Fast loops

- This process can only be used where the process can oscillate without affecting process safety or product quality. This process is typically used on fast loops such as flow control loops.
- Start with low value of gain (0.1-0.3 or proportional band of 1000-330%) and an integral of 1 rep/min and the derivative set to 0 min.



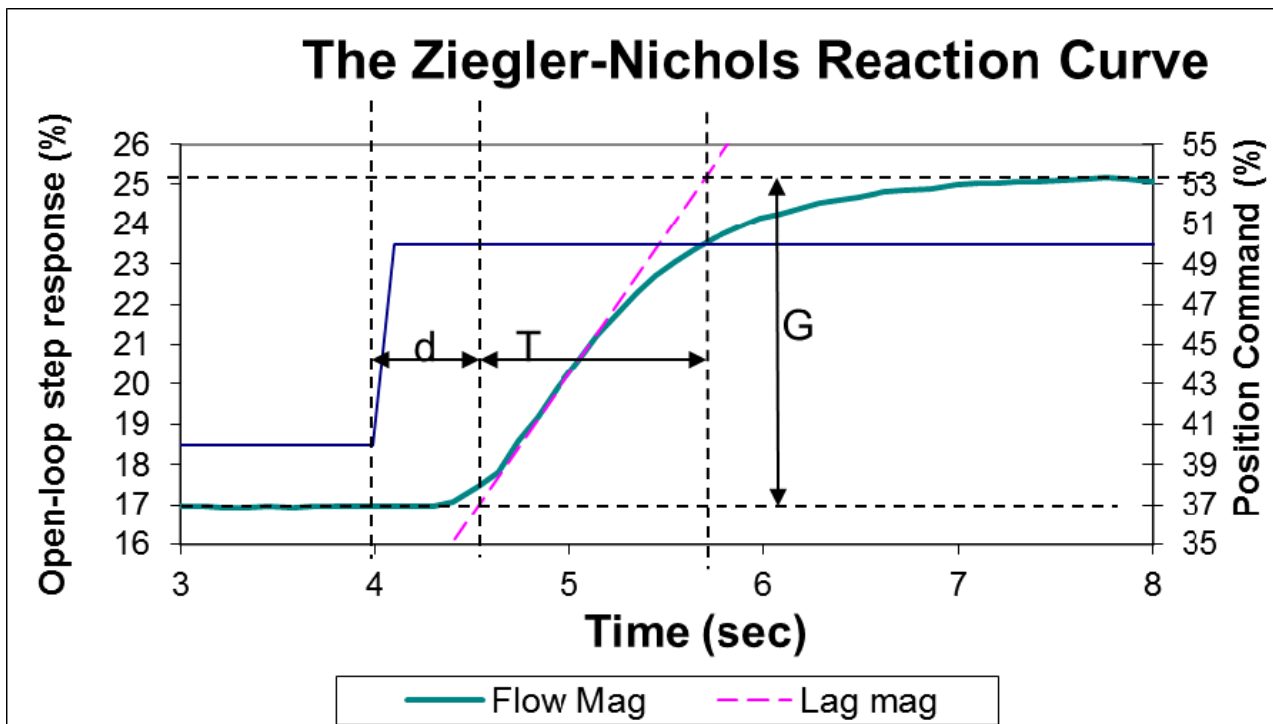
## **StarTalk™ DTM Help for StarPac 3 System**

- Slowly increase gain ( or lower Proportional band) until loop starts to oscillate steadily after changing set point
- Call gain at steady oscillation  $K_c$  = the critical gain
- Divide gain  $K_c$  by 2 (or multiply proportional band by 2) to set gain value  $K$ .
- With  $K = K_c/2$ , slowly increase integral action.
- Note Integral (or reset) where loop oscillates steadily without reaching end of valve travel. Call this value  $I_c$  = critical Integral (reset).
- Set reset  $I$  to  $I_c/2$
- Derivative is not normally used in fast processes and should be set to 0.
- The tuning set from this process is for the specific process conditions where the test was performed. Repeating the process at several conditions is recommended.

### **Open Loop Method – For Slow loops**

- This procedure can only be used where the process can be safely operated with the loop in manual and where small step changes in the valve position can be made without affecting process safety or product quality. This method is not typically used on fast loops such as flow control.
- Make steps at different starting points and of different sizes, both open and closed, to measure process response. Record conditions before and after step, either on data logger or strip chart.
- Calculate deadtime, lag, and process gain for different tests. Estimate tuning constants from these values.
- Put new constants into controller and watch response

- After step test, draw line tangent to reaction curve at steepest point. Extend this to intersect with process variable before step and at final value.
- Deadtime ( $d$ ) is difference from time at start of step to intersection of tangent line and beginning value.
- Lag time ( $T$ ) is difference between intersections of tangent with beginning and final values
- Process gain ( $G$ ) is distance between beginning and final values, expressed as % of span.
- Calculate tuning constants as follows, where
  - $K = \text{Gain}$  ( $\text{PB}\% = 100/K$ ),  $I = \text{Integral (repeats/min)}$ ,  $D = \text{Derivative (min)}$ :
- $T$  and  $d$  are entered in minutes, and  $G$  is the percent of change in the process relative to the controller output span. In the example below  $T = 1.25 \text{ sec} = 0.0208 \text{ min}$ ,  $d = 0.5 \text{ sec} = 0.0083 \text{ min}$ , and  $G = 8\%$ . Therefore  $K = 0.47$  ( $\text{PB}\% = 213\%$ ),  $I = 48$ ,  $D = .004$  (Note  $D$  values less than 1 should be entered in the StarPac as 0)



### PID Action Configuration



## StarTalk™ DTM Help for StarPac 3 System

Determines the response of the controller to error. Reverse action will cause an air-to-open valve to begin to close when the process variable is greater than the setpoint. Direct action has the opposite effect. The following table gives some guidelines for control action settings:

Process Variable	Air-to-Open Valve	Air-to-Close Valve
Flow	Reverse	Direct
Upstream Pressure	Direct	Reverse
Downstream Pressure	Reverse	Direct
Differential Pressure	Direct	Reverse
Process Temperature	Depends on Installation	Depends on Installation
Auxiliary 4-20 Input	Depends on Installation	Depends on Installation

If the PID action is not set correctly, the controller will hold the valve either full open or full closed and there will be no control.

### Setpoint Source

This controls where the StarPac unit receives the valve command or controller setpoint information. Integer register 40041 sets the setpoint source for how the unit receives control information. Valid values are: 0 = 4-20 mA, 1 = Digital, 2 = Remote.

**Digital** - Configures the unit so that integer register 40047 (SPI & II) or 40035 (SP 3) sets the controller setpoint as a scaled integer if the StarPac unit is in Automatic mode. Integer register 40048 (SPI & II) or 40036 (SP 3) sets the valve position command as a scaled integer if the StarPac unit is in Manual mode. The scale for digital source using the integer registers is fixed for both position command and controller setpoint with 0 = -12.5 percent and 9999 = 112.5 percent. The valve command is defined as 0 percent = closed and 100 percent = open. See Process maximum.

**Analog** - Prompts the StarPac unit to use the 4-20 mA signal from the analog input as the valve position command or as the controller setpoint, depending on whether or not the unit is in Manual or Automatic mode. It can be set so that 4-20 mA = 0 to 100 percent or 100 to 0 percent, using integer register 40051 (SPI & II) or 40046 (SP 3) (1 = normal, 2 = inverted). See Process maximum.

**Remote** - Configures the unit so that floating point register 70551 (SPI & II) or 70705 (SP 3) sets the controller setpoint in percent of maximum (See Process maximum) or the valve position command in percent open, depending on the selected mode. Remote differs from Digital in that the remote register must be updated within the number of seconds set in integer register 40111 (SPI & II) or 40109 (SP 3) or the unit will go into a Loss of Command Trip mode. When the Loss of Command Trip occurs the system will initially hold the last setpoint if in auto, or the last position if in Manual for the number of seconds specified in integer register 40052 (SPI & II) or 40047 (SP 3). When the timer expires the valve will then ramp open or closed at the rate set in floating point register 70321 (SPI & II) or 70491 (SP 3) (a negative rate will ramp closed and a positive rate will ramp open).



### **Annunciator Panel**

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*Annunciator Panels* allow quick viewing of the current state and history of diagnostic indicators and allows masking of alarms, warnings and alerts. This selection automatically redirects to the *Alarms Annunciator* page.

## ValveSight Annunciator

The *ValveSight Annunciator Panels* allow quick viewing of the current state and history of diagnostic indicators and allows masking of alarms, warnings and alerts.

ValveSight Annunciator
NAMUR Annunciator

**System Status**

- ☒ Loss of supply pressure
- ☒ Loss of command signal
- ☒ Loss of remote command
- ☒ Position deviation

**Process Status**

- ☐ Setpoint deviation
- ☒ Low delta pressure
- ☒ Anti-reset windup

**Hardware / Software Status**

- ☐ Master Hardware / Software Mask

**Hardware Status**

- ☒ Watch dog timer reset
- ☒ SRAM read/write failure
- ☒ Flash RAM check failure
- ☒ NVRAM read/write check failure
- ☒ MCU communication failure
- ☒ Voltage reference failure
- ☒ NVRAM check failure

**Software Status**

- ☒ Illegal pointer assignment
- ☒ Divide by zero detected

**Calibration Status**

- ☒ Position not calibrated
- ☒ Actuator not calibrated
- ☒ Tuning not calibrated
- ☒ ILNull not calibrated
- ☒ Aborted by user

**Calibration Detail Status**

- ☐ Position unstable at open
- ☐ Position unstable at closed
- ☐ Too close to end point at open
- ☐ Too close to end point at closed
- ☐ Open/closed span too small
- ☐ IL NULL calculation timed out
- ☐ Pressure unstable at open
- ☐ Pressure unstable at closed
- ☐ Port 1 range too small
- ☐ Port 2 range too small
- ☐ Stroke time not calculated

**Sensor Status**

- ☐ Master Sensor Mask
- ☒ Position sensor fault
- ☒ Upstream pressure sensor fault
- ☒ Downstream pressure sensor fault
- ☒ Process temperature sensor fault
- ☒ Port 1 pressure sensor fault
- ☒ Port 2 pressure sensor fault
- ☒ Ambient temperature sensor fault

**Position Status**

- ☒ Soft limit
- ☒ Cycle Count
- ☒ Travel limit
- ☒ Accumulated travel limit
- ☒ Lower position cutoff
- ☒ Upper position cutoff
- ☒ Stroke rate limit

**Legend**

- ☒ Healthy
- ☐ Alert, Mode, or Warning
- ☐ Alarm or State
- ☐ Not Available
- ☒ Masked/Disable







Retrieve
Apply
Print Report

### Legend

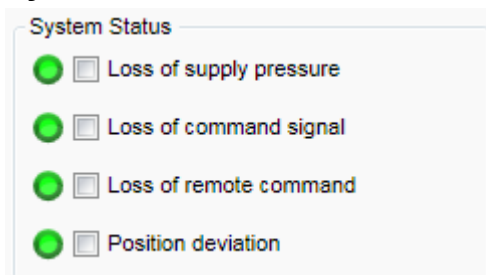
Legend

- ☒ Healthy
- ☐ Alert, Mode, or Warning
- ☐ Alarm or State
- ☐ Not Available
- ☒ Masked/Disable

Each indicator group box may contain the following components:

-  An "LED light" indicates health status. Warning and alarm limits (set by the user in many cases) determine the conditions when the color will turn from green to yellow to red.
-  **Green** indicates an occurrence of a normal activity that does not affect the health of the valve system.
-  **Yellow** circle indicates that an active warning, alert or mode is present.
-  **Red** circle indicates that an active alarm or state is present that could seriously limit the operation of the valve.
-  **Gray** circle indicates that the feature or condition is not available because the configuration of the hardware or software does not support it.
-  A checkbox indicates the masked status. Check to mask.

### System Status



#### Loss of Supply Pressure

- **Definition:** The supply pressure is below the user set warning or alarm limit.
- **Implications:** Implications: Low supply pressure can cause poor valve response or positioner failure. The minimum recommended supply pressure for proper operation is 2.1 bar (30 PSI).
- **Possible Solutions:** Possible Solutions: Regulate the supply pressure at the positioner above 2.1 bar (30 PSI). Ensure system air/gas supply is adequate. Repair kinked or restricted supply tubing. Check for pneumatic leaks in the actuator and actuator tubing. Re-calibrate pressure sensors. Check the pressure sensor board connections and replace pressure sensor board if necessary.

#### Loss of Command Signal

- **Definition:** Loss of Command
- **Implications:** The StarPac 3 system will go to Fail Safe at the loss of analog command.
- **Possible Solutions:** Make sure the analog wires are connected correctly. Also make sure the Analog input is calibrated correctly.

#### Loss of Remote Command

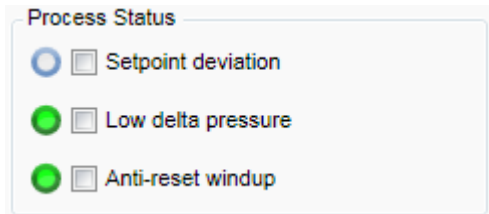
- **Definition:** Loss of Remote Command



- **Implications:** The StarPac 3 System will remain in the last command. (User selectable)
- **Possible Solutions:** Make sure the analog wires are connected correctly.

### Position Deviation

- **Definition:** The device is not positioning at the commanded set point position.
- **Implications:** The difference between the command and the actual position has been greater than the user-set limit for longer than a user-set time.
- **Possible Solutions:** Possible Solutions: Review active alarms and warnings to find root causes of this alarm. The deviation settings can be changed in the Valve Health page of the DTM.



### Setpoint Deviation

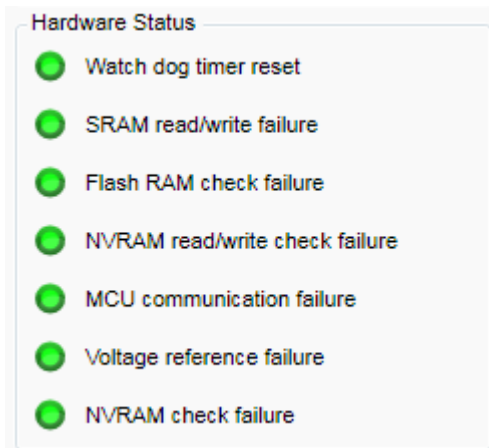
- **Definition:** The controller is unable to maintain the process at the current set point. Tuning is adjusted using StarTalk DTM Software
- **Implications:** Process will not maintain the desired operation point. Unit may be in Manual Mode.
- **Possible Solutions:** Tune the process loop. Increase the process pressure, temperature, flow rating, etc. Make sure unit is in Auto Mode

### Low Delta Pressure

- **Definition:** Low Delta Pressure
- **Implications:** Limited control of the process and flow calculation will stop. If in flow control the low DP trip condition is set, the valve will ramp closed.
- **Possible Solutions:** Check the process sensors upstream and downstream or the actual Delta pressure input to make sure it is calibrated and wired correctly.

### Anti-Reset Windup

- **Definition:** Anti-reset windup condition present. Controller action stops integrating at 125%
- **Implications:** Stops the integrator
- **Possible Solutions:** Process scaling is out of range, Adjust the scaling.



### Watch Dog Timer Reset

- **Definition:** There has been a watch dog time out, stack overflow warning, or CPU usage warning.
- **Implications:** The StarPac 3 will appear to go through a power cycle even without a power loss. The Process will re-start. Valve may stroke.
- **Possible Solutions:** Possible Solutions: Check the power supply. If the problem persists, perform a factory reset. If it still persists, reprogram or replace the main board.

### SRAM read/write Failure

- **Definition:** SRAM read/write failure
- **Implications:** The StarPac 3 System might lose its memory and stroke the valve to a Fail Safe position.
- **Possible Solutions:** Check the power supply. If the problem persists, perform a factory reset. If it still persists, reprogram or replace the main board.

### Flash RAM check Failure

- **Definition:** Hardware Alert (Flash RAM Check Failure)
- **Implications:** The StarPac 3 System might lose its memory and stroke the valve to a Fail Safe position.
- **Possible Solutions:** Check the power supply. If the problem persists, perform a factory reset. If it still persists, reprogram or replace the main board. Possible programming error, reprogram.

### NVRAM read/write Check Failure

- **Definition:** Hardware Alert (NVRAM read/write check failure)
- **Implications:** The StarPac 3 System might lose its configuration and stroke the valve to a Fail Safe position.
- **Possible Solutions:** Check the power supply. If the problem persists, perform a factory reset. If it still persists, reprogram or replace the main board.

### MCU Communication Failure

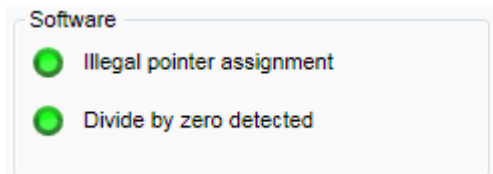
- **Definition:** Hardware Alert (MCU Communication Failure)

### Voltage Reference Failure

- **Definition:** Hardware Alert (Voltage reference failure)
- **Implications:** The StarPac 3 System internal sensor has detected a failure.
- **Possible Solutions:** If the problem persists, perform a factory reset. If it still persists, reprogram or replace the main board.

### NVRAM Check Failure

- **Definition:** Hardware Alert (NVRAM check failure)
- **Implications:** The StarPac 3 System might set the watch dog. The StarPac 3 system will restart.
- **Possible Solutions:** Check the power supply. If the problem persists, perform a factory reset. If it still persists, reprogram or replace the main board.

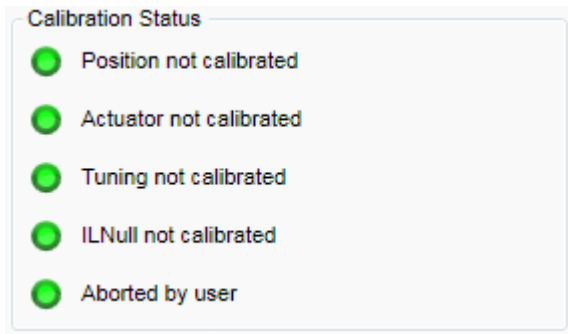


### Illegal Pointer Assignment

- **Definition:** StarPac Software Error (Illegal Pointer assignment)
- **Implications:** The StarPac 3 System might set the watch dog. The StarPac 3 system will restart.
- **Possible Solutions:** If the problem persists, perform a factory reset. If it still persists, reprogram or replace the main board.

### Divided by Zero Detected

- **Definition:** StarPac Software Error (Divided by Zero detected)
- **Implications:** The StarPac 3 System might set the watch dog. The StarPac 3 system will restart.
- **Possible Solutions:** If the problem persists, perform a factory reset. If it still persists, reprogram or replace the main board.



### Position Not Calibrated

- **Definition:** Position Not Calibrated
- **Implications:** Position Sensor calibration has not been calibrated
- **Possible Solutions:** Complete the Stroke calibration

### Actuator Not Calibrated

- **Definition:** Actuator Not Calibrated
- **Implications:** Actuator pressure sensors calibration has not been calibrated
- **Possible Solutions:** Complete the actuator sensor calibration

### Tuning Not Calibrated

- **Definition:** Tuning Not Calibrated. Positioner unstable.
- **Implications:** QUICK-CAL calibration has not been calibrated
- **Possible Solutions:** Complete the QUICK\_CAL calibration

### ILNULL Not Calibrated

- **Definition:** IsNull Not Calibrated
- **Implications:** QUICK-CAL calibration has not been calibrated fully.
- **Possible Solutions:** Complete the QUICK\_CAL calibration

### Aborted by User

- **Definition:** Calibration was aborted by user
- **Implications:** Some calibration were not completed and the system might not perform correctly.
- **Possible Solutions:** Perform aborted calibration.

### Calibration Detail Status

- ☐ Position unstable at open
- ☐ Position unstable at closed
- ☐ Too close to end point at open
- ☐ Too close to end point at closed
- ☐ Open/closed span too small
- ☐ IL NULL calculation timed out
- ☐ Pressure unstable at open
- ☐ Pressure unstable at closed
- ☐ Port 1 range too small
- ☐ Port 2 range too small
- ☐ Stroke time not calculated

### Position Unstable at Open

- **Definition:** Due to the position feedback unstable the calibration will not complete.
- **Implications:** Calibration will not complete due to continued movement
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

### Position Unstable at Close

- **Definition:** Due to the position feedback unstable the calibration will not complete.
- **Implications:** Calibration will not complete due to continued movement
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

### Too close to End Point at Open

- **Definition:** Too close to end point at open
- **Implications:** Calibration will not complete
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

### Too close to End Point at Close

- **Definition:** Too close to end point at close
- **Implications:** Calibration will not complete
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.



## **StarTalk™ DTM Help for StarPac 3 System**

### **Open/Close Span Too Small**

- **Definition:** Not enough movement for calibration to complete.
- **Implications:** Calibration will not complete due to ADC count being too small of span.
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely. Check the linkage range.

### **ILNULL Calculation Timed Out**

- **Definition:** Has an offset of position vs. command
- **Implications:** Calibration will not complete as valve cannot stabilize movement.
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

### **Pressure Unstable at Open**

- **Definition:** Pressure unstable at open or not reading correctly.
- **Implications:** Calibration will not complete
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

### **Pressure Unstable at Close**

- **Definition:** Pressure unstable at close or not reading correctly.
- **Implications:** Calibration will not complete
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

### **Port 1 Range too Small**

- **Definition:** Port 1 range too small
- **Implications:** Calibration will not complete due to insufficient pressure range.
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

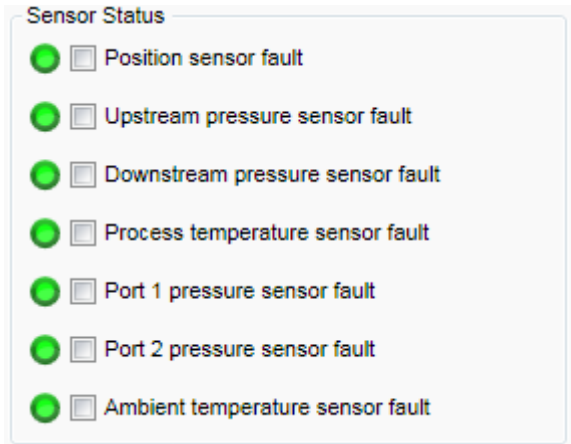
### **Port 2 Range too Small**

- **Definition:** Port 2 range too small
- **Implications:** Calibration will not complete due to insufficient pressure range.
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

### **Stroke Time Not Calculated**

- **Definition:** Stroke time not calculated

- **Implications:** Calibration will not complete
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely. Make sure the valve is not blocked or Hand wheel engaged.



### Position Sensor Fault

- **Definition:** The
- **Implications:** Low
- **Possible Solutions:** Regulate

### Upstream Pressure Sensor Fault

- **Definition:** The
- **Implications:** Low
- **Possible Solutions:** Regulate

### Downstream Pressure Sensor Fault

- **Definition:** The
- **Implications:** Low
- **Possible Solutions:** Regulate

### Process Temperature Sensor Fault

- **Definition:** The
- **Implications:** Low
- **Possible Solutions:** Regulate

### Port 1 Pressure Sensor Fault

- **Definition:** The

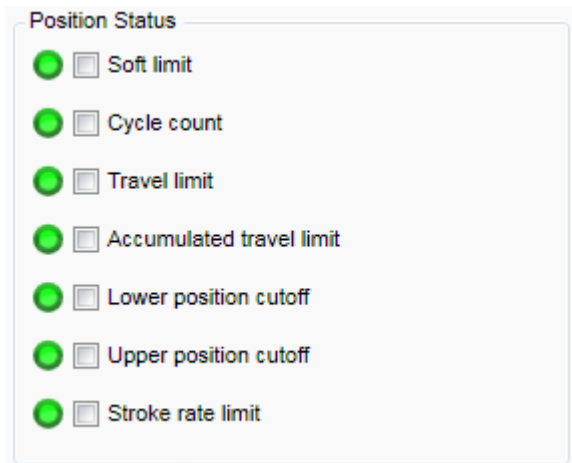
- **Implications:** Low
- **Possible Solutions:** Regulate

### Port 2 Pressure Sensor Fault

- **Definition:** The
- **Implications:** Low
- **Possible Solutions:** Regulate

### Ambient Temperature Sensor Fault

- **Definition:** The
- **Implications:** Low
- **Possible Solutions:** Regulate



### Soft Limits

- **Definition:** A soft limit has been reached. The Final Command would move the valve beyond the user-set Soft Limit, but the internal software is holding the position at the limit.
- **Implications:** The function is similar to a mechanical limit stop except it is not active if the unit is un-powered.
- **Possible Solutions:** If more travel is needed, reset the Soft Limits. If not, adjust the Final Command signal back into the specified range.

### Cycle Count

- **Definition:** The user defined valve cycle limit has been reached.
- **Implications:** Each cycle represents two reversals of the direction of valve movement. The cycle counting criterion and count limit are set by the user to track the usage of the valve.
- **Possible Solutions:** Follow routine procedures for maintenance when the limit is reached such as checking the packing tightness, and checking linkages for wear,





## **StarTalk™ DTM Help for StarPac 3 System**

misalignment, and tightness. After maintenance, reset the cycle accumulator, or adjust cycle count limits.

### **Travel Limit**

- **Definition:** Travel limit exceeded, the current position has exceeded the user defined limit.
- **Implications:** The position limit is exceeded in either direction from user setting.
- **Possible Solutions:** Check the position feedback sensor or check the travel limit user settings. Reset or adjust travel limit.

### **Accumulated Travel Limit**

- **Definition:** The total accumulated valve travel limit has exceeded user defined limits.
- **Implications:** The travel is accumulated in both directions. The travel counting criterion and limit are set by the user to track the usage of the valve.
- **Possible Solutions:** Follow routine procedures for maintenance when the limit is reached such as checking the packing tightness, and checking linkages for wear, misalignment, and tightness. After maintenance, reset the travel accumulator.

### **Lower Position Cutoff**

- **Definition:** Lower position cutoff active. Valve will be in tight shut off. Slight delay coming off the seat.
- **Implications:** (Also called MPC.) The Final Command is beyond the user set limit for the tight shutoff feature and the positioner is applying full actuator pressure to close (or open) the valve. This is a normal condition for all valves when closed. The factory default setting triggers this at command signals below 1%. This indication may also occur on 3 way valves at both ends of travel if the upper Tight Shut Off value has been set.
- **Possible Solutions:** If tight shutoff is not desired, reset the tight shut off limits to be less than 1% or adjust the command signal inside of the specified Tight Shut Off values.

### **Upper Position Cutoff**

- **Definition:** Upper position cutoff active
- **Implications:** (Also called MPC.) The Final Command is beyond the user set limit for the full open feature and the positioner is applying full actuator pressure to close (or open) the valve. This is a normal condition for all valves when open. The factory default setting triggers this at command signals below 1%. This indication may also occur on 3 way valves at both ends of travel if the upper Tight Shut Off value has been set.
- **Possible Solutions:** If tight shutoff is not desired reset the tight shut off limits to be less than 1% or adjust the command signal inside of the specified Tight Shut Off values.

### Stroke Rate Limit

- **Definition:** Valve opens and closes slower than desired
- **Implications:** The Stroke Rate Limits area displays the maximum rate of travel in the opening and closing directions. Limiting the rate of travel can be helpful to prevent surging process flow.
- **Possible Solutions:** Change the Stroke Rate Limit User settings

### Action Buttons

The *Apply* button will save changes to the connected device.

Apply

The *Retrieve* button will retrieve the latest information from the device.

Retrieve

The *Print Report* button will print a report to default printer (see example below). Information includes:

- Information about the connected device
- The active status of the alarms, warnings and alerts.
- The masked status.
- The current value (where applicable).
- The value threshold (where applicable).



Print Report



## StarTalk™ DTM Help for StarPac 3 System

ValveSight Annunciator NAMUR Annunciator Print Preview

Page 1 / 2 One Page Find



### StarPac3 Alarms/Alerts Report

Tag Name: SPVTSGStarPac3  
Device type: StarPac 3  
Valve serial number: EW SETUP123

System Status	Active	Masked
Loss of supply pressure		X
Loss of command signal		X
Loss of remote command		X
Position deviation		

### Process Status

Setpoint deviation  
Low delta pressure  
Anti-reset windup

### Hardware Status

Watch dog timer reset  
SRAM read/write failure  
Flash RAM check failure  
NVRAM read/write check failure  
MCU communication failure  
Voltage reference failure  
NVRAM check failure

### Sensor Status

Position sensor fault  
Unstream pressure sensor fault


## NAMUR Annunciator


The *NAMUR Annunciator Panels* allow quick viewing of the current state and history of diagnostic indicators and allows masking of alarms, warnings and alerts.


ValveSight Annunciator


NAMUR Annunciator

System Status


 ☐ Loss of supply pressure


 ☐ Loss of command signal


 ☐ Loss of remote command

 ☐ Position deviation

Process Status

 ☐ Setpoint deviation


 ☐ Low delta pressure


 ☐ Anti-reset windup


Hardware / Software Status


☐ Master Hardware / Software Mask


Hardware Status


 Watch dog timer reset


 SRAM read/write failure

 Flash RAM check failure


 NVRAM read/write check failure


 MCU communication failure

 Voltage reference failure


 NVRAM check failure


Software Status


 Illegal pointer assignment


 Divide by zero detected


Calibration Status

 Position not calibrated


 Actuator not calibrated


 Tuning not calibrated


 ILNull not calibrated


 Aborted by user


Calibration Detail Status


 Position unstable at open


 Position unstable at closed


 Too close to end point at open


 Too close to end point at closed


 Open/closed span too small


 IL NULL calculation timed out

 Pressure unstable at open

 Pressure unstable at closed


 Port 1 range too small


 Port 2 range too small


 Stroke time not calculated


Sensor Status


☐ Master Sensor Mask


 ☐ Position sensor fault


 ☐ Upstream pressure sensor fault

 ☐ Downstream pressure sensor fault


 ☐ Process temperature sensor fault


 ☐ Port 1 pressure sensor fault


 ☐ Port 2 pressure sensor fault


 ☐ Ambient temperature sensor fault


Position Status


 ☐ Soft limit


 ☐ Cycle Count

 ☐ Travel limit


 ☐ Accumulated travel limit


 ☐ Lower position cutoff


 ☐ Upper position cutoff


 ☐ Stroke rate limit


Legend


 Not Available

 Normal

 Maintenance Required

 Out of Specification

 Function Check

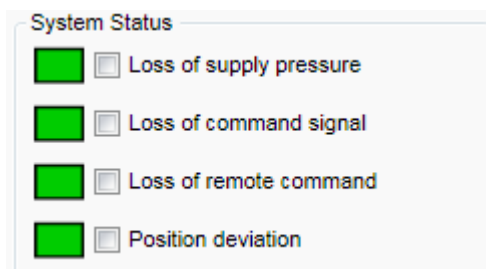
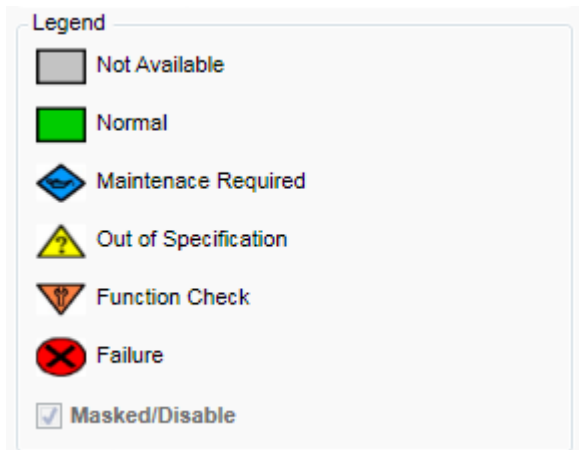
 Failure

☒ Masked/Disable

Retrieve

Apply

Print Report



## Loss of Supply Pressure

- **Definition:** The supply pressure is below the user set warning or alarm limit.
- **Implications:** Implications: Low supply pressure can cause poor valve response or positioner failure. The minimum recommended supply pressure for proper operation is 2.1 bar (30 PSI).
- **Possible Solutions:** Possible Solutions: Regulate the supply pressure at the positioner above 2.1 bar (30 PSI). Ensure system air/gas supply is adequate. Repair kinked or restricted supply tubing. Check for pneumatic leaks in the actuator and actuator tubing. Re-calibrate pressure sensors. Check the pressure sensor board connections and replace pressure sensor board if necessary.

## Loss of Command Signal

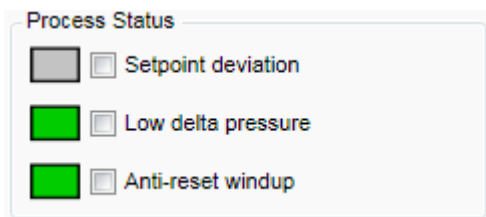
- **Definition:** Loss of Command
- **Implications:** The StarPac 3 system will go to Fail Safe at the loss of analog command.
- **Possible Solutions:** Make sure the analog wires are connected correctly. Also make sure the Analog input is calibrated correctly.

## Loss of Remote Command

- **Definition:** Loss of Remote Command
- **Implications:** The StarPac 3 System will remain in the last command. (User selectable)
- **Possible Solutions:** Make sure the analog wires are connected correctly.

## Position Deviation

- **Definition:** The device is not positioning at the commanded set point position.
- **Implications:** The difference between the command and the actual position has been greater than the user-set limit for longer than a user-set time.
- **Possible Solutions:** Possible Solutions: Review active alarms and warnings to find root causes of this alarm. The deviation settings can be changed in the Valve Health page of the DTM.



## Setpoint Deviation

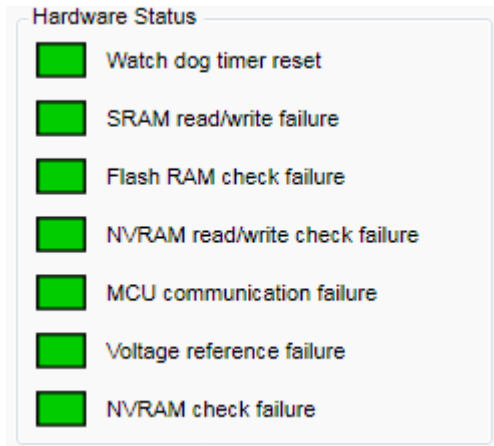
- **Definition:** The controller is unable to maintain the process at the current set point. Tuning is adjusted using StarTalk DTM Software
- **Implications:** Process will not maintain the desired operation point. Unit may be in Manual Mode.
- **Possible Solutions:** Tune the process loop. Increase the process pressure, temperature, flow rating, etc. Make sure unit is in Auto Mode

## Low Delta Pressure

- **Definition:** Low Delta Pressure
- **Implications:** Limited control of the process and flow calculation will stop. If in flow control the low DP trip condition is set, the valve will ramp closed.
- **Possible Solutions:** Check the process sensors upstream and downstream or the actual Delta pressure input to make sure it is calibrated and wired correctly.

## Anti-Reset Windup

- **Definition:** Anti-reset windup condition present. Controller action stops integrating at 125%
- **Implications:** Stops the integrator
- **Possible Solutions:** Process scaling is out of range, Adjust the scaling.



## Watch Dog Timer Reset

- **Definition:** There has been a watch dog time out, stack overflow warning, or CPU usage warning.
- **Implications:** The StarPac 3 will appear to go through a power cycle even without a power loss. The Process will re-start. Valve may stroke.
- **Possible Solutions:** Possible Solutions: Check the power supply. If the problem persists, perform a factory reset. If it still persists, reprogram or replace the main board.

## SRAM read/write Failure

- **Definition:** SRAM read/write failure
- **Implications:** The StarPac 3 System might lose its memory and stroke the valve to a Fail Safe position.
- **Possible Solutions:** Check the power supply. If the problem persists, perform a factory reset. If it still persists, reprogram or replace the main board.

## Flash RAM check Failure

- **Definition:** Hardware Alert (Flash RAM Check Failure)
- **Implications:** The StarPac 3 System might lose its memory and stroke the valve to a Fail Safe position.
- **Possible Solutions:** Check the power supply. If the problem persists, perform a factory reset. If it still persists, reprogram or replace the main board. Possible programming error, reprogram.

## NVRAM read/write Check Failure

- **Definition:** Hardware Alert (NVRAM read/write check failure)
- **Implications:** The StarPac 3 System might lose its configuration and stroke the valve to a Fail Safe position.
- **Possible Solutions:** Check the power supply. If the problem persists, perform a factory reset. If it still persists, reprogram or replace the main board.

## MCU Communication Failure

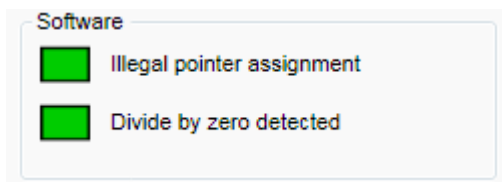
- **Definition:** Hardware Alert (MCU Communication Failure)

### Voltage Reference Failure

- **Definition:** Hardware Alert (Voltage reference failure)
- **Implications:** The StarPac 3 System internal sensor has detected a failure.
- **Possible Solutions:** If the problem persists, perform a factory reset. If it still persists, reprogram or replace the main board.

### NVRAM Check Failure

- **Definition:** Hardware Alert (NVRAM check failure)
- **Implications:** The StarPac 3 System might set the watch dog. The StarPac 3 system will restart.
- **Possible Solutions:** Check the power supply. If the problem persists, perform a factory reset. If it still persists, reprogram or replace the main board.

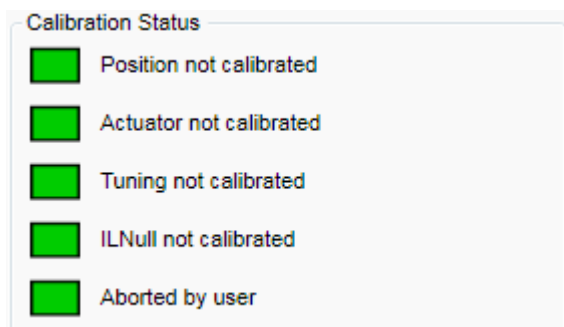


### Illegal Pointer Assignment

- **Definition:** StarPac Software Error (Illegal Pointer assignment)
- **Implications:** The StarPac 3 System might set the watch dog. The StarPac 3 system will restart.
- **Possible Solutions:** If the problem persists, perform a factory reset. If it still persists, reprogram or replace the main board.

### Divided by Zero Detected

- **Definition:** StarPac Software Error (Divided by Zero detected)
- **Implications:** The StarPac 3 System might set the watch dog. The StarPac 3 system will restart.
- **Possible Solutions:** If the problem persists, perform a factory reset. If it still persists, reprogram or replace the main board.







## ***StarTalk™ DTM Help for StarPac 3 System***

### **Position Not Calibrated**

- **Definition:** Position Not Calibrated
- **Implications:** Position Sensor calibration has not been calibrated
- **Possible Solutions:** Complete the Stroke calibration

### **Actuator Not Calibrated**

- **Definition:** Actuator Not Calibrated
- **Implications:** Actuator pressure sensors calibration has not been calibrated
- **Possible Solutions:** Complete the actuator sensor calibration

### **Tuning Not Calibrated**

- **Definition:** Tuning Not Calibrated. Positioner unstable.
- **Implications:** QUICK-CAL calibration has not been calibrated
- **Possible Solutions:** Complete the QUICK\_CAL calibration

### **ILNULL Not Calibrated**

- **Definition:** IsNull Not Calibrated
- **Implications:** QUICK-CAL calibration has not been calibrated fully.
- **Possible Solutions:** Complete the QUICK\_CAL calibration

### **Aborted by User**

- **Definition:** Calibration was aborted by user
- **Implications:** Some calibration were not completed and the system might not perform correctly.
- **Possible Solutions:** Perform aborted calibration.

Calibration Detail Status

☐ Position unstable at open  
☐ Position unstable at closed  
☐ Too close to end point at open  
☐ Too close to end point at closed  
☐ Open/closed span too small  
☐ IL NULL calculation timed out  
☐ Pressure unstable at open  
☐ Pressure unstable at closed  
☐ Port 1 range too small  
☐ Port 2 range too small  
☐ Stroke time not calculated

## Position Unstable at Open

- **Definition:** Due to the position feedback unstable the calibration will not complete.
- **Implications:** Calibration will not complete due to continued movement
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

## Position Unstable at Close

- **Definition:** Due to the position feedback unstable the calibration will not complete.
- **Implications:** Calibration will not complete due to continued movement
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

## Too close to End Point at Open

- **Definition:** Too close to end point at open
- **Implications:** Calibration will not complete
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

## Too close to End Point at Close

- **Definition:** Too close to end point at close
- **Implications:** Calibration will not complete
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

## Open/Close Span Too Small



## **StarTalk™ DTM Help for StarPac 3 System**

- **Definition:** Not enough movement for calibration to complete.
- **Implications:** Calibration will not complete due to ADC count being too small of span.
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely. Check the linkage range.

### **ILNULL Calculation Timed Out**

- **Definition:** Has an offset of position vs. command
- **Implications:** Calibration will not complete as valve cannot stabilize movement.
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

### **Pressure Unstable at Open**

- **Definition:** Pressure unstable at open or not reading correctly.
- **Implications:** Calibration will not complete
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

### **Pressure Unstable at Close**

- **Definition:** Pressure unstable at close or not reading correctly.
- **Implications:** Calibration will not complete
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

### **Port 1 Range too Small**

- **Definition:** Port 1 range too small
- **Implications:** Calibration will not complete due to insufficient pressure range.
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

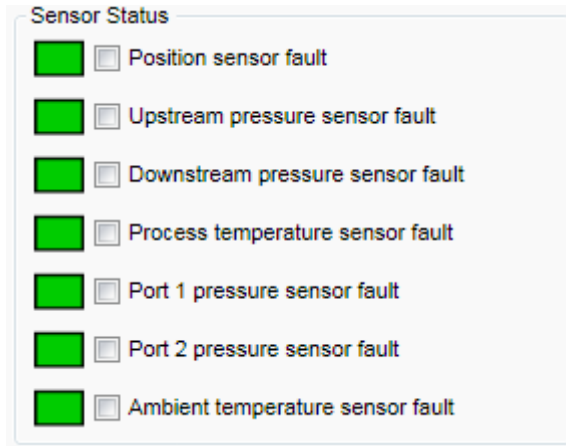
### **Port 2 Range too Small**

- **Definition:** Port 2 range too small
- **Implications:** Calibration will not complete due to insufficient pressure range.
- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely.

### **Stroke Time Not Calculated**

- **Definition:** Stroke time not calculated
- **Implications:** Calibration will not complete

- **Possible Solutions:** Make sure you have a good source of supply pressure and the tubing to the actuator is done correctly. Make sure the valve can stroke freely. Make sure the valve is not blocked or Hand wheel engaged.



### Position Sensor Fault

- **Definition:** The
- **Implications:** Low
- **Possible Solutions:** Regulate

### Upstream Pressure Sensor Fault

- **Definition:** The
- **Implications:** Low
- **Possible Solutions:** Regulate

### Downstream Pressure Sensor Fault

- **Definition:** The
- **Implications:** Low
- **Possible Solutions:** Regulate

### Process Temperature Sensor Fault

- **Definition:** The
- **Implications:** Low
- **Possible Solutions:** Regulate

### Port 1 Pressure Sensor Fault

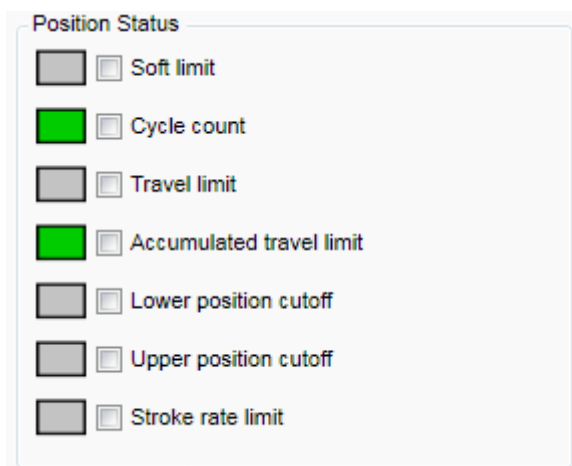
- **Definition:** The
- **Implications:** Low
- **Possible Solutions:** Regulate

## Port 2 Pressure Sensor Fault

- **Definition:** The
- **Implications:** Low
- **Possible Solutions:** Regulate

## Ambient Temperature Sensor Fault

- **Definition:** The
- **Implications:** Low
- **Possible Solutions:** Regulate



## Soft Limits

- **Definition:** A soft limit has been reached. The Final Command would move the valve beyond the user-set Soft Limit, but the internal software is holding the position at the limit.
- **Implications:** The function is similar to a mechanical limit stop except it is not active if the unit is un-powered.
- **Possible Solutions:** If more travel is needed, reset the Soft Limits. If not, adjust the Final Command signal back into the specified range.

## Cycle Count

- **Definition:** The user defined valve cycle limit has been reached.
- **Implications:** Each cycle represents two reversals of the direction of valve movement. The cycle counting criterion and count limit are set by the user to track the usage of the valve.
- **Possible Solutions:** Follow routine procedures for maintenance when the limit is reached such as checking the packing tightness, and checking linkages for wear, misalignment, and tightness. After maintenance, reset the cycle accumulator, or adjust cycle count limits.

## Travel Limit



## **StarTalk™ DTM Help for StarPac 3 System**

- **Definition:** Travel limit exceeded, the current position has exceeded the user defined limit.
- **Implications:** The position limit is exceeded in either direction from user setting.
- **Possible Solutions:** Check the position feedback sensor or check the travel limit user settings. Reset or adjust travel limit.

### **Accumulated Travel Limit**

- **Definition:** The total accumulated valve travel limit has exceeded user defined limits.
- **Implications:** The travel is accumulated in both directions. The travel counting criterion and limit are set by the user to track the usage of the valve.
- **Possible Solutions:** Follow routine procedures for maintenance when the limit is reached such as checking the packing tightness, and checking linkages for wear, misalignment, and tightness. After maintenance, reset the travel accumulator.

### **Lower Position Cutoff**

- **Definition:** Lower position cutoff active. Valve will be in tight shut off. Slight delay coming off the seat.
- **Implications:** (Also called MPC.) The Final Command is beyond the user set limit for the tight shutoff feature and the positioner is applying full actuator pressure to close (or open) the valve. This is a normal condition for all valves when closed. The factory default setting triggers this at command signals below 1%. This indication may also occur on 3 way valves at both ends of travel if the upper Tight Shut Off value has been set.
- **Possible Solutions:** If tight shutoff is not desired, reset the tight shut off limits to be less than 1% or adjust the command signal inside of the specified Tight Shut Off values.

### **Upper Position Cutoff**

- **Definition:** Upper position cutoff active
- **Implications:** (Also called MPC.) The Final Command is beyond the user set limit for the full open feature and the positioner is applying full actuator pressure to close (or open) the valve. This is a normal condition for all valves when open. The factory default setting triggers this at command signals below 1%. This indication may also occur on 3 way valves at both ends of travel if the upper Tight Shut Off value has been set.
- **Possible Solutions:** If tight shutoff is not desired reset the tight shut off limits to be less than 1% or adjust the command signal inside of the specified Tight Shut Off values.

### **Stroke Rate Limit**

- **Definition:** Valve opens and closes slower than desired



## **StarTalk™ DTM Help for StarPac 3 System**

- **Implications:** The Stroke Rate Limits area displays the maximum rate of travel in the opening and closing directions. Limiting the rate of travel can be helpful to prevent surging process flow.
- **Possible Solutions:** Change the Stroke Rate Limit User settings

### **Action Buttons**

The *Apply* button will save changes to the connected device.

Apply

The *Retrieve* button will retrieve the latest information from the device.

Retrieve

The *Print Report* button will print a report to default printer (see example below). Information includes:

- Information about the connected device
- The active status of the alarms, warnings and alerts.
- The masked status.
- The current value (where applicable).
- The value threshold (where applicable).



Print Report



## StarTalk™ DTM Help for StarPac 3 System

ValveSight Annunciator NAMUR Annunciator Print Preview

Page 1 / 2 One Page Find



### StarPac3 Alarms/Alerts Report

Tag Name: SPVTSGStarPac3  
Device type: StarPac 3  
Valve serial number: EW SETUP123

System Status	Active	Masked
Loss of supply pressure		X
Loss of command signal		X
Loss of remote command		X
Position deviation		

### Process Status

Setpoint deviation  
Low delta pressure  
Anti-reset windup

### Hardware Status

Watch dog timer reset  
SRAM read/write failure  
Flash RAM check failure  
NVRAM read/write check failure  
MCU communication failure  
Voltage reference failure  
NVRAM check failure

### Sensor Status

Position sensor fault  
Unstream pressure sensor fault





## ***StarTalk™ DTM Help for StarPac 3 System***

### **Health**

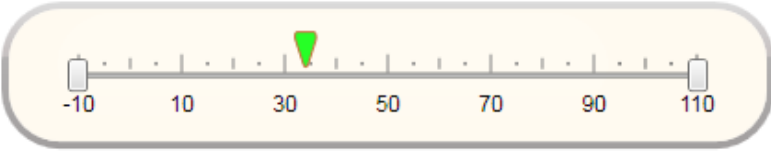
---

*Health* pages allow quick viewing of the state of all diagnostics. This selection automatically redirects to the *Valve Health* page.

## Valve Health

The *Valve Health* page shows information about all indicators related to the condition of the valve.

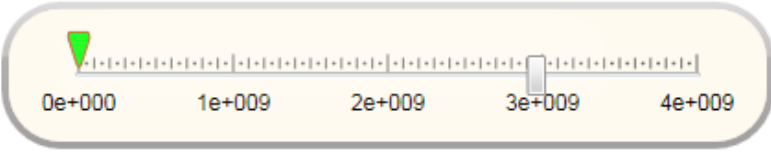
Travel Alert



Lower Limit:  %
Upper Limit:  %

☒ Masked
Position:  %

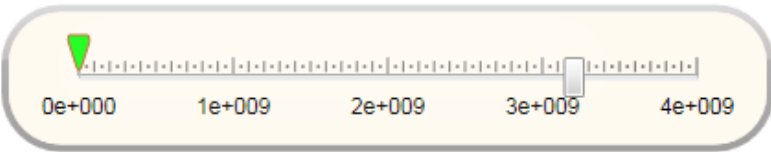
Travel Accumulator



Dead Band:  %
Accumulator Limit:  %

☒ Masked
☒ Travel Value:  %

Cycle Count



Dead Band:  %
Cycle Limit:  %

☒ Masked
☒ Cycle Value:  %

Legend

☒ Healthy
☐ Alert, Mode, or Warning

☐ Alarm or State
☒ Masked
☒ Reset

Travel Alert
Travel Accumulator
Cycle Count

Implication

**Travel Alert Implications:**





VALVE TRAVEL LIMIT ALERT (user set) indicates that the total accumulated travel limit has been exceeded. The travel criterion and travel limit are set by the user to track the usage of the valve.



Possible Solution

**Travel Alert Possible Solution:**

Follow any applicable internal procedures for maintenance when the limit is reached such as checking the packing tightness, and checking linkages for wear, misalignment, and tightness. After maintenance, reset the travel accumulator.

Each indicator group box may contain the following components:

-  An "LED light" indicates health status. Warning and alarm limits (set by the user in many cases) determine the conditions when the color will turn from green to yellow to red.
-  **Green** indicates an occurrence of a normal activity that does not affect the health of the valve system.
-  **Yellow** circle indicates that an active warning, alert or mode is present.
-  **Red** circle indicates that an active alarm or state is present that could seriously limit the operation of the valve.

-  Gray circle indicates that the feature or condition is not available because the configuration of the hardware or software does not support it.
-  A checkbox indicates the masked status. Check to mask.

### Indicators

#### Valve Cycles

- **Definition:** The valve cycle limit has been exceeded.
- **Implications:** Each cycle represents two reversals of the direction of valve movement. The cycle counting criterion and count limit are set by the user to track the usage of the valve.
- **Possible Solutions:** Follow routine procedures for maintenance when the limit is reached such as checking the packing tightness, and checking linkages for wear, misalignment, and tightness. After maintenance, reset the cycle accumulator.

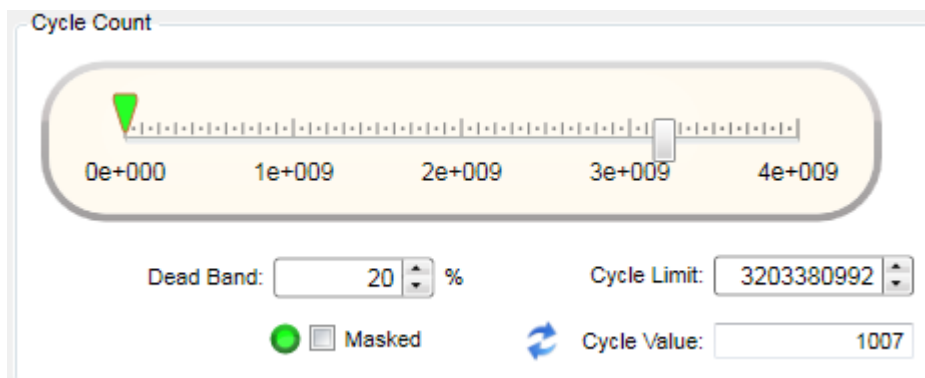
#### Valve Travel

- **Definition:** The total accumulated valve travel limit has been exceeded.
- **Implications:** The travel is accumulated in both directions. The travel counting criterion and limit are set by the user to track the usage of the valve.
- **Possible Solutions:** Follow routine procedures for maintenance when the limit is reached such as checking the packing tightness, and checking linkages for wear, misalignment, and tightness. After maintenance, reset the travel accumulator.

### Adjusting Limits

There are two ways to adjust the settings.

1. Move the scale indicators. The limits can be adjusted by "dragging" each limit indicator with a mouse click.



2. Use the input boxes. Numbers can be directly typed. Clicking on the up and down arrows will also change the value.

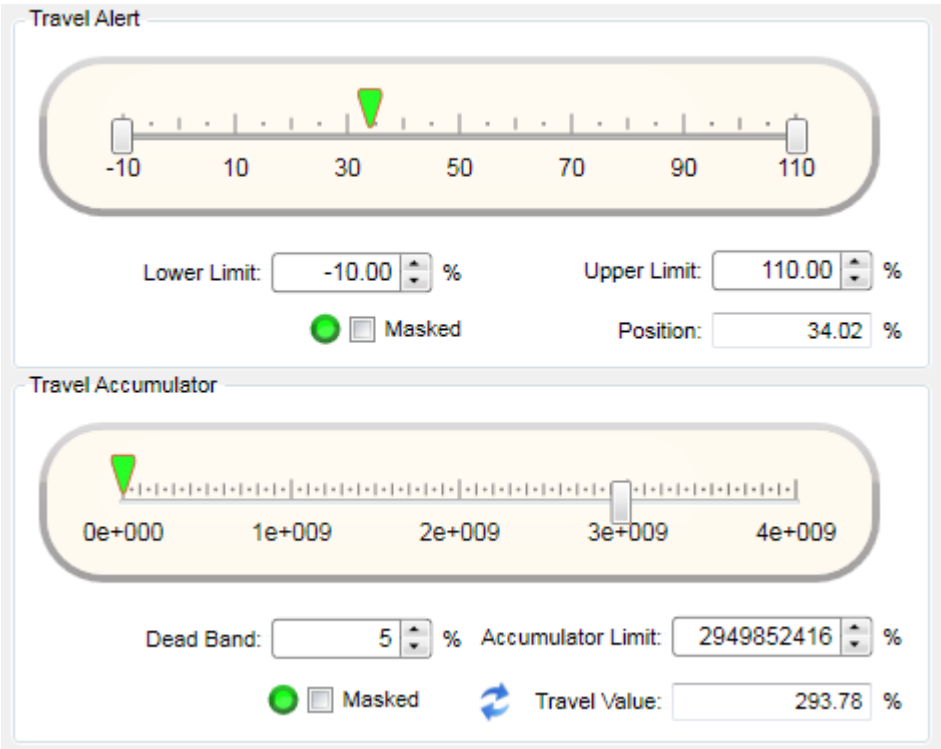
**NOTE:** The apply button must be selected for the changes to take effect.

### Set Valve Cycles Count Limits

The *Current Value* is the number of *Valve Cycles* counted by the positioner. The *Cycle Deadband* is the minimum amount of travel required in each direction before the cycle is counted. The reset button will set the *Current Value* to zero.

## Set Valve Travel Limits

The *Current Value* is the total valve travel recorded by the positioner. The *Travel Deadband* is the minimum amount of travel required before the travel is counted. The reset button will set the *Current Value* to zero. The *Accumulated Travel* is the same as the *Current Value*, but converted to the stroke length units of measure selected by you. The *Training Travel Rate* field displays average amount of travel per day of the valve during the training period.



## Implications and Possible Solutions

Select the desired tab to display the related implications and possible solutions. The Implications field describes the conditions that trigger the indicator. The Possible Solutions field describes actions you might take to restore normal operation.

Travel Alert
Travel Accumulator
Cycle Count

### Implication

**Travel Alert Implications:**

VALVE TRAVEL LIMIT ALERT (user set) indicates that the total accumulated travel limit has been exceeded. The travel criterion and travel limit are set by the user to track the usage of the valve.

### Possible Solution

**Travel Alert Possible Solution:**



Follow any applicable internal procedures for maintenance when the limit is reached such as checking the packing tightness, and checking linkages for wear, misalignment, and tightness. After maintenance, reset the travel accumulator.



**NOTE:** Flowserve does not recommend any action, only lists possible actions that could restore the system to normal operation. Qualified maintenance personnel should evaluate the possible solutions, all safety procedures and all other applicable factors on a case by case basis when determining the best action to take.

## Legend

The legend shows the purpose of the icons.

Legend

 Healthy
 Alert, Mode, or Warning

 Alarm or State
☒ Masked
 Reset

## Action Buttons

The *Apply* button will save changes to the connected device.

Apply



## ***StarTalk™ DTM Help for StarPac 3 System***

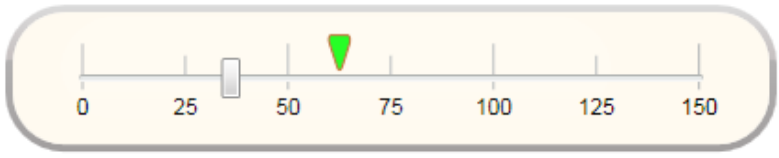
The *Retrieve* button will retrieve the latest information from the device.



## Actuator Health

The *Actuator Health* page will allow the configuration of the supply pressure alarm.

Supply Pressure



Lower Limit:  psig      Supply Pressure:  psig

☒ Healthy      ☐ Masked

Legend

☒ Healthy      ☐ Alert, Mode, or Warning

☐ Alarm or State      ☒ Masked

**Implication**

**Supply Pressure Implications:**







SUPPLY PRESSURE LOW ALARM (user set) indicates that the supply pressure is below the user set alarm limit. Low supply pressure can cause poor valve response or positioner failure. The minimum recommended supply pressure is 30 PSI (2.1 bar) for proper operation.

**Possible Solution**

**Supply Pressure Possible Solution:**

SUPPLY PRESSURE LOW - Regulate the supply pressure at the positioner between 30PSI (2 bar) and 90 PSI (6 bar). Recalibrate pressure sensors. Ensure system air/gas supply is adequate. Repair kinked supply tubing. Check the pressure sensor board connections and replace pressure sensor board if necessary.

Each indicator group box may contain the following components:

-  An "LED light" indicates health status. Warning and alarm limits (set by the user in many cases) determine the conditions when the color will turn from green to yellow to red.
-  **Green** indicates an occurrence of a normal activity that does not affect the health of the valve system.
-  **Yellow** circle indicates that an active warning, alert or mode is present.
-  **Red** circle indicates that an active alarm or state is present that could seriously limit the operation of the valve.
-  **Gray** circle indicates that the feature or condition is not available because the configuration of the hardware or software does not support it.
-  A checkbox indicates the masked status. Check to mask.

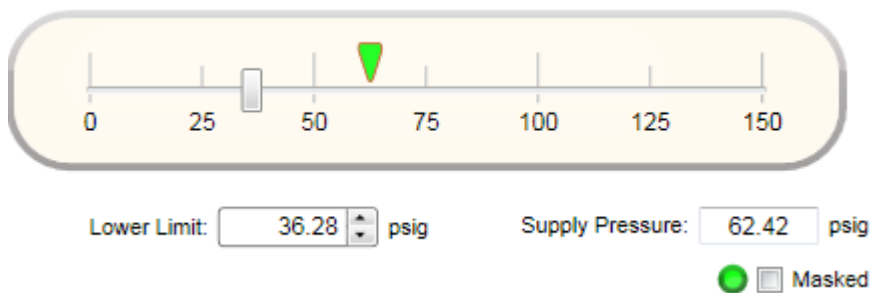
### Indicators

#### Loss of Supply Pressure

- **Definition:** The supply pressure is below the user set warning or alarm limit.
- **Implications:** Implications: Low supply pressure can cause poor valve response or positioner failure. The minimum recommended supply pressure for proper operation is 2.1 bar (30 PSI).
- **Possible Solutions:** Possible Solutions: Regulate the supply pressure at the positioner above 2.1 bar (30 PSI). Ensure system air/gas supply is adequate. Repair kinked or restricted supply tubing. Check for pneumatic leaks in the actuator and actuator tubing. Re-calibrate pressure sensors. Check the pressure sensor board connections and replace pressure sensor board if necessary.

### Supply Pressure

Supply Pressure is detected by the positioner. The *Current Value* field shows the supply pressure. The supply pressure limit can be easily adjusted on this page.



### Adjusting Limits

There are two ways to adjust the settings.

1. Move the scale indicators. The limits can be adjusted by "dragging" each limit indicator with a mouse click.
2. Use the input boxes. Numbers can be directly typed. Clicking on the up and down arrows will also change the value.

**NOTE:** The apply button must be selected for the changes to take effect.

### Implications and Possible Solutions

Select the desired tab to display the related implications and possible solutions. The Implications field describes the conditions that trigger the indicator. The Possible Solutions field describes actions you might take to restore normal operation.



## Implication

### Supply Pressure Implications:

SUPPLY PRESSURE LOW ALARM (user set) indicates that the supply pressure is below the user set alarm limit. Low supply pressure can cause poor valve response or positioner failure. The minimum recommended supply pressure is 30 PSI (2.1 bar) for proper operation.

## Possible Solution

### Supply Pressure Possible Solution:


SUPPLY PRESSURE LOW - Regulate the supply pressure at the positioner between 30PSI (2 bar) and 90 PSI (6 bar). Recalibrate pressure sensors. Ensure system air/gas supply is adequate. Repair kinked supply tubing. Check the pressure sensor board connections and replace pressure sensor board if necessary.


**NOTE:** Flowserve does not recommend any action, only lists possible actions that could restore the system to normal operation. Qualified maintenance personnel should evaluate the possible solutions, all safety procedures and all other applicable factors on a case by case basis when determining the best action to take.


## Legend

The legend shows the purpose of the icons.


Legend

 Healthy

 Alert, Mode, or Warning

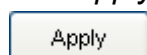
 Alarm or State

☒ Masked

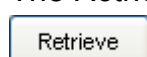
 Reset

## Action Buttons

The *Apply* button will save changes to the connected device.



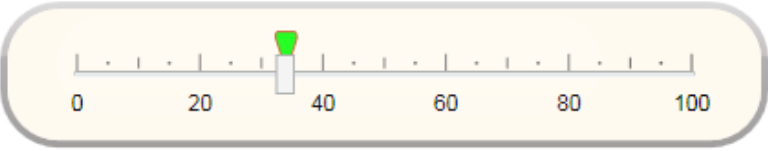
The *Retrieve* button will retrieve the latest information from the device.



## Positioner Health

The *Positioner Health* page will allow the configuration of the command loss alarm.

Command Loss



Command:  %      Position:  %

Hold Time:  sec      Ramp Rate:  %/min

Action:       ☒ Masked

Legend

● Healthy      ● Alert, Mode, or Warning

● Alarm or State      ☒ Masked

Command Loss

**Implication**

COMMAND LOSS - this alarm indicates that the StarPac does not have a valid command signal.

**Possible Solution**

Verify that the proper command is being sent to the positioner. If set to analog source then verify the 4-20 input signal. If set to remote source then verify that a command is being written to register 70405 with in the number of seconds set for the command refresh in register 40109.

Each indicator group box may contain the following components:

- ● An "LED light" indicates health status. Warning and alarm limits (set by the user in many cases) determine the conditions when the color will turn from green to yellow to red.
- ● **Green** indicates an occurrence of a normal activity that does not affect the health of the valve system.
- ● **Yellow** circle indicates that an active warning, alert or mode is present.
- ● **Red** circle indicates that an active alarm or state is present that could seriously limit the operation of the valve.
- ● **Gray** circle indicates that the feature or condition is not available because the configuration of the hardware or software does not support it.
- ☒ A checkbox indicates the masked status. Check to mask.

### Indicators

#### Loss of Command Signal

- **Definition:** Loss of Command
- **Implications:** The StarPac 3 system will go to Fail Safe at the loss of analog command.
- **Possible Solutions:** Make sure the analog wires are connected correctly. Also make sure the Analog input is calibrated correctly.

## Implications and Possible Solutions

Select the desired tab to display the related implications and possible solutions. The Implications field describes the conditions that trigger the indicator. The Possible Solutions field describes actions you might take to restore normal operation.

Command Loss

Implication

COMMAND LOSS - this alarm indicates that the StarPac does not have a valid command signal.

Possible Solution


Verify that the proper command is being sent to the positioner. If set to analog source then verify the 4-20 input signal. If set to remote source then verify that a command is being written to register 70405 with in the number of seconds set for the command refresh in register 40109.


**NOTE:** Flowserve does not recommend any action, only lists possible actions that could restore the system to normal operation. Qualified maintenance personnel should evaluate the possible solutions, all safety procedures and all other applicable factors on a case by case basis when determining the best action to take.


## Legend

The legend shows the purpose of the icons.


Legend

 Healthy

 Alert, Mode, or Warning

 Alarm or State

☒ Masked

 Reset

## Action Buttons

The *Apply* button will save changes to the connected device.

Apply

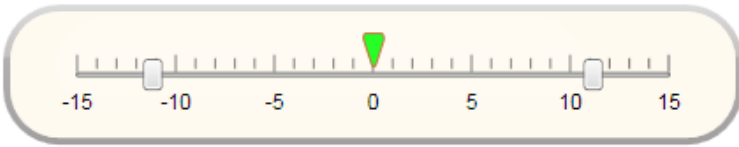
The *Retrieve* button will retrieve the latest information from the device.

Retrieve

## Control Health

The *Control Health* page allows the configuration of the positioner command deviation alarm.

Command Deviation



Tolerable Error +/-:  %      Required change:  %/sec.

☒ Masked      Current Value:  %

Legend

- Healthy
- Alert, Mode, or Warning
- Alarm or State
- ☒ Masked

Command Deviation

**Implication**

**Command Deviation Implications:**

Verify the limits are set at an appropriate level. Adjust the selectable Gain switch to a lower setting or use the Hi Friction setting. Perform a QUICK-CAL which sets the gains based on valve response. Check for high friction. If the problem persists replace the relay.

**Possible Solution**

**Command Deviation Possible Solution:**

Verify the limits are set at an appropriate level. Adjust the selectable Gain switch to a lower setting or use the Hi Friction setting. Perform a QUICK-CAL which sets the gains based on valve response. Check for high friction. If the problem persists replace the relay.

Each indicator group box may contain the following components:

- ● An "LED light" indicates health status. Warning and alarm limits (set by the user in many cases) determine the conditions when the color will turn from green to yellow to red.
- ● **Green** indicates an occurrence of a normal activity that does not affect the health of the valve system.
- ● **Yellow** circle indicates that an active warning, alert or mode is present.
- ● **Red** circle indicates that an active alarm or state is present that could seriously limit the operation of the valve.
- ● **Gray** circle indicates that the feature or condition is not available because the configuration of the hardware or software does not support it.
- ☒ A checkbox indicates the masked status. Check to mask.

### Indicators

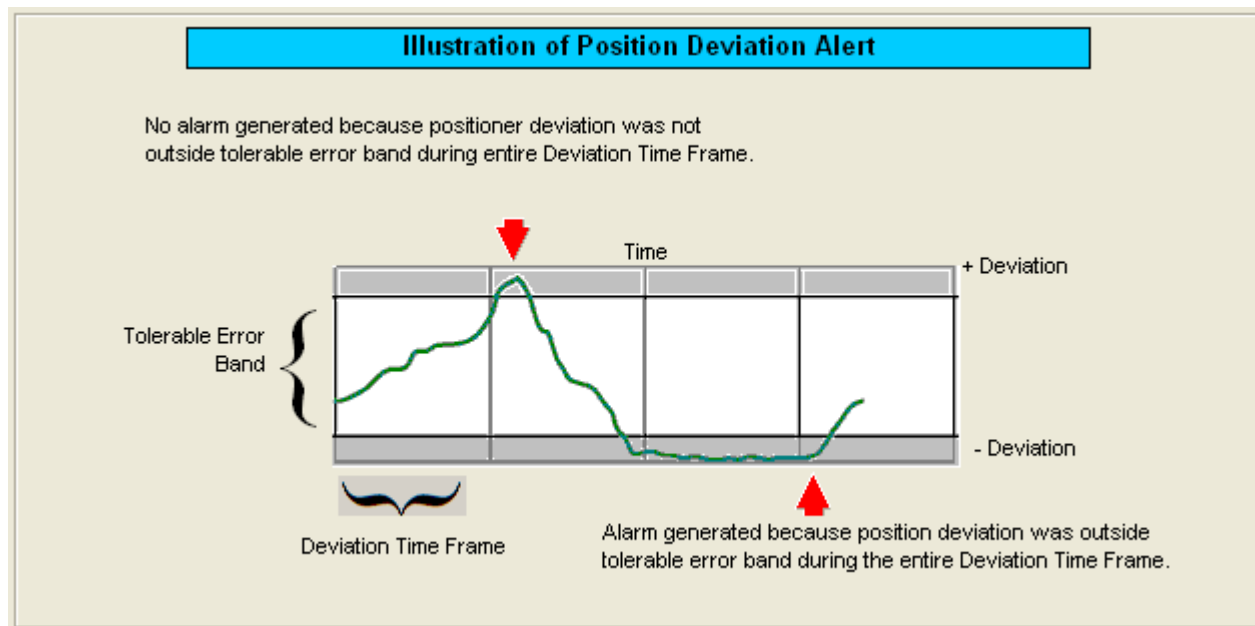
#### Position Deviation

- **Definition:** The device is not positioning at the commanded set point position.
- **Implications:** The difference between the command and the actual position has been greater than the user-set limit for longer than a user-set time.

- **Possible Solutions:** Possible Solutions: Review active alarms and warnings to find root causes of this alarm. The deviation settings can be changed in the Valve Health page of the DTM.

### Position Deviation

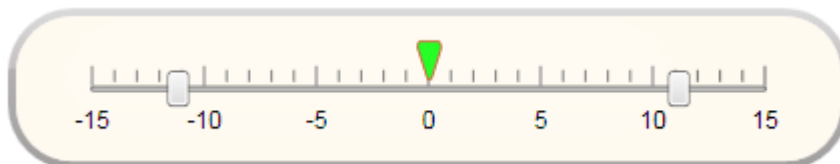
Deviation is detected by the positioner. The *Current Value* field shows the latest deviation value. The deviation limits (*Tolerable Error +/-*, and *Deviation Time Frame*) can be easily adjusted on this page. When the deviation limit has been greater than the Tolerable Error for longer than the Deviation Time Frame, the Position Deviation alarm will be activated. The illustration at the bottom of the page is a graphical representation showing how these factors work and when an alert is generated.



### Adjusting Limits

There are two ways to adjust the settings.

1. Move the scale indicators. The limits can be adjusted by "dragging" each limit indicator with a mouse click.



2. Use the input boxes. Numbers can be directly typed. Clicking on the up and down arrows will also change the value.

**NOTE:** The apply button must be selected for the changes to take effect.

### Implications and Possible Solutions

Select the desired tab to display the related implications and possible solutions. The Implications field describes the conditions that trigger the indicator. The Possible Solutions field describes actions you might take to restore normal operation.

Command Deviation

Implication

**Command Deviation Implications:**

Verify the limits are set at an appropriate level. Adjust the selectable Gain switch to a lower setting or use the Hi Friction setting. Perform a QUICK-CAL which sets the gains based on valve response. Check for high friction. If the problem persists replace the relay.

Possible Solution

**Command Deviation Possible Solution:**

Verify the limits are set at an appropriate level. Adjust the selectable Gain switch to a lower setting or use the Hi Friction setting. Perform a QUICK-CAL which sets the gains based on valve response. Check for high friction. If the problem persists replace the relay.

Retrieve


Apply


**NOTE:** Flowserve does not recommend any action, only lists possible actions that could restore the system to normal operation. Qualified maintenance personnel should evaluate the possible solutions, all safety procedures and all other applicable factors on a case by case basis when determining the best action to take.


### Legend

The legend shows the purpose of the icons.


Legend

 Healthy

 Alert, Mode, or Warning

 Alarm or State

☒ Masked

 Reset

### Action Buttons

The *Apply* button will save changes to the connected device.

Apply

The *Retrieve* button will retrieve the latest information from the device.

Retrieve

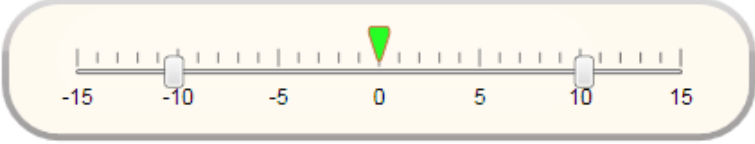


## ***StarTalk™ DTM Help for StarPac 3 System***

## Process Health

The *Process Health* page will allow the configuration of the Process set point deviation alarm.

### Process Set Point Deviation



Tolerable Error +/-:  % Required change:  %/sec.

☒ Healthy ☐ Masked Current Value:  %

**Legend**

☒ Healthy ☐ Alert, Mode, or Warning

☐ Alarm or State ☒ Masked

### Set Point Deviation

**Implication**

**Set Point Deviation Implications:**






Verify the limits are set at an appropriate level. Adjust the selectable Gain switch to a lower setting or use the Hi Friction setting. Perform a QUICK-CAL which sets the gains based on valve response. Check for high friction. If the problem persists replace the relay.

**Possible Solution**

**Set Point Deviation Possible Solution:**

Verify the limits are set at an appropriate level. Adjust the selectable Gain switch to a lower setting or use the Hi Friction setting. Perform a QUICK-CAL which sets the gains based on valve response. Check for high friction. If the problem persists replace the relay.

Each indicator group box may contain the following components:

-  An "LED light" indicates health status. Warning and alarm limits (set by the user in many cases) determine the conditions when the color will turn from green to yellow to red.
-  **Green** indicates an occurrence of a normal activity that does not affect the health of the valve system.
-  **Yellow** circle indicates that an active warning, alert or mode is present.
-  **Red** circle indicates that an active alarm or state is present that could seriously limit the operation of the valve.
-  **Gray** circle indicates that the feature or condition is not available because the configuration of the hardware or software does not support it.
- ☒ A checkbox indicates the masked status. Check to mask.

## Indicators

### Setpoint Deviation

- **Definition:** The controller is unable to maintain the process at the current set point. Tuning is adjusted using StarTalk DTM Software
- **Implications:** Process will not maintain the desired operation point. Unit may be in Manual Mode.



- **Possible Solutions:** Tune the process loop. Increase the process pressure, temperature, flow rating, etc. Make sure unit is in Auto Mode

## Implications and Possible Solutions

Select the desired tab to display the related implications and possible solutions. The Implications field describes the conditions that trigger the indicator. The Possible Solutions field describes actions you might take to restore normal operation.

Set Point Deviation

**Implication**  
**Set Point Deviation Implications:**  
Verify the limits are set at an appropriate level. Adjust the selectable Gain switch to a lower setting or use the Hi Friction setting. Perform a QUICK-CAL which sets the gains based on valve response. Check for high friction. If the problem persists replace the relay.

**Possible Solution**  
**Set Point Deviation Possible Solution:**  
Verify the limits are set at an appropriate level. Adjust the selectable Gain switch to a lower setting or use the Hi Friction setting. Perform a QUICK-CAL which sets the gains based on valve response. Check for high friction. If the problem persists replace the relay.

**NOTE:** Flowserve does not recommend any action, only lists possible actions that could restore the system to normal operation. Qualified maintenance personnel should evaluate the possible solutions, all safety procedures and all other applicable factors on a case by case basis when determining the best action to take.

## Legend

The legend shows the purpose of the icons.

Legend

Healthy
Alert, Mode, or Warning

Alarm or State
☒ Masked

Reset

## Action Buttons

The *Apply* button will save changes to the connected device.

Apply

The *Retrieve* button will retrieve the latest information from the device.



## ***StarTalk™ DTM Help for StarPac 3 System***

Retrieve



## ***StarTalk™ DTM Help for StarPac 3 System***

### **On-line Diagnostics**

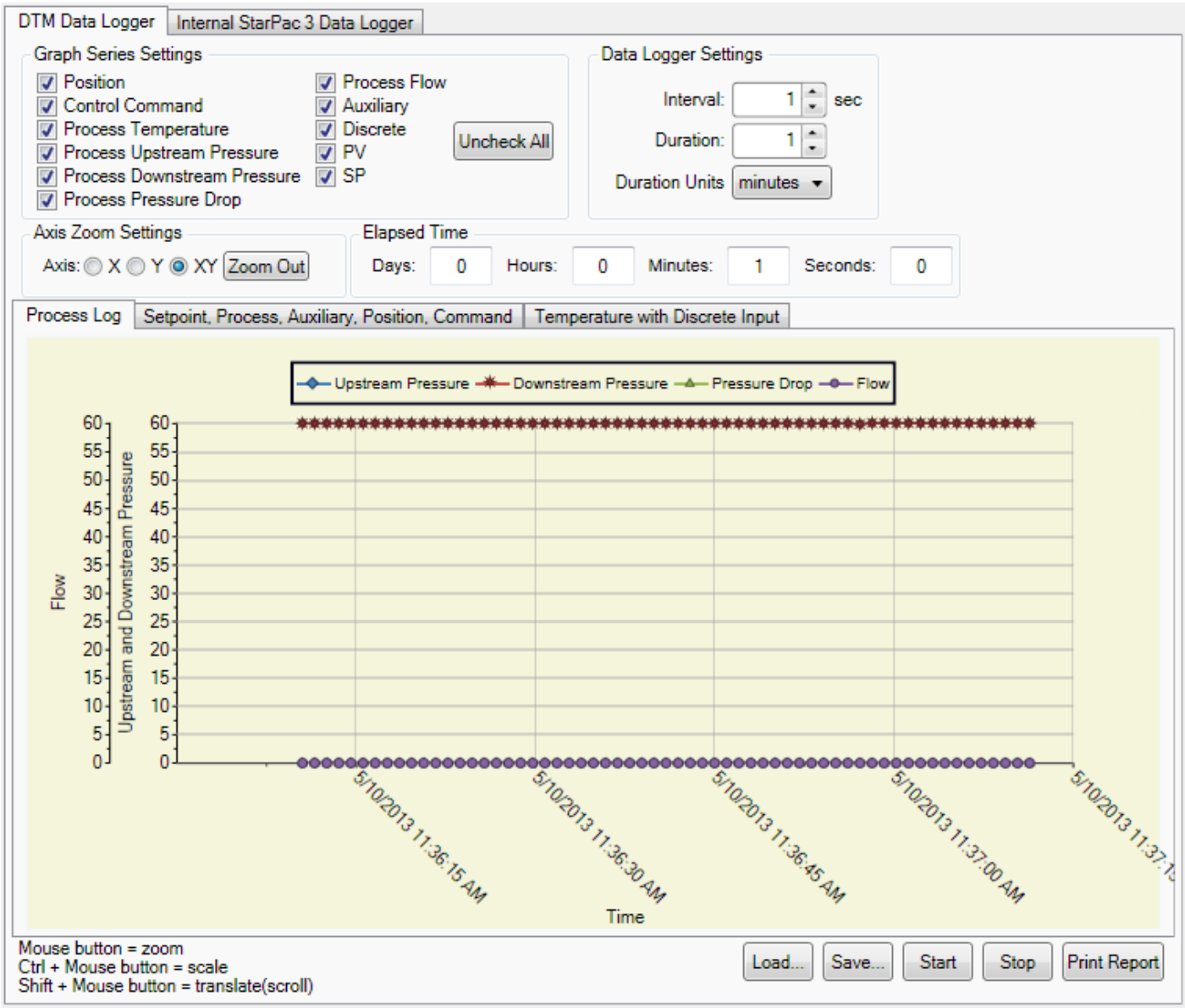
---

On-line diagnostics pages provide ways to view and analyze the valve and positioner while it is controlling. This selection automatically redirects to the *Data Logger* page.

## Data Logger

The *Data Monitor* page displays a graph used to monitor a valve's current state. There are two Data Loggers:

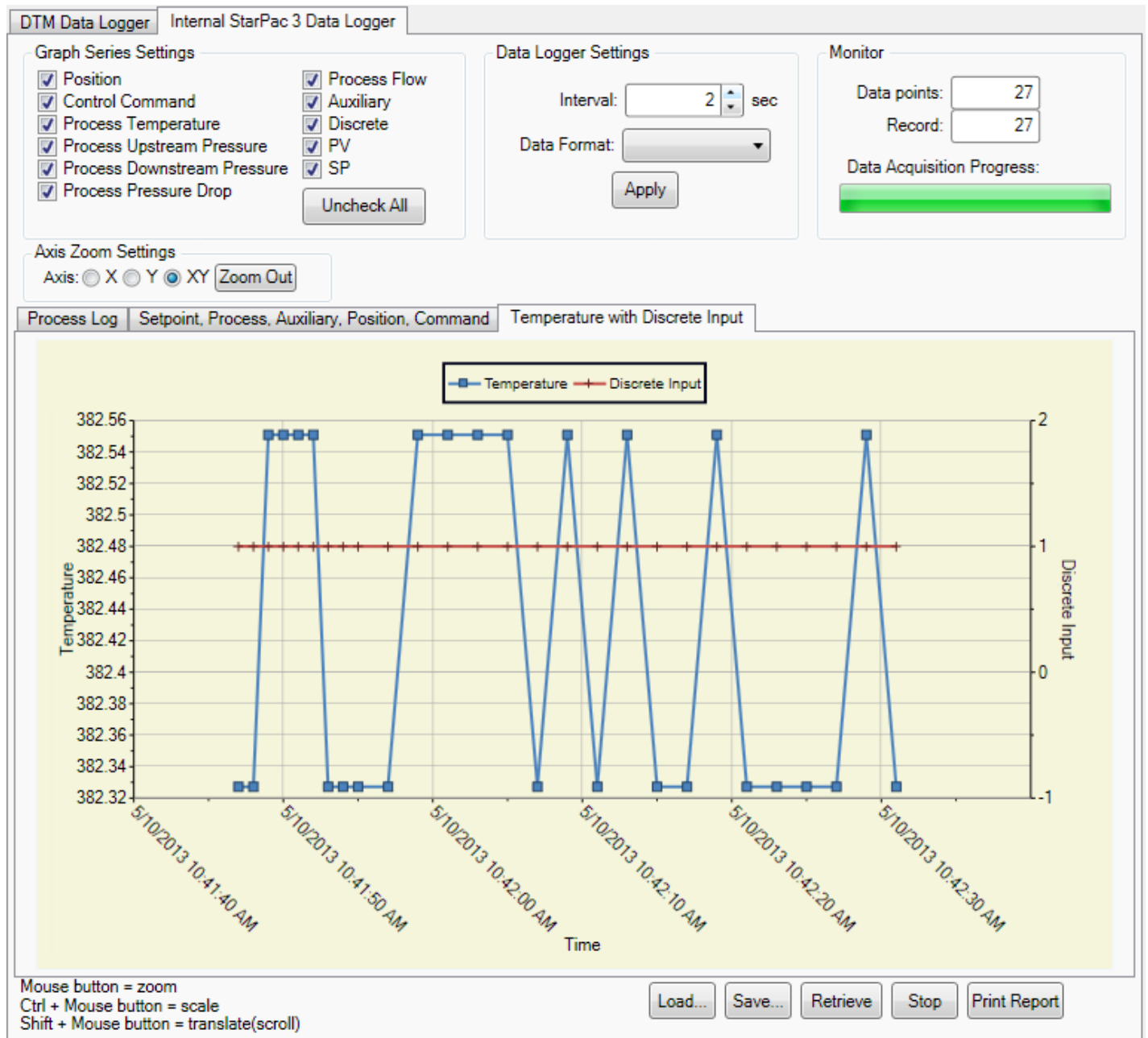
1. The DTM Data Logger displays the data requested from the DTM.



2. The Internal StarPac 3 Data Logger displays the data stored and downloaded from the Device.



## StarTalk™ DTM Help for StarPac 3 System

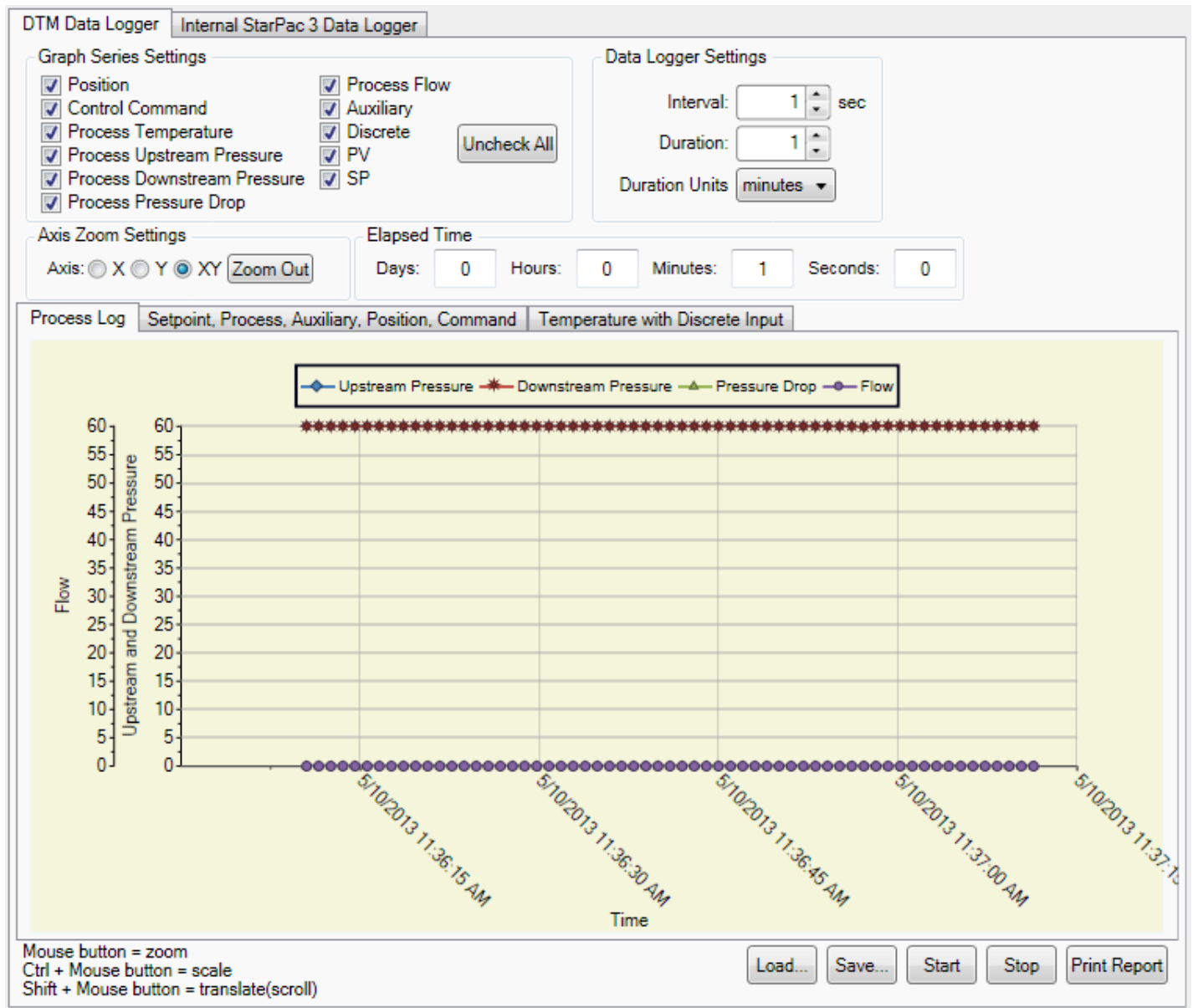




## StarTalk™ DTM Help for StarPac 3 System

### DTM Data Logger

The *Data Monitor* page displays a graph used to monitor a valve's current state. When running, the graph will update with current data. This data can be saved to a file. A report can also be automatically generated.



#### Graph Series Settings

This box allows for the selection of items to be shown on the graph. All of the data is acquired regardless of this setting. Any item can be hidden or shown after the data has been downloaded from the positioner. The "**Uncheck All**" button will remove all the selected boxes.

Graph Series Settings

☒ Position  
☒ Control Command  
☒ Process Temperature  
☒ Process Upstream Pressure  
☒ Process Downstream Pressure  
☒ Process Pressure Drop

☒ Process Flow  
☒ Auxiliary  
☒ Discrete  
☒ PV  
☒ SP

Uncheck All

## Data Logger Settings

The *Monitor Settings* box sets the *Interval* between data points, the *Duration* of the logging, and the *Duration Units*. Two seconds is the fastest acquisition interval for the logger (due to the speed of HART communications). If you are on a large network, latency times may require a longer acquisition interval.

Data Logger Settings

Interval:  sec

Duration:

Duration Units

## Data Capture Timing

The data is plotted on the graph at different times depending on transmission rates. A data sample is requested after the first interval has passed. After the data sample has been received, the values are plotted at the next time interval. For example, if the time interval is 5 seconds and it takes 2.5 seconds to request and receive the data sample, the first data points will be plotted at the 8th second on the graph (5 seconds + 2.5 seconds = 7.5 seconds. Then rounded up to 8 seconds). At 10 seconds, another data sample will be requested. It will be plotted at the 13th second on the graph.

Elapsed Time

Days:

Hours:

Minutes:

Seconds:

## Elapsed Time

This box displays the time that has passed since the monitor was started.

The *Start* button will clear the existing data and start recording a new set of data.

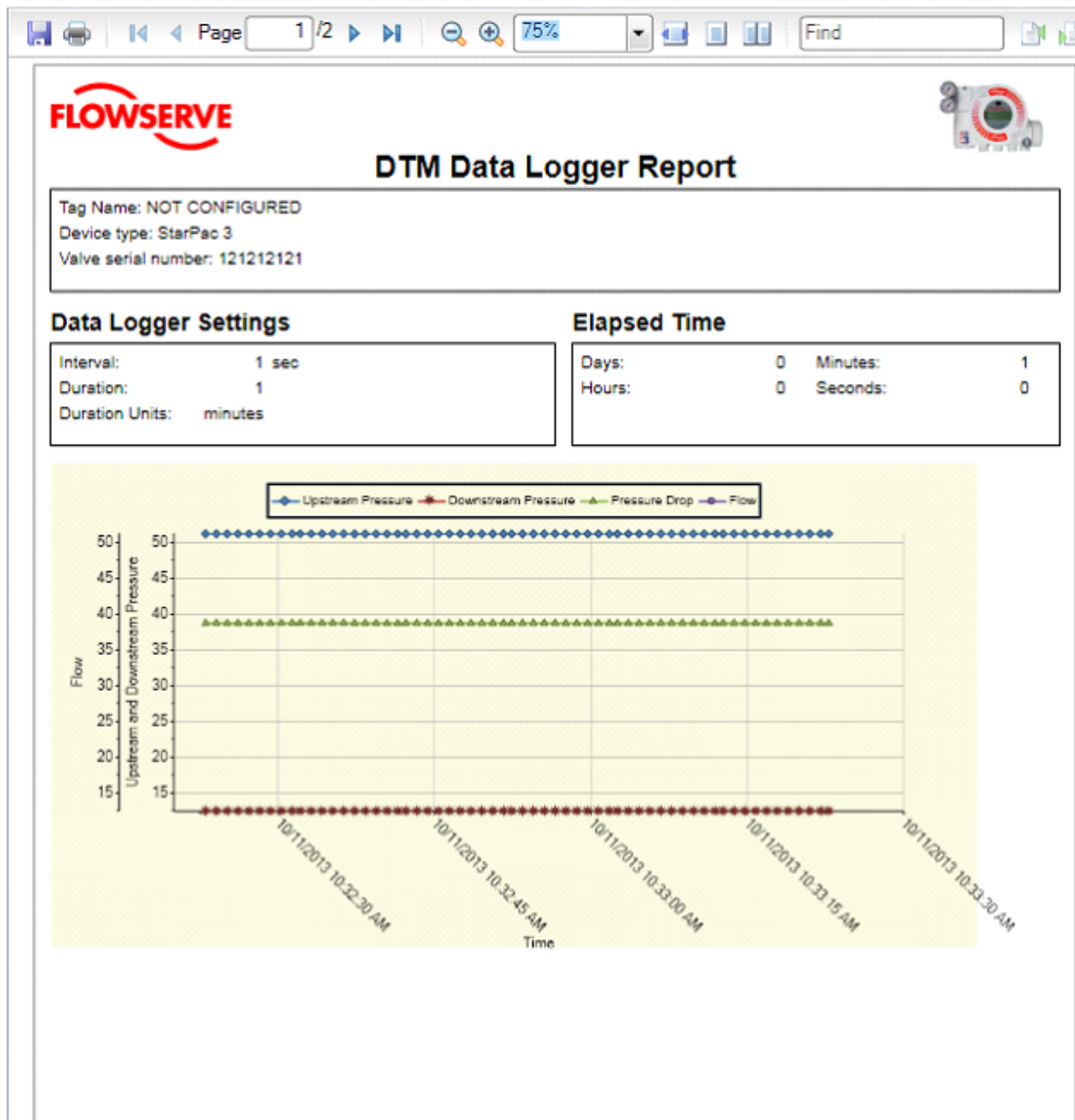
Start

The *Stop* button will stops the data logger.

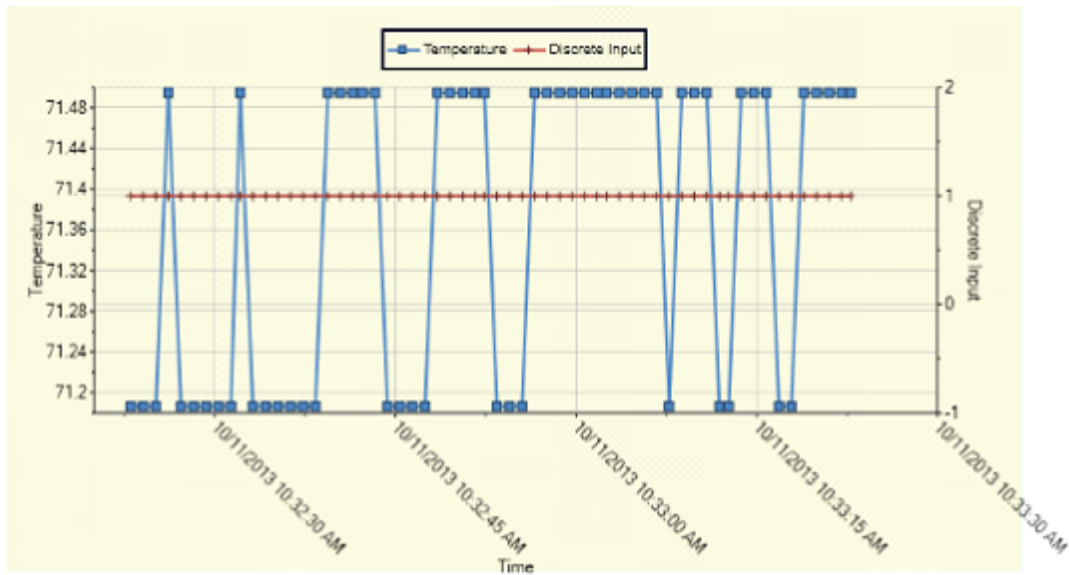
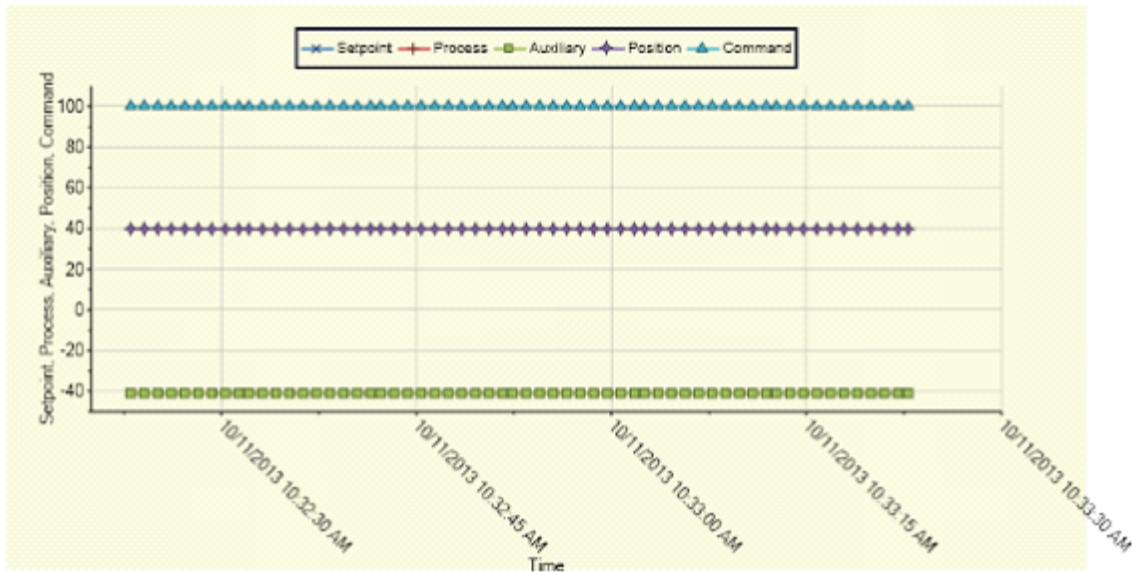
Stop

The *Print Report* button will print a data logger test report.

Print Report

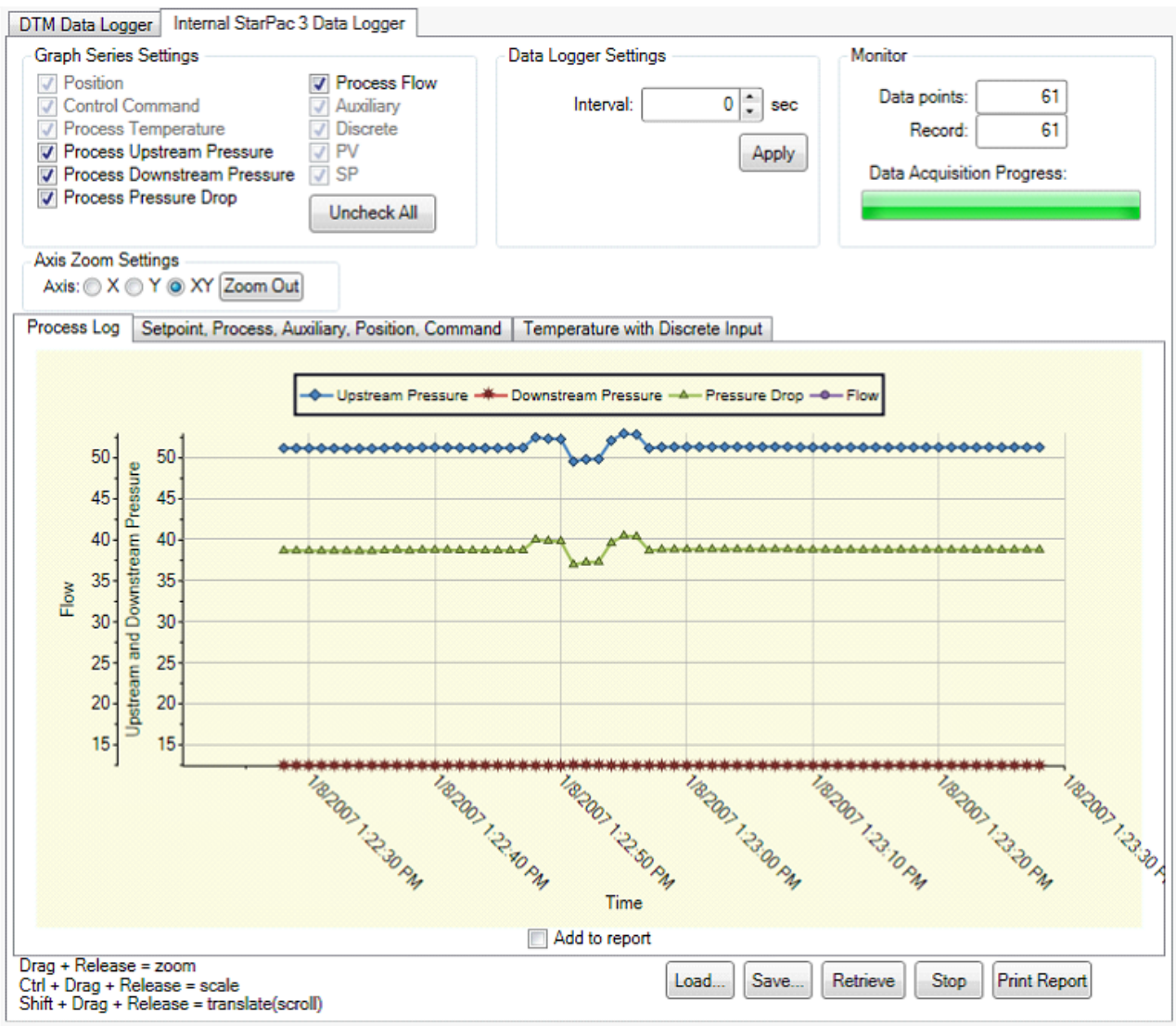






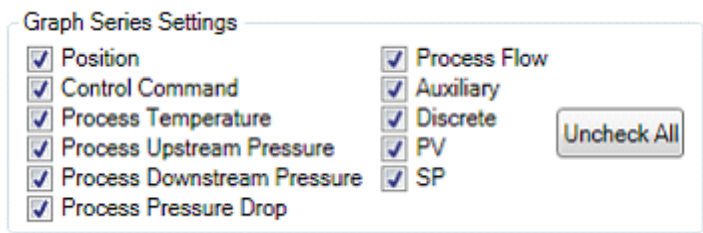


## Internal StarPac 3 Data Logger



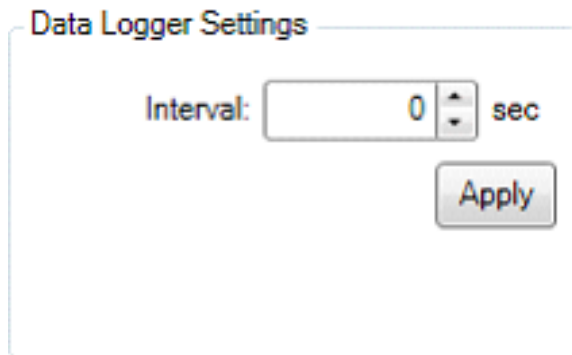
### Graph Series Settings

This box allows for the selection of items to be shown on the graph. All of the data is acquired regardless of this setting. Any item can be hidden or shown after the data has been downloaded from the positioner. The "**Uncheck All**" button will remove all the selected boxes.



### Data Logger Settings

The *Data Logger Settings* box sets the *Interval* between data points. Click the Apply button to activate the StarPac3 internal data logger. Set and apply the interval to 0 to deactivate the internal logging mechanism.

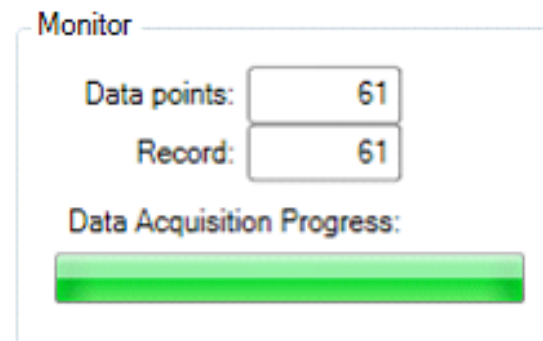


The **Data Logger Settings** dialog box contains the following elements:

- Interval:** A text input field with the value "0" and a unit label "sec".
- Apply:** A button located below the interval field.

### Monitor

The *Monitor* box displays the available data points, the record that is being retrieved, and the progress of the current download.



The **Monitor** dialog box contains the following elements:

- Data points:** A text input field with the value "61".
- Record:** A text input field with the value "61".
- Data Acquisition Progress:** A green progress bar.

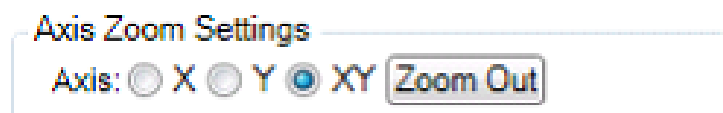
At the top, left of the graph window is the **Axis Zoom Settings** box.

Select the X radio button to cause all zoom operations to occur exclusively along the x-axis.

Select the Y radio button to cause all zoom operations to occur exclusively along the y-axis.

Select the XY radio button to cause all zoom operations to occur on both axes.

Click the *Zoom Out* button to undo any previously performed zoom actions.



The **Axis Zoom Settings** dialog box contains the following elements:

- Axis:** Three radio buttons labeled X, Y, and XY. The XY button is selected.
- Zoom Out:** A button located to the right of the radio buttons.

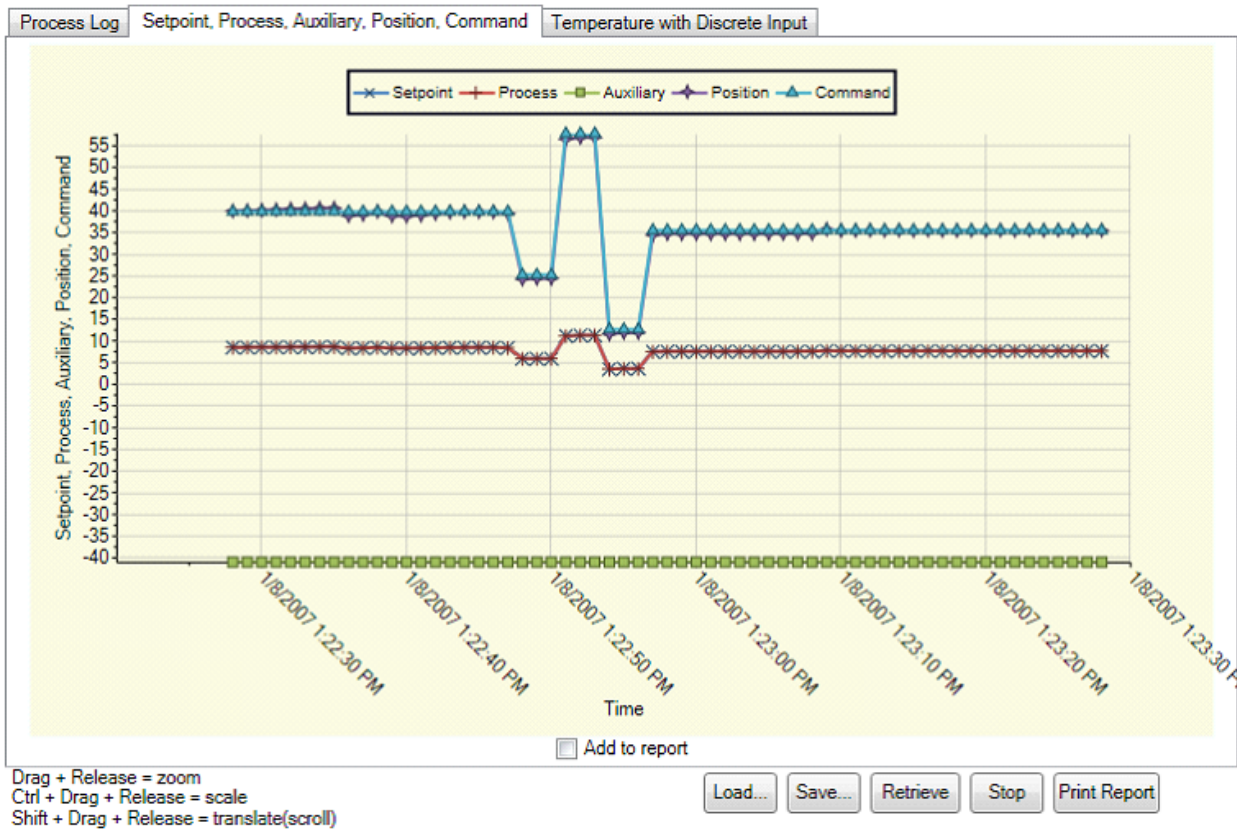
The three tabs after the axis controls allow viewing the acquired data.

The **"Process Log"** tab shows all of the process signals data relative to time on the x-axis during the data acquisition.

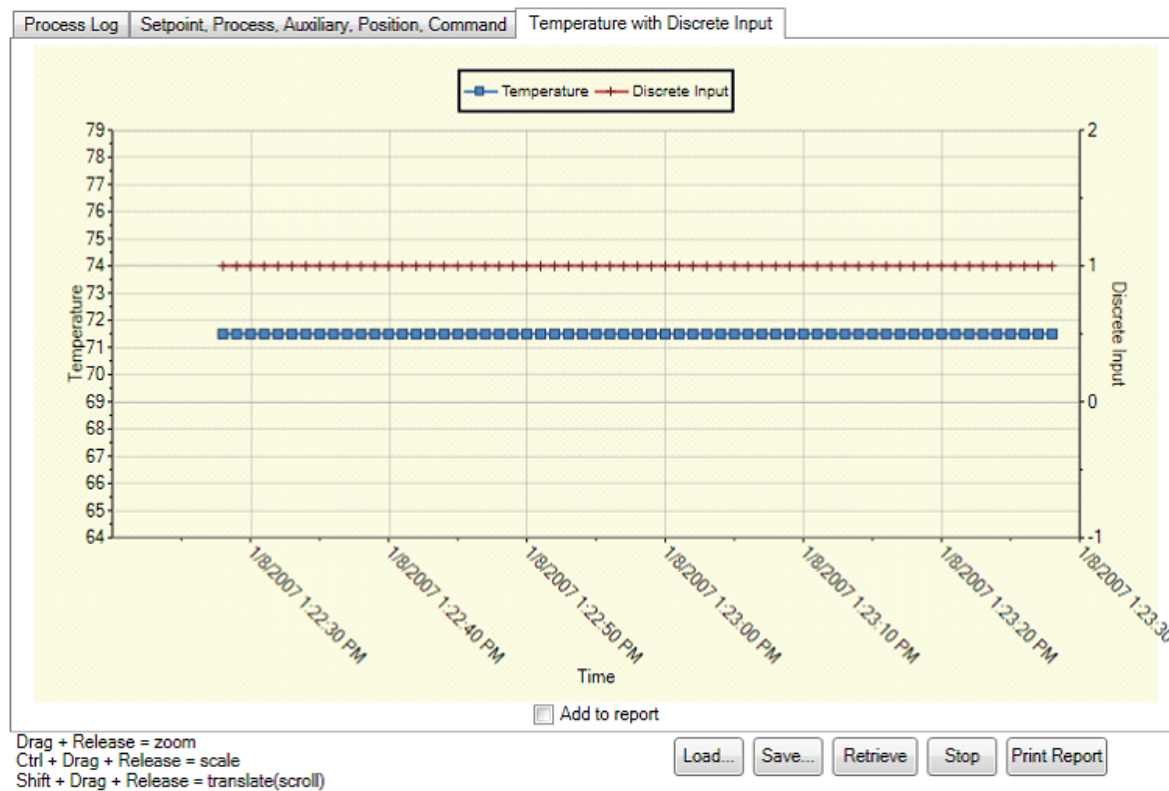


## StarTalk™ DTM Help for StarPac 3 System

The "Setpoint, Process, Auxiliary, Position, Command" tab shows all of the control and response signals data relative to time on the x-axis during the data acquisition.



The "Temperature with Discrete Input" tab shows the process temperature and discrete input data signals relative to time on the x-axis during the data acquisition.

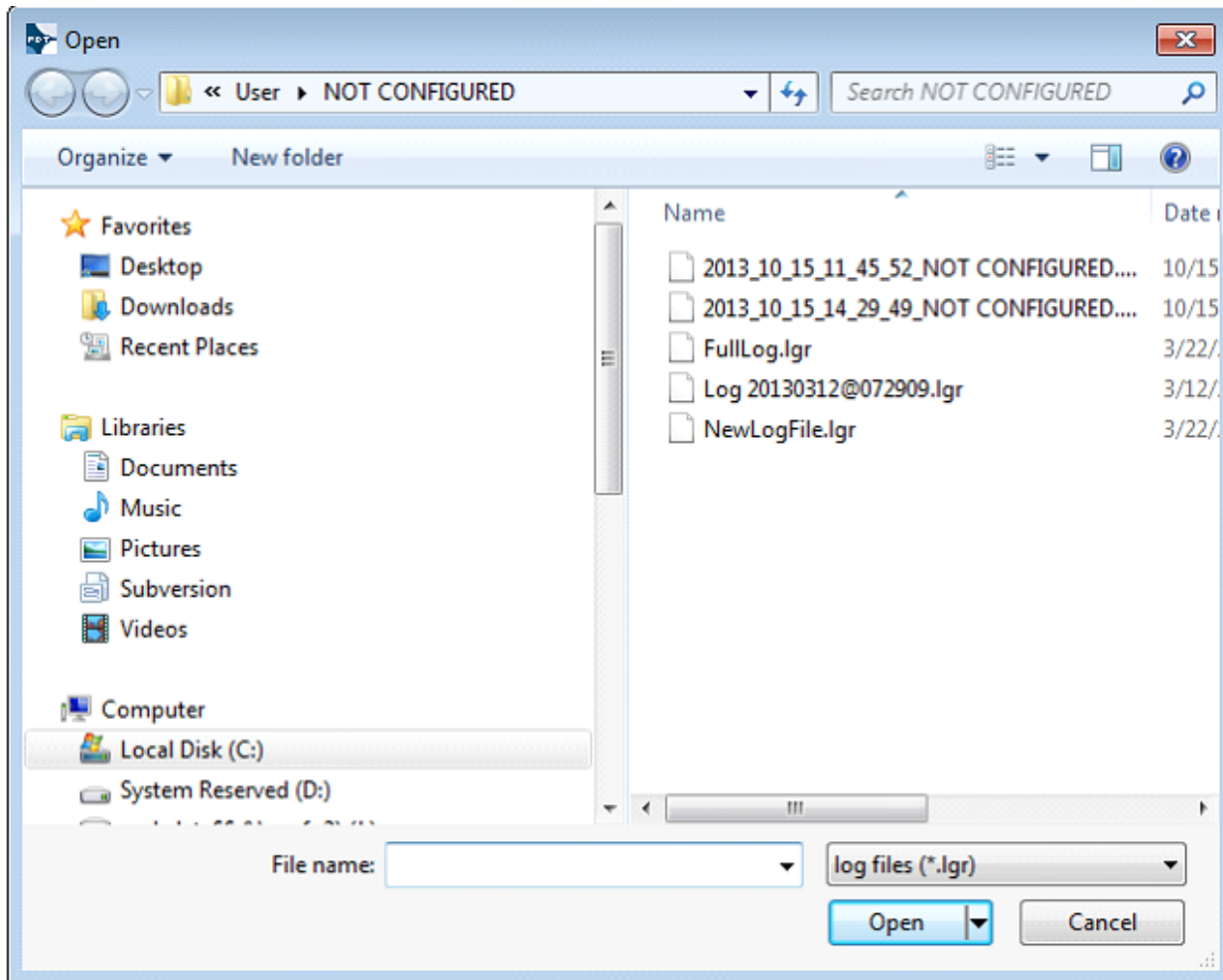


Under the graph display area is a set of buttons allowing the user to perform various actions.

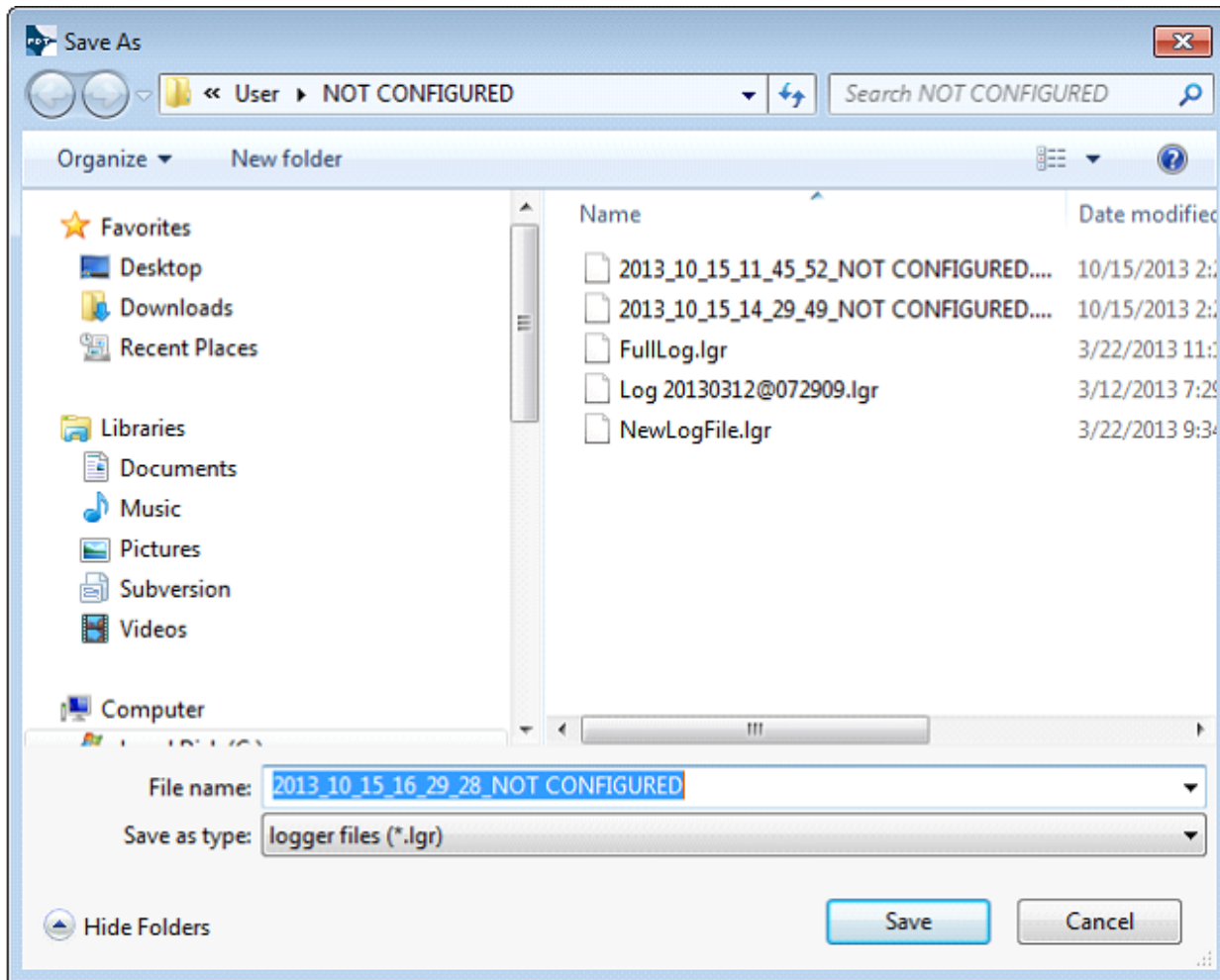


Clicking *Load...* opens a file selection dialog which allows opening of a previously saved log file.





Clicking Save... opens a file save dialog which allows saving of the currently displayed log.



Clicking *Start* initiates a new log acquisition process using the Data Logger Settings and also clears all data from the graphs.

Clicking *Retrieve* downloads the data from the device up to the current point in time; or, up to the last data point acquired.

Clicking *Stop* aborts a retrieve operation.

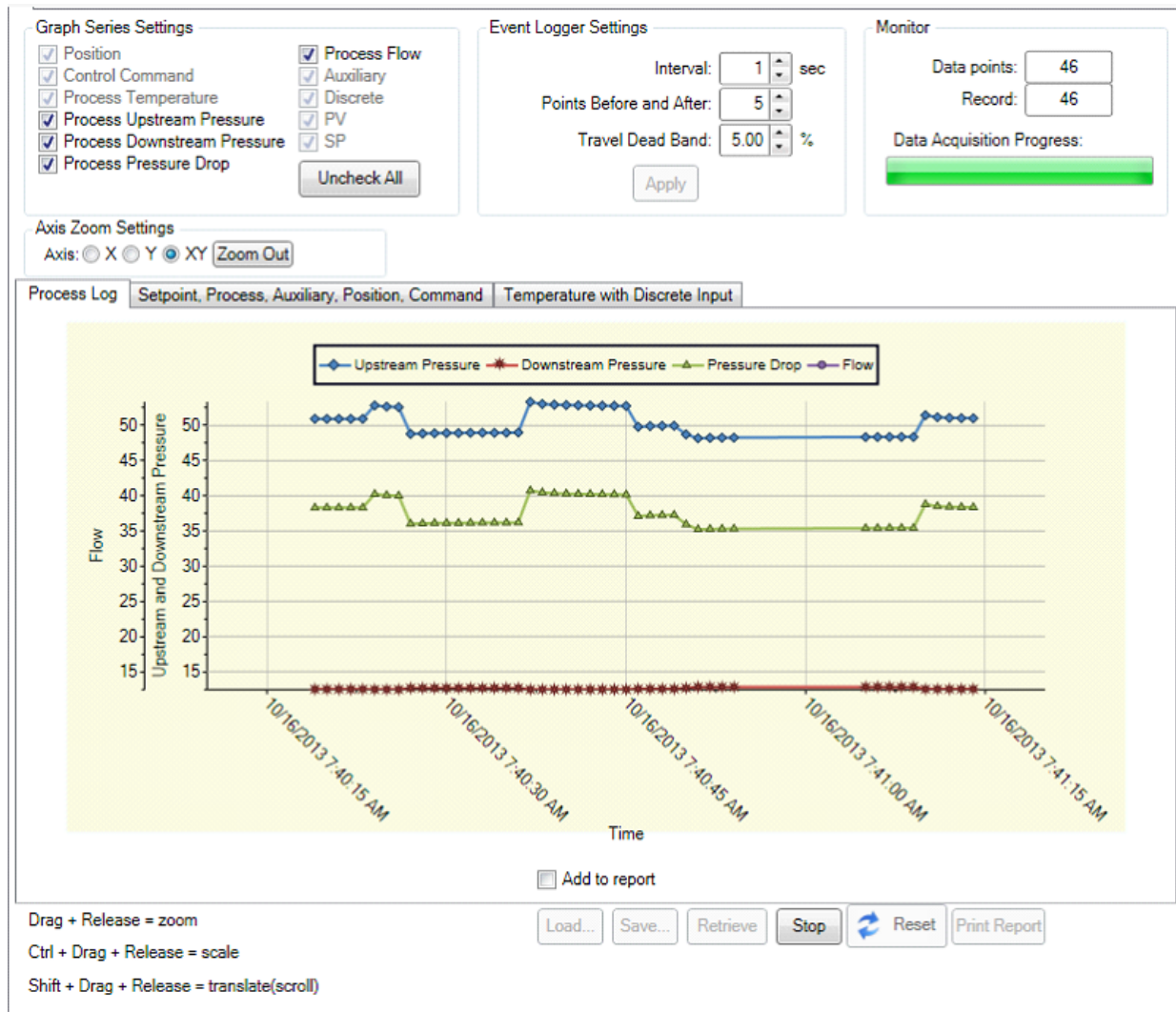
Clicking *Print Report* opens a Print Preview tab. In order to print a graph, you must check the **Add to report** check box under the desired graph. The generated report is in PDF format and can be saved or printed from the preview.



## StarTalk™ DTM Help for StarPac 3 System

### Event Logger

The Event Logger captures data before and after change in position (event). The user sets an interval, the points before and after the event to capture, and the Deadband; or, amount of travel allowed before an event is triggered.



### Graph Series Settings

This box allows for the selection of items to be shown on the graph. All of the data is acquired regardless of this setting. Any item can be hidden or shown after the data has been downloaded from the positioner. The **"Uncheck All"** button will remove all the selected boxes.

### Event Logger Settings



The *Event Logger Settings* box sets the *Interval* between data collection, the number of points before and after an event, and the amount of travel allowed before StarPac considers a change in position as an event. Click the Apply button to activate the StarPac3 internal event logger. Set and apply the interval to 0 to deactivate the internal logging mechanism.

Event Logger Settings

Interval:

1

sec

Points Before and After:

5

Travel Dead Band:

5.00

%

Apply

## Monitor

The *Monitor* box displays the available data points, the record that is being retrieved, and the progress of the current download.

Monitor

Data points:

61

Record:

61

Data Acquisition Progress:

At the top, left of the graph window is the **Axis Zoom Settings** box.

Select the X radio button to cause all zoom operations to occur exclusively along the x-axis.

Select the Y radio button to cause all zoom operations to occur exclusively along the y-axis.

Select the XY radio button to cause all zoom operations to occur on both axes.

Click the *Zoom Out* button to undo any previously performed zoom actions.

Axis Zoom Settings

Axis:

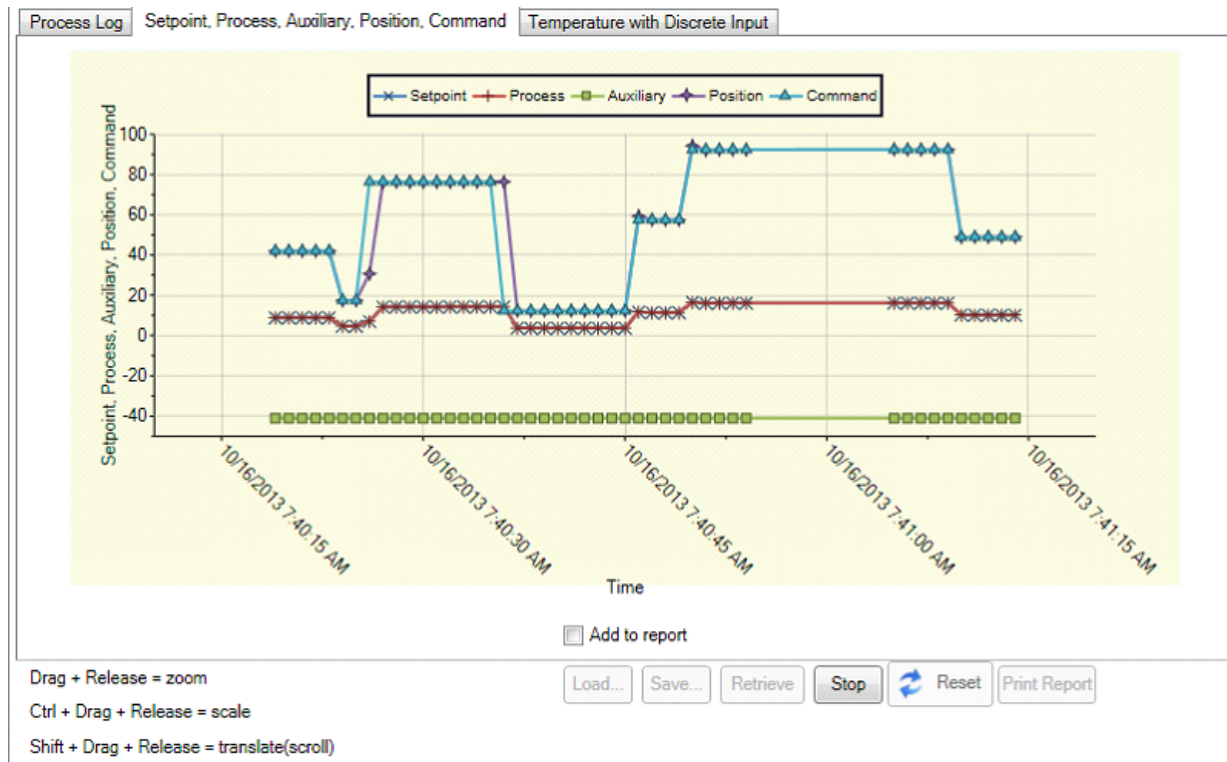
☐ X
 ☐ Y
 ☒ XY

Zoom Out

The three tabs after the axis controls allow viewing the acquired event data.

The "**Process Log**" tab shows all of the process signals data relative to time on the x-axis during the event log acquisition.

The **"Setpoint, Process, Auxiliary, Position, Command"** tab shows all of the control and response signals data relative to time on the x-axis during the event log acquisition.



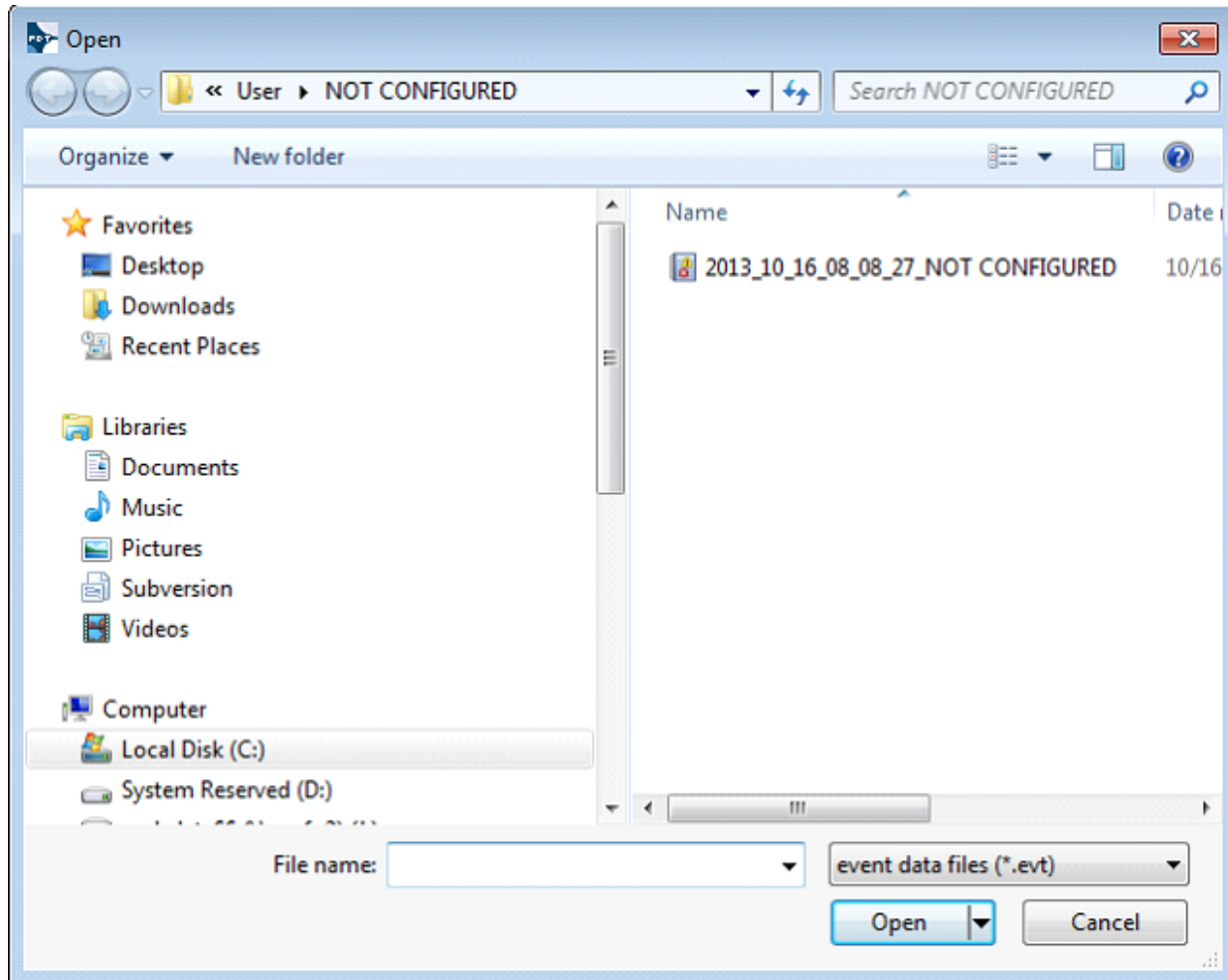
The **"Temperature with Discrete Input"** tab shows the process temperature and discrete input data signals relative to time on the x-axis during the event log acquisition.



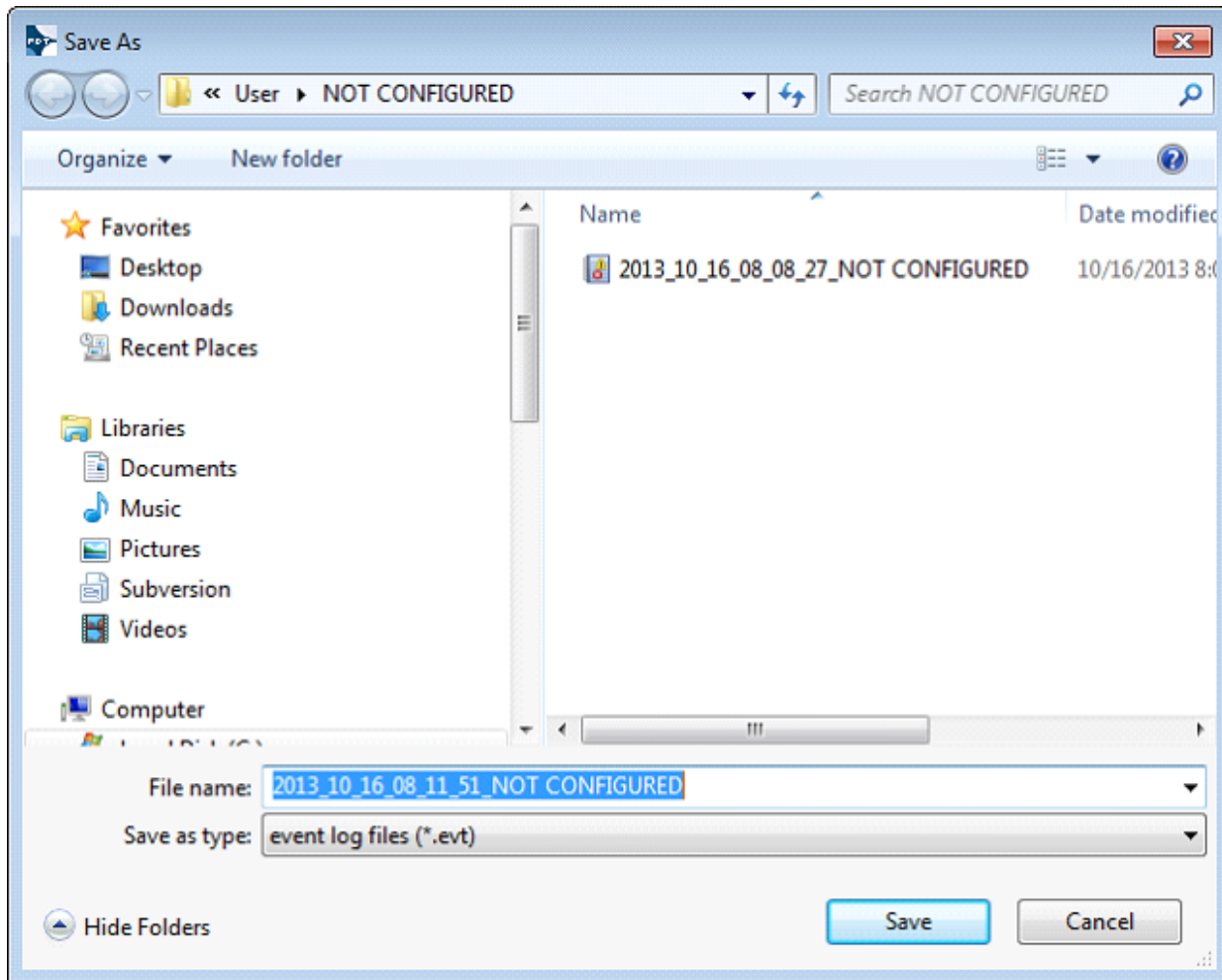
Under the graph display area is a set of buttons allowing the user to perform various actions.



Clicking *Load...* opens a file selection dialog which allows opening of a previously saved event log file.



Clicking *Save...* opens a file save dialog which allows saving of the currently displayed log.

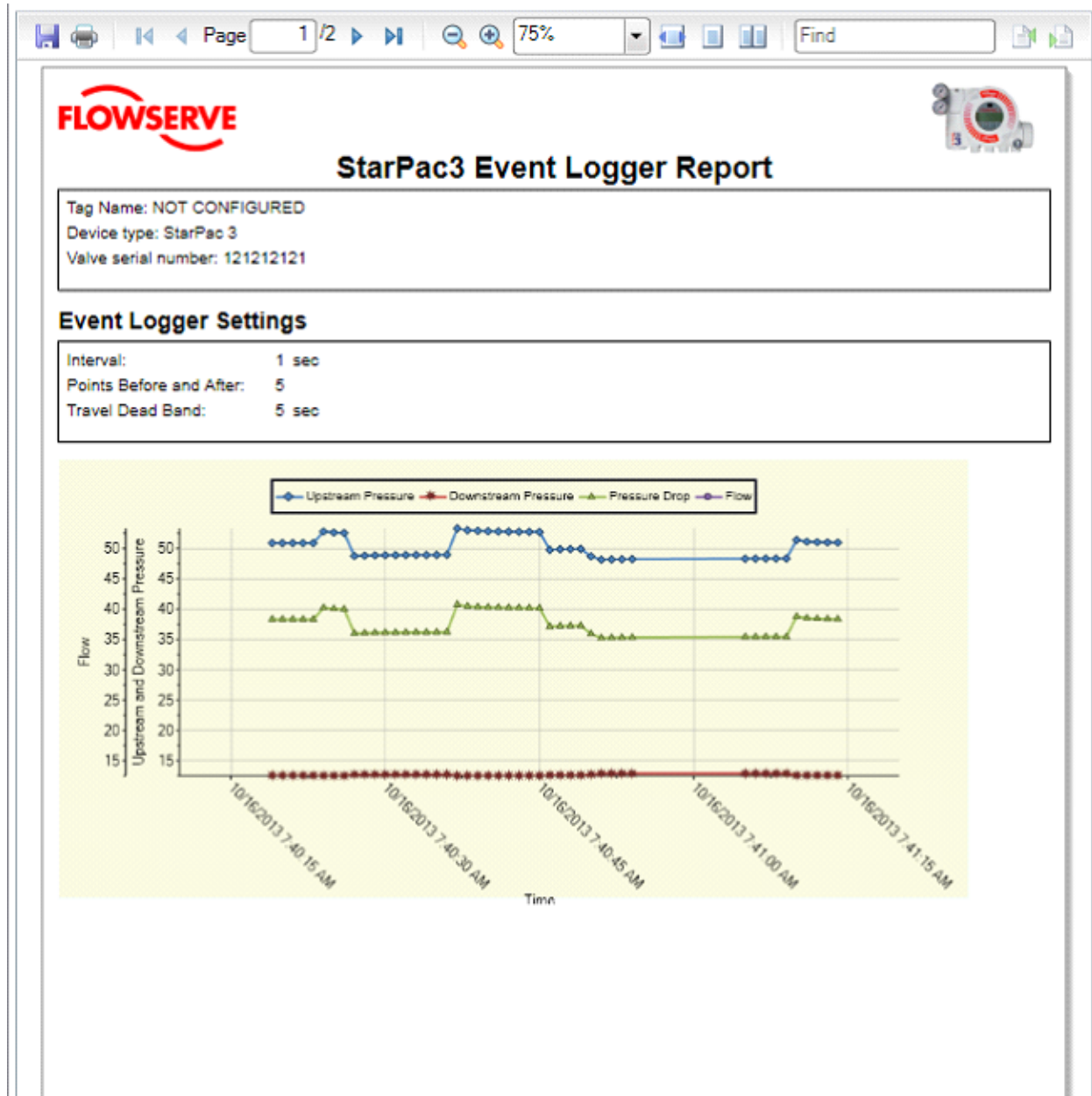


Clicking *Retrieve* downloads the event data from the device up to the current point in time; or, up to the last event point acquired.

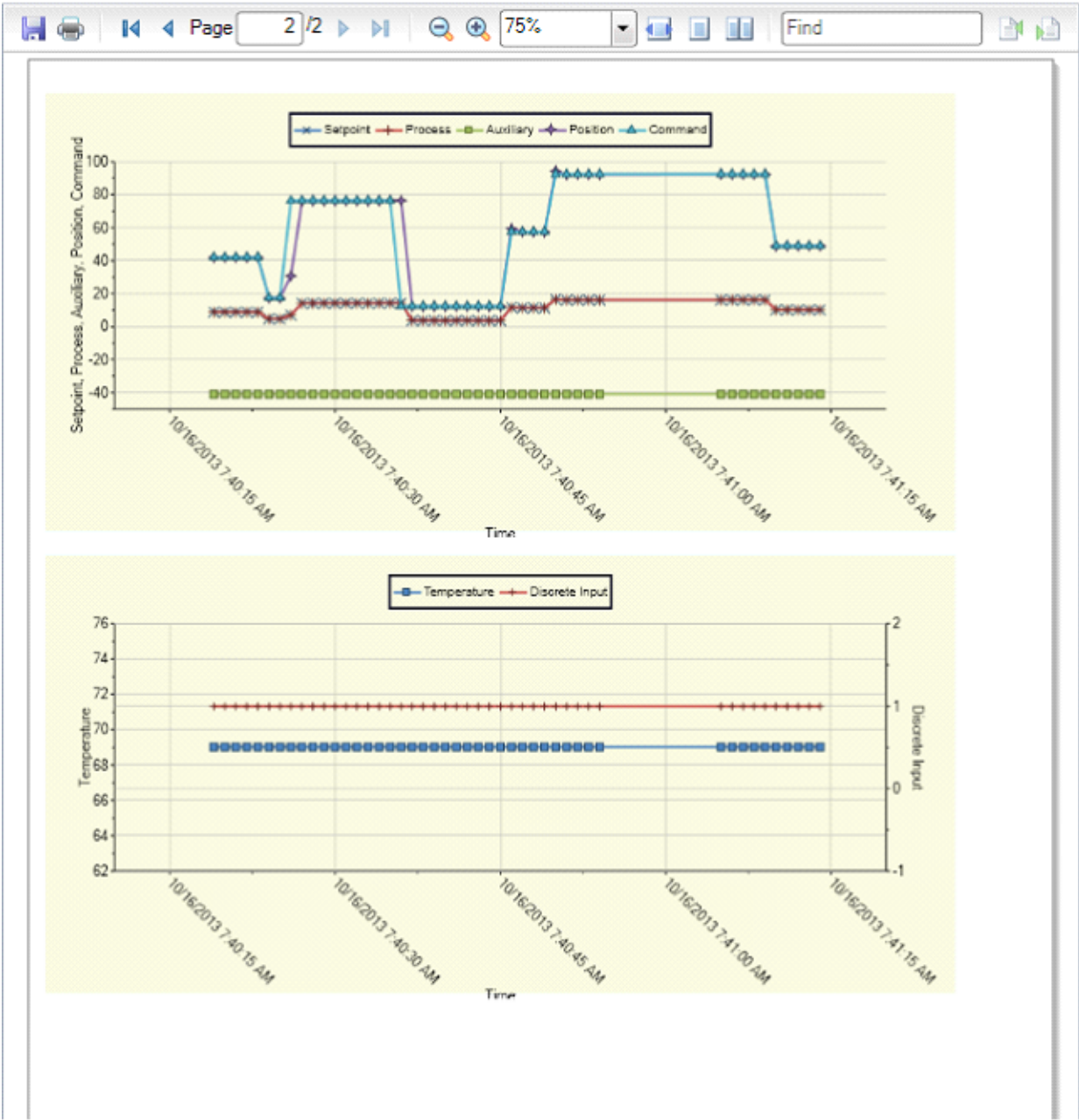
Clicking *Stop* aborts a retrieve operation.

Clicking *Reset* clears the internal event log.

Clicking *Print Report* opens a Print Preview tab. In order to print a graph, you must check the **Add to report** check box under the desired graph. The generated report is in PDF format and can be saved or printed from the preview.









## Off-line Diagnostics

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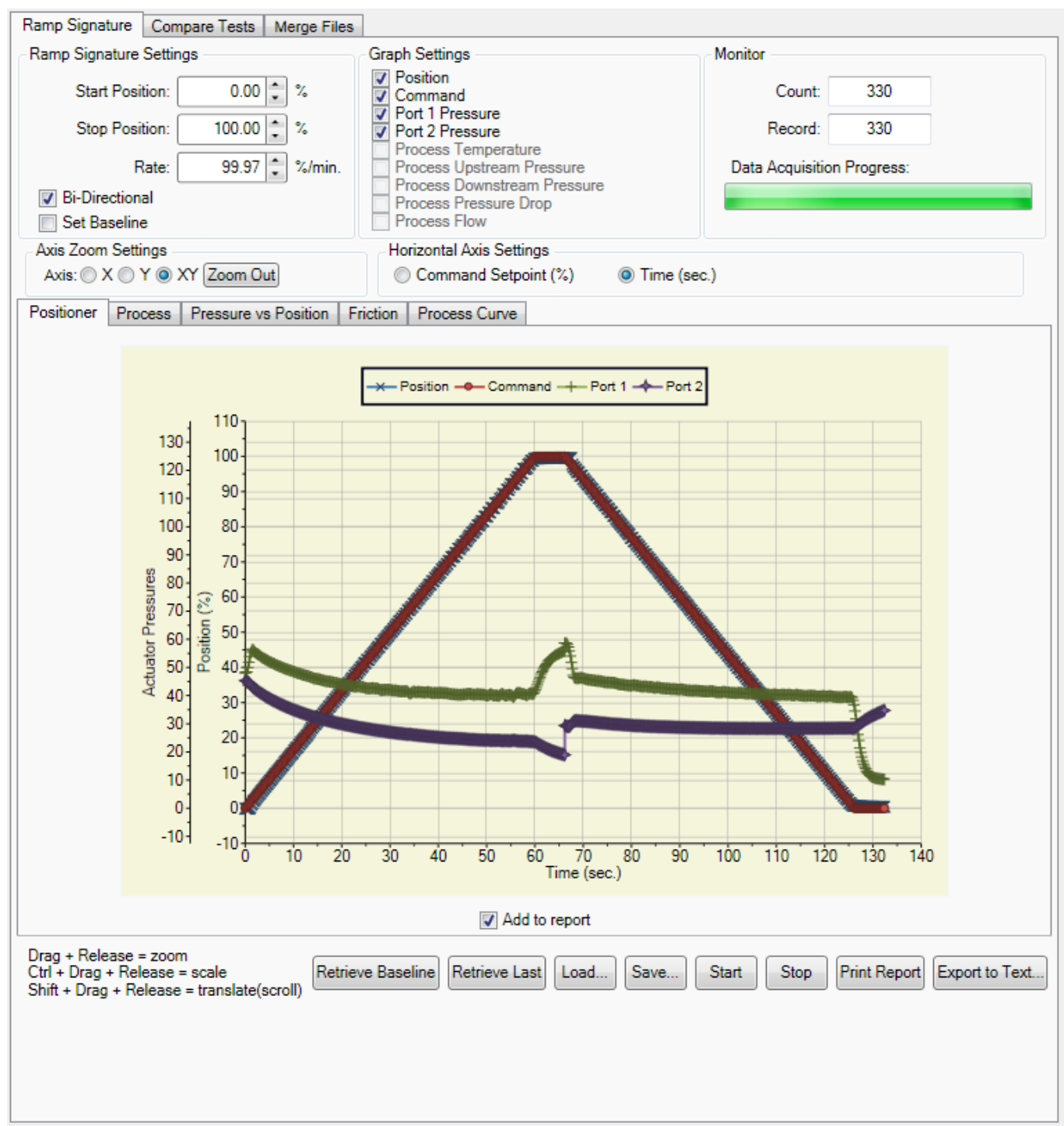
*Off-line Diagnostics* pages provide ways to view and analyze the valve and positioner while it is off-line, not controlling. This selection automatically redirects to the *Ramp Test* page.



## Ramp Signature

Ramp signatures are a powerful tool for bench testing valves in a shop; or, installed valves that are not in service and can be fully or partially stroked. By ramping the valve with a known input and monitoring the response, changes over time can be noted and used to pinpoint developing or existing problems.

**Warning: During a ramp test the valve will not respond to control signals and movement of the valve stem will occur.**





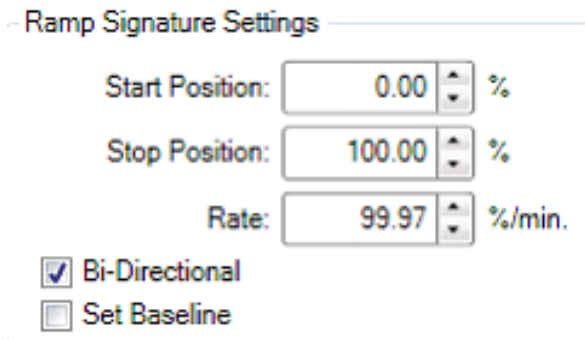
### Ramp Test Settings

The *Start Position* and *Stop Position* are used to specify where the valve position will begin and end during the ramp test. Normally the most informative signatures cover the full range of travel of the valve and the characteristic saturation at each end of travel. Each signature contains a large number of data points which may vary depending on the ramp setting.

The *Rate* is the rate at which the positioner will stroke per minute. The command will remain at the end of the ramp to allow the valve to continue moving and stabilize. The ramp always includes a one second stabilization period at the beginning of each ramp.

The *Bi-Directional* check box indicates that the ramp will run in both directions. The first direction will be from the start position to the stop position. The second direction will be in reverse.

The *Set Baseline* check box indicates the signature will be stored in a different memory location in the positioner. This baseline will remain in the positioner even if other tests are completed and can be retrieved at any time.



Ramp Signature Settings

Start Position: 0.00 %

Stop Position: 100.00 %

Rate: 99.97 %/min.

☒ Bi-Directional

☐ Set Baseline

Before starting a ramp test, the **Ramp Test Settings** should be set to the desired settings. The **Start Position** and **Stop Position** fields are used to specify beginning and end positions of the ramp test. Normally the most informative signatures cover the full range of travel of the valve and the characteristic saturation at each end of travel. For this reason, having a -5% start position and a 105% stop position is a good practice. Each signature contains a large number of data points; so, if any problems are seen from the larger signature, then a smaller range signature can be run specifically in an area of interest for greater resolution. Generally, large valves should be ramped slower than small ones to better observe their behavior. If the *Bi-Directional* box is checked, the signature will include two ramps with the start and stop positions switched. There will be a delay between the ramps while the system acquires the data from the first test before it starts the second test. During the delay, the valve will return to normal operation and follow the command until the first signature is retrieved and the second ramp started.

The **Graph Settings** box allows one to select the items (**Position, Command, Port 1 Pressure, Port 2 Pressure, Process Temperature, Process Upstream Pressure, Process Downstream Pressure, Process Pressure Drop, and Process Flow**) to be shown on the graph. All of the data is acquired regardless of this setting. Any item can be shown or hidden after the data has been downloaded from the positioner.

**Note:** Some items will only show in specific tabs of the graph.

Graph Settings

☒ Position  
☒ Command  
☐ Port 1 Pressure  
☐ Port 2 Pressure  
☐ Process Temperature  
☐ Process Upstream Pressure  
☐ Process Downstream Pressure  
☐ Process Pressure Drop  
☐ Process Flow

The **Monitor** box shows information regarding the **Signature Count**, **Record**, and the **Data Acquisition Progress** of the test.

Monitor

Count:   
 Record:   
 Data Acquisition Progress:

At the top, left of the graph window is the **Axis Zoom Settings** box.  
 Select the **X** radio button to cause all zoom operations to occur exclusively along the x-axis.  
 Select the **Y** radio button to cause all zoom operations to occur exclusively along the y-axis.  
 Select the **XY** radio button to cause all zoom operations to occur on both axes.  
 Click the **Zoom Out** button to undo any previously performed zoom actions.

Axis Zoom Settings

Axis: ☐ X ☐ Y ☒ XY

At the top, right of the graph window is the **Horizontal Axis Settings** box.  
 Select the **Command Setpoint** radio button to plot all data using the command setpoint data as the x axis.

Select the **Time** radio button to plot all data using time data as the x axis.

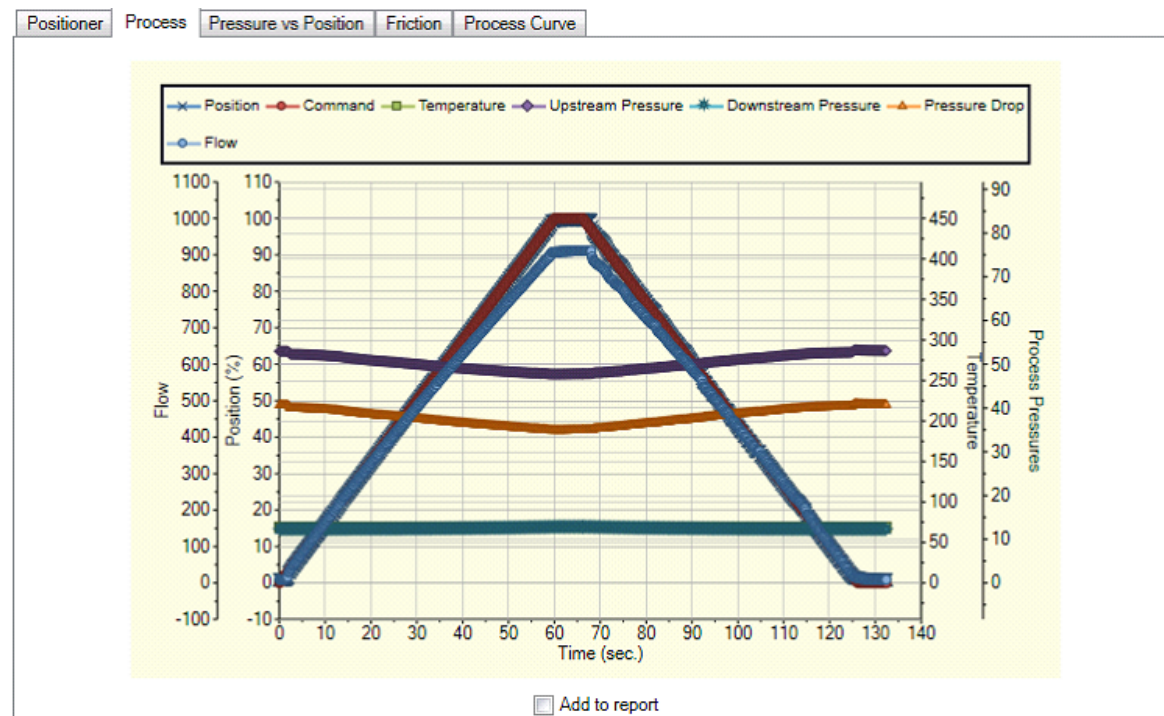
Horizontal Axis Settings

☐ Command Setpoint (%) ☒ Time (sec.)

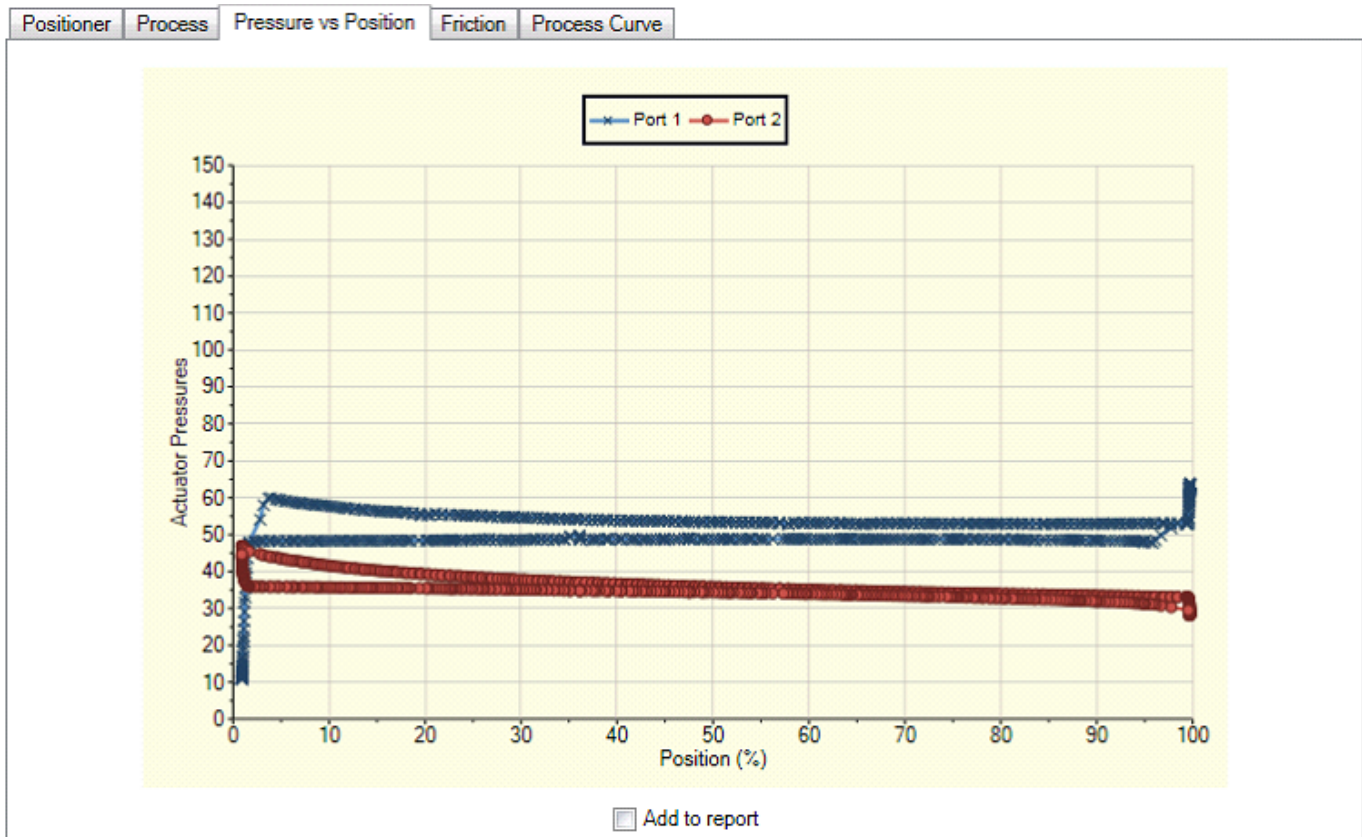
The five tabs after the axis controls allow viewing the acquired.

The "**Positioner**" tab shows all of the positioner signals data relative to time or Command Setpoint on the x-axis during the signature test. If a bi-directional signature has been taken, it shows the second signature as if it occurred right after the first signature.

The "**Process**" tab shows all of the process data relative to time or Command Setpoint on the x-axis during the signature test. If a bi-directional signature has been taken, it shows the second signature as if it occurred right after the first signature.

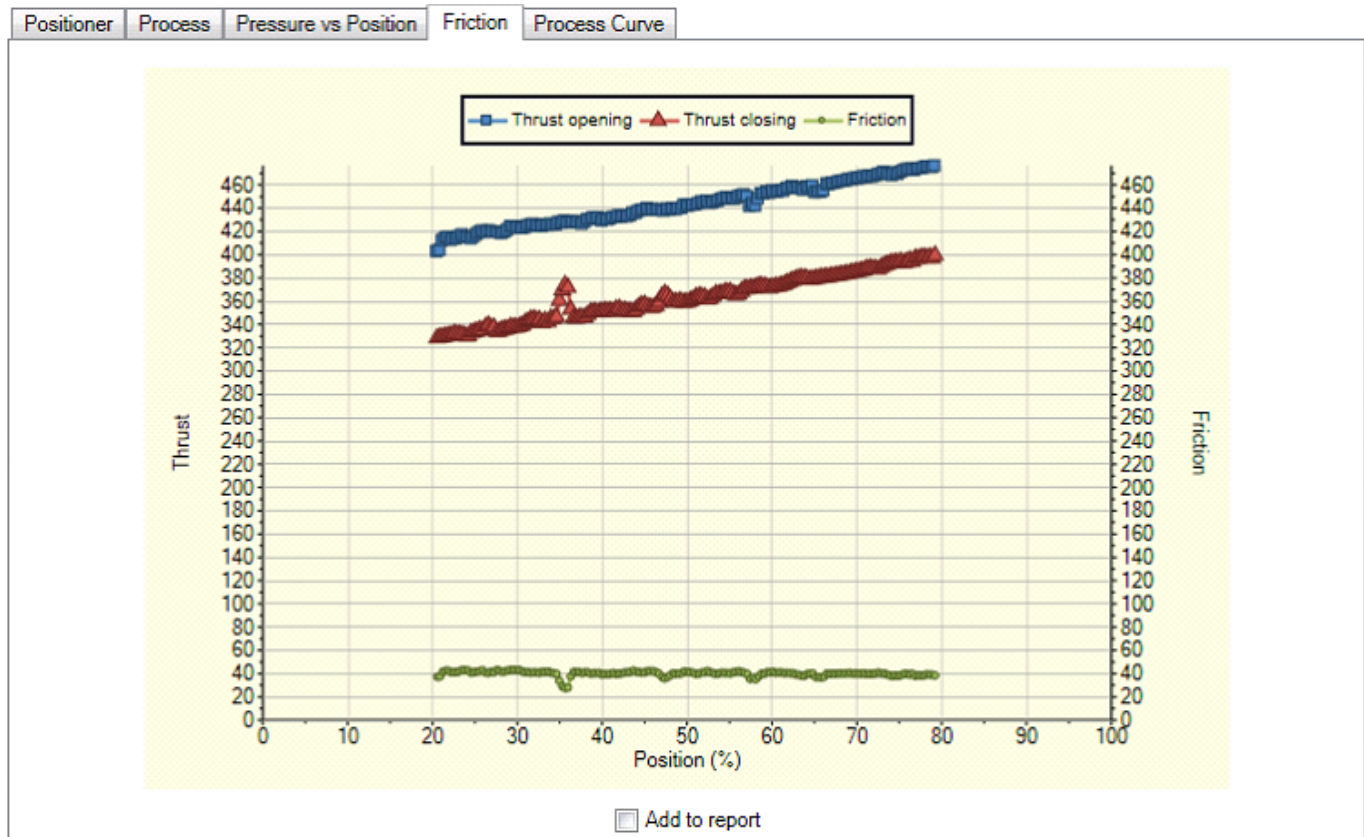


The "**Pressure vs. Position**" tab sets up the graph to show the position on the x-axis with the corresponding pressures. If a bi-directional signature has been taken, it shows both sets of pressures relative to the valve position. The pressures are not the same in a bi-directional test due to the friction in the valve. The pressures are only shown for positions from 5-95% of the range of the test. This removes the effects of saturating the actuator at the ends of travel. Any spikes or irregularities in the pressure can indicate problems at that point in the valve travel where the irregularity occurs.



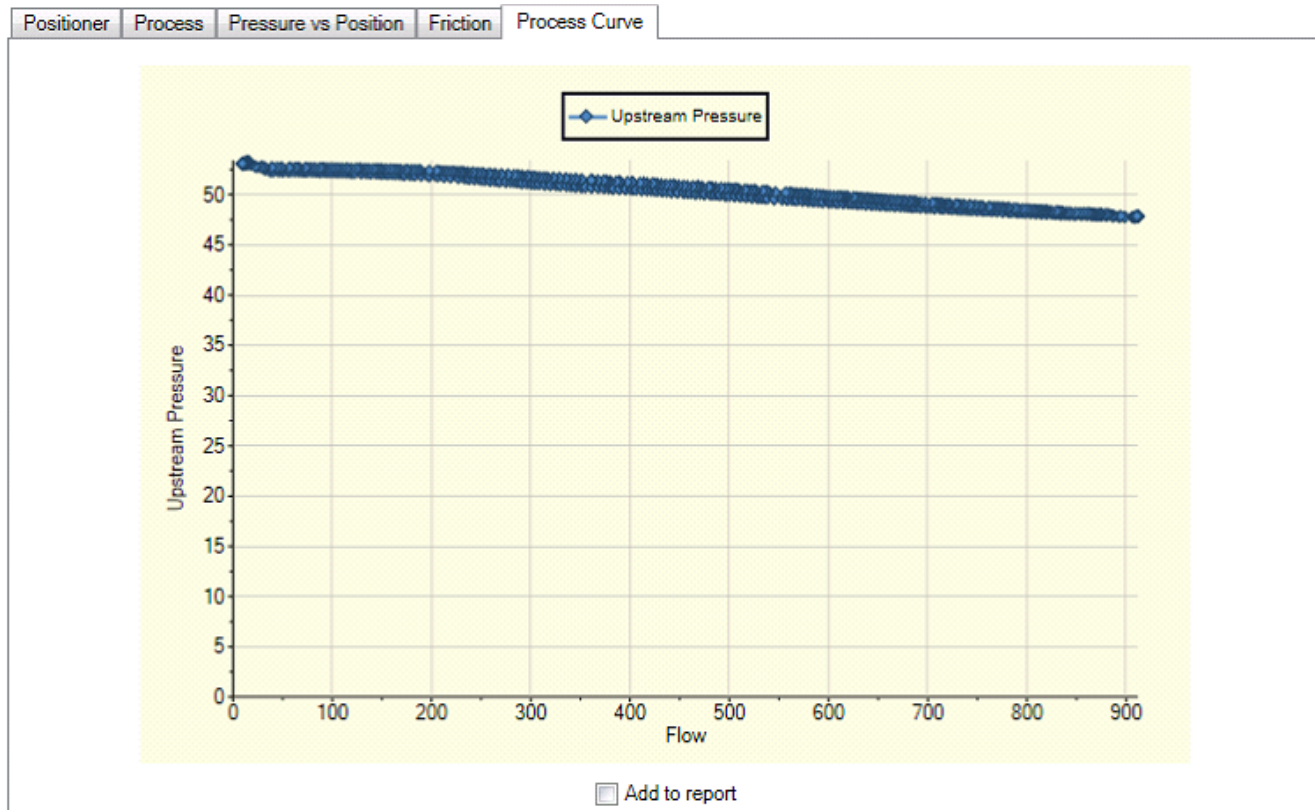
The "**Friction**" tab calculates the friction in the valve based on the pressures measured during the signature test.

**NOTE:** For this graph to be accurate, the proper actuator size must have been selected in the Configuration / System Information / Actuator / Size option. Friction can only be calculated from a bi-directional signature.



The **"Process Curve"** tab displays the graph showing the relationship of the flow versus the upstream pressure. This relationship allows the user to detect possible pump degradation. If a bi-directional signature has been taken, it shows this relationship for the opening and closing of the valve.





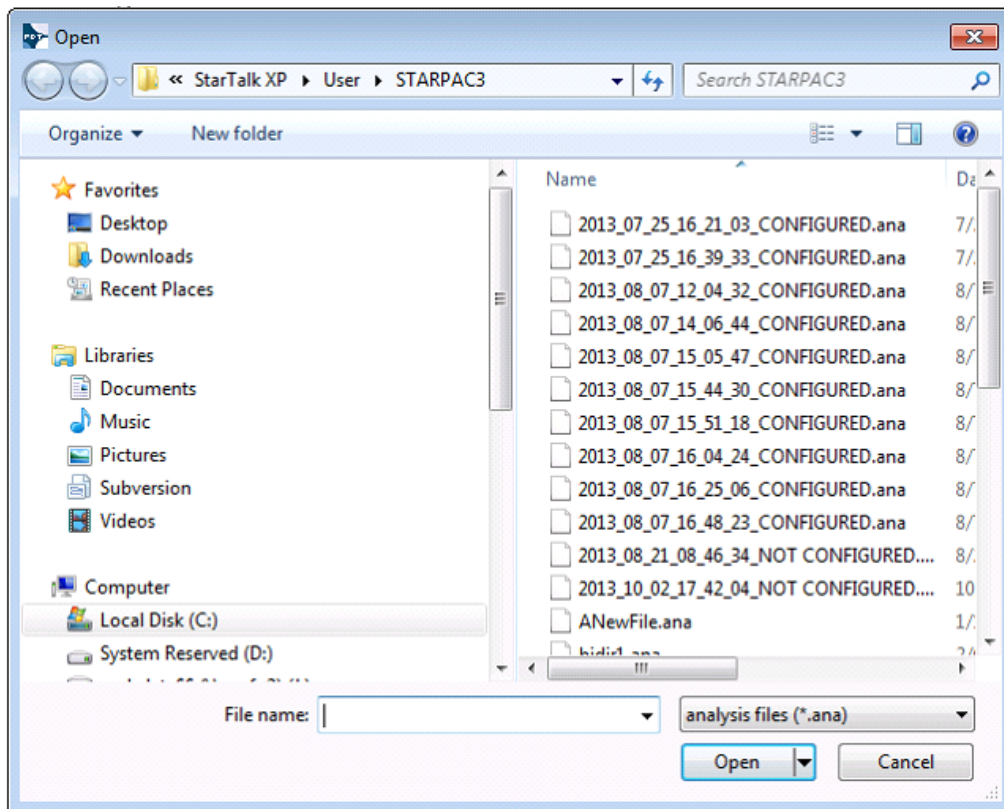
Under the graph display area is a set of buttons allowing the user to perform various actions.



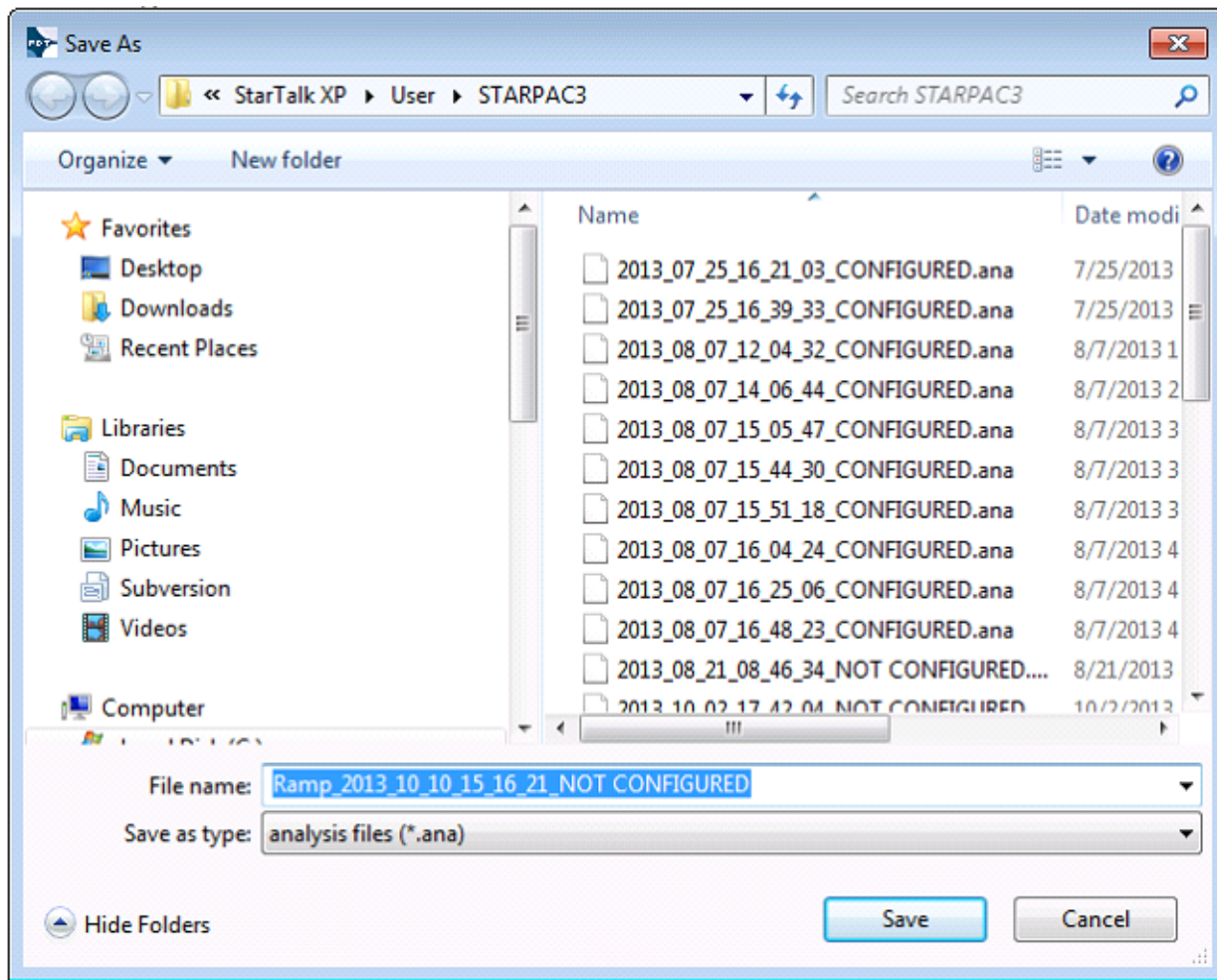
Clicking *Retrieve Baseline* downloads a previously stored signature. To acquire a baseline signature one must check the Set Baseline check box; then, click the *Start* button. When the test completes, the data is stored on the device for future retrieval. *Set Baseline* and *Bi-Directional* are mutually exclusive. You are only allowed to have one of these options checked at a time.

Clicking *Retrieve Last* downloads the last completed signature. If the previous signature was a bidirectional test, the second half will be downloaded. If the previous signature was a step test, then the data for that test will be downloaded.

Clicking *Load...* opens a file selection dialog which allows opening of a previously saved signature.



Clicking Save... opens a file save dialog which allows saving of the currently displayed signature.

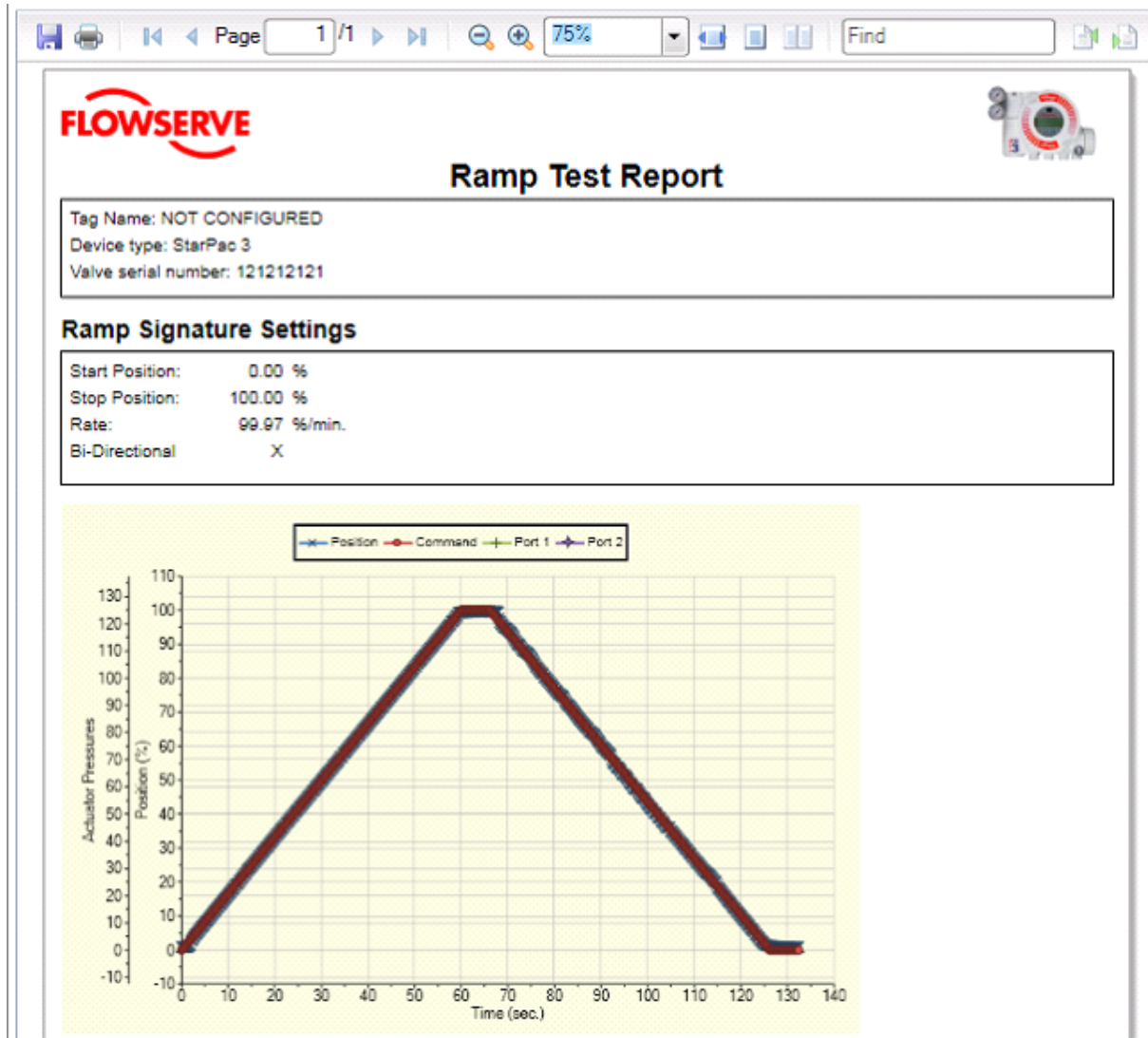


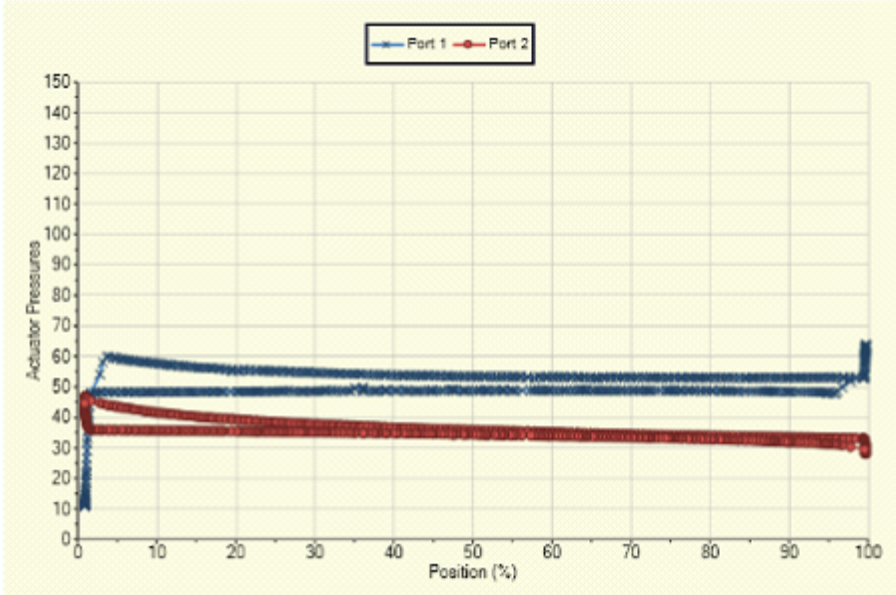
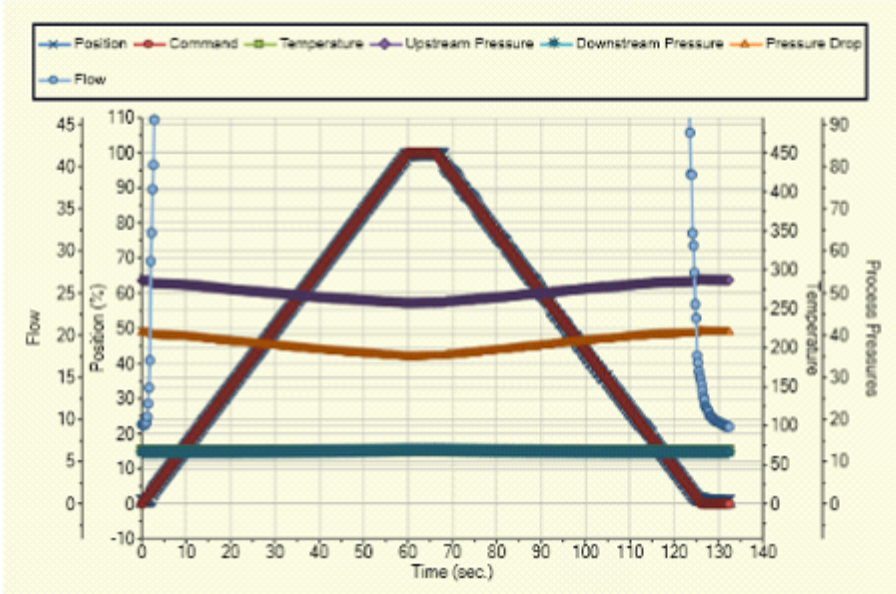
Clicking *Start* initiates a new signature using the Ramp Signature Settings and also clears all from the graphs.

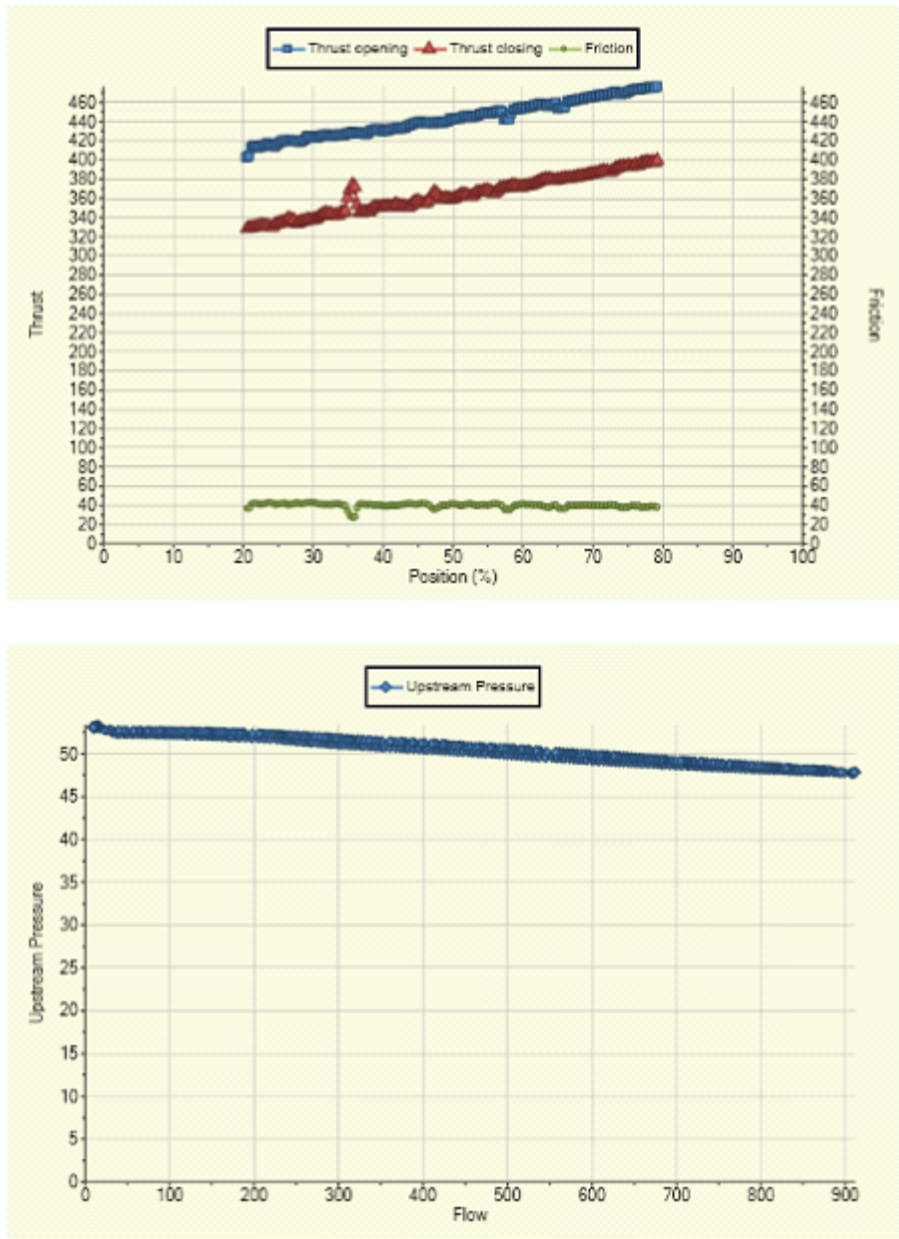
Clicking *Stop* aborts a currently running test; or, stops a retrieve operation.

Clicking *Print Report* opens a Print Preview tab. In order to print a graph, you must check the **Add to report** check box under the desired graph. The generated report is in PDF format and can be saved or printed from the preview.







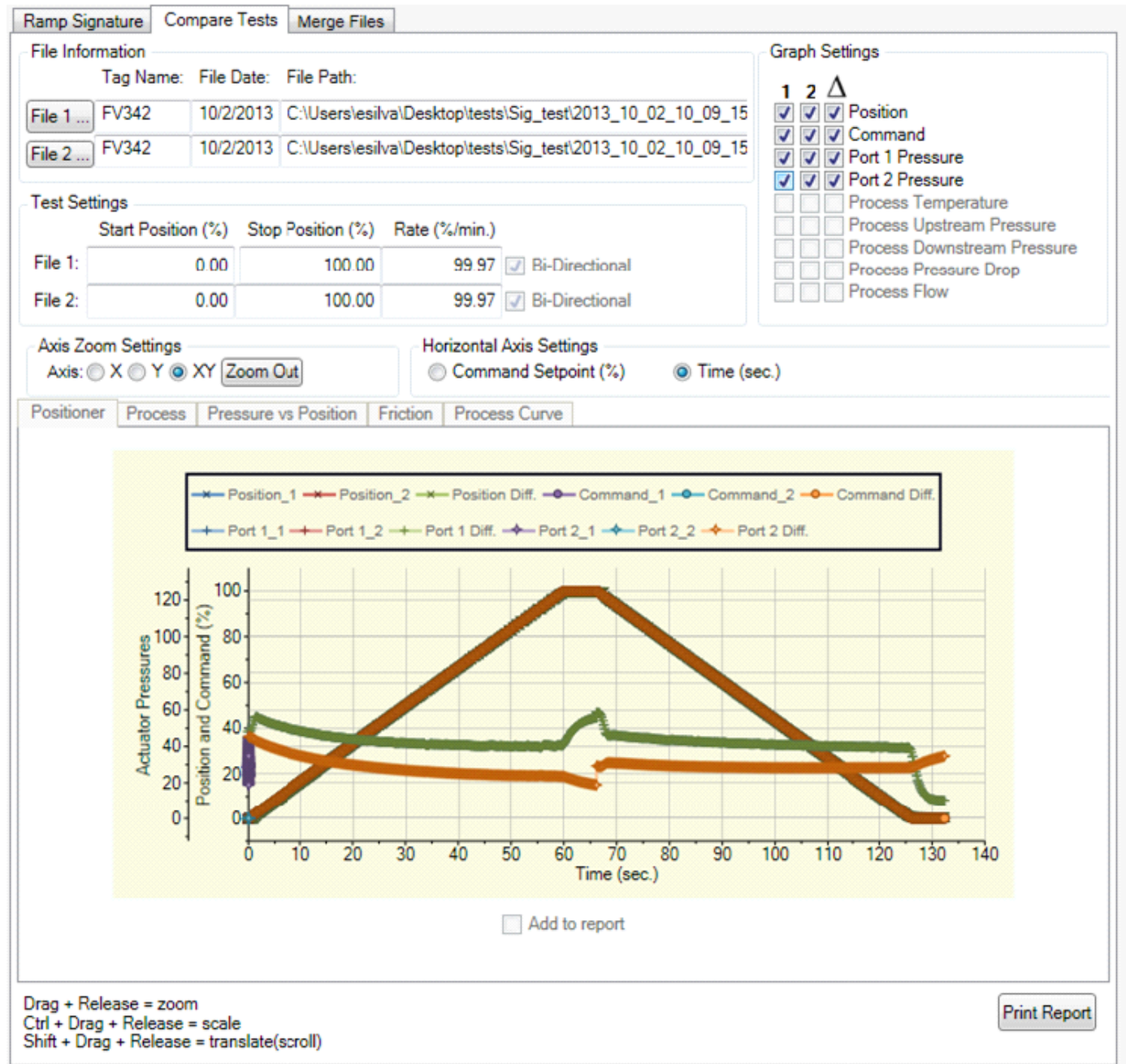


Clicking *Export to Text...* opens a file save dialog allowing you to save a tab delimited file containing the data for the currently displayed signature.



## Ramp Compare Tests

The Ramp Test Comparison page displays two previously saved ramp test files for an overlay comparison. The comparison includes file information, ramp test settings, and graphed data. Difference data is also displayed on the graphs.



The **File Information** area allows the user to load two files. The files are loaded by selecting the "1..." and "2..." buttons. This area then shows the tag ID, the date the file was saved, and the file name for each file.

File Information			
	Tag Name:	File Date:	File Path:
File 1 ...	FV342	10/2/2013	C:\Users\lesiva\Desktop\tests\Sig_test\2013_10_02_10_09_15
File 2 ...	FV342	10/2/2013	C:\Users\lesiva\Desktop\tests\Sig_test\2013_10_02_10_09_15

The **Graph Settings** area allows the user to select which information will be displayed on the graphs. The user can select between data sets from file 1, file 2, and the differences. Each difference data point is calculated by subtracting the value of the data point in the second file from the corresponding data point in the first file.

Graph Settings

1 2  $\Delta$

☒ ☒ ☒ Position  
☒ ☒ ☒ Command  
☒ ☒ ☒ Port 1 Pressure  
☒ ☒ ☒ Port 2 Pressure  
☐ ☐ ☐ Process Temperature  
☐ ☐ ☐ Process Upstream Pressure  
☐ ☐ ☐ Process Downstream Pressure  
☐ ☐ ☐ Process Pressure Drop  
☐ ☐ ☐ Process Flow

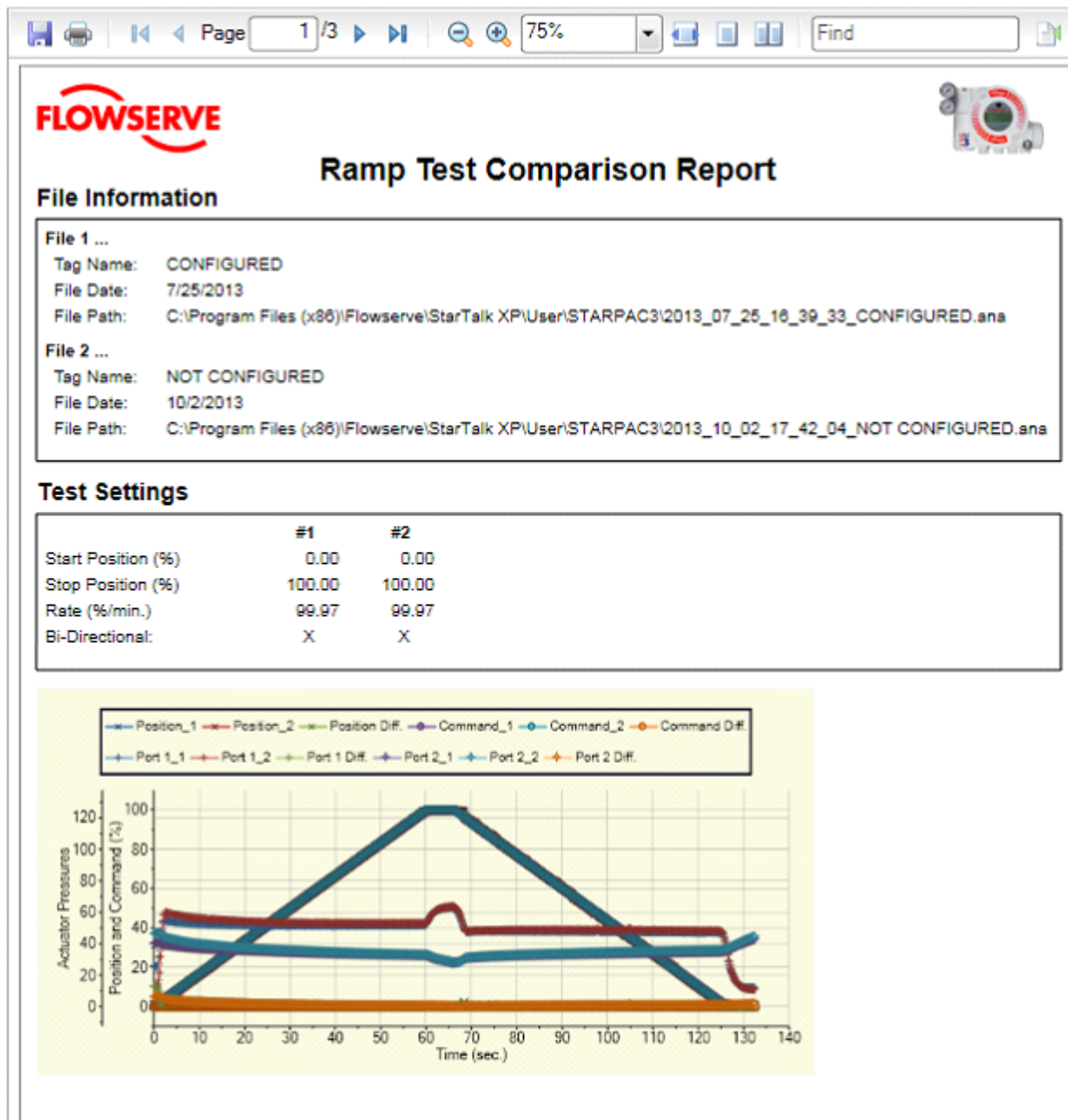
The **Ramp Test Settings** area contains the information used to run the ramp test and other information that may affect the results. This information is shown for each file in a side - by side comparison.

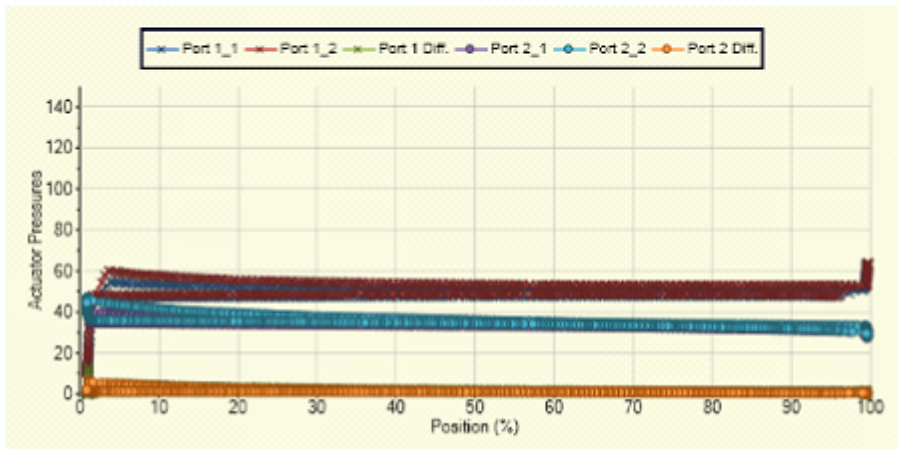
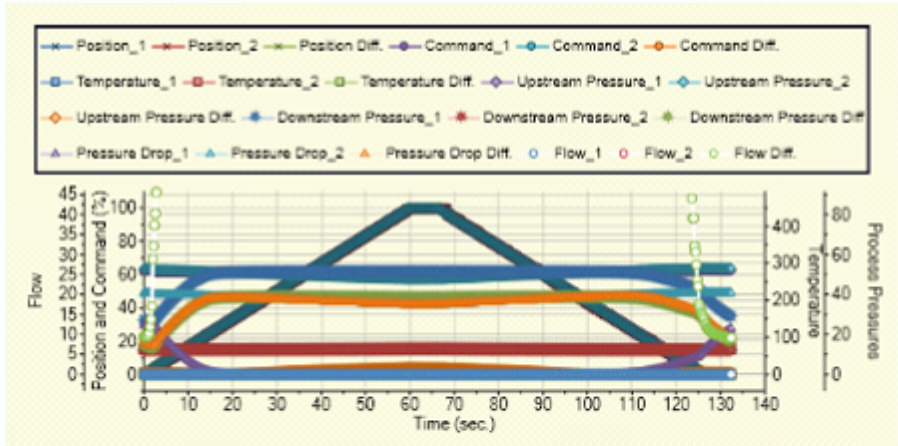
Test Settings				
	Start Position (%)	Stop Position (%)	Rate (%/min.)	
File 1:	0.00	100.00	99.97	<input checked="" type="checkbox"/> Bi-Directional
File 2:	0.00	100.00	99.97	<input checked="" type="checkbox"/> Bi-Directional

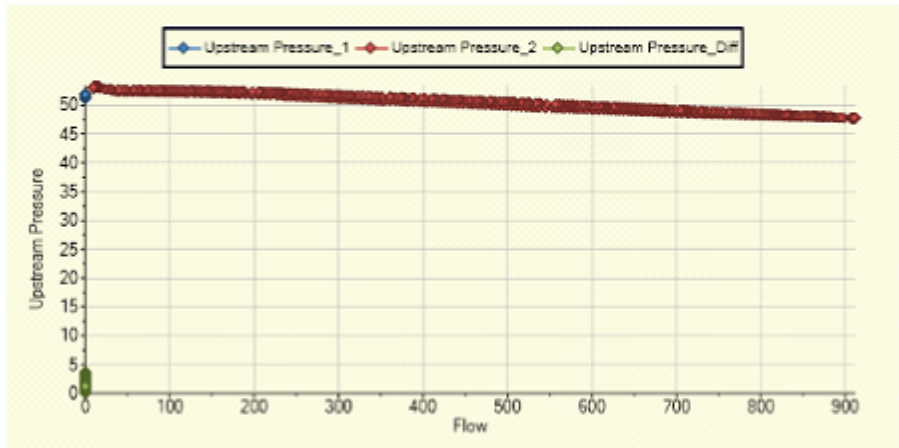
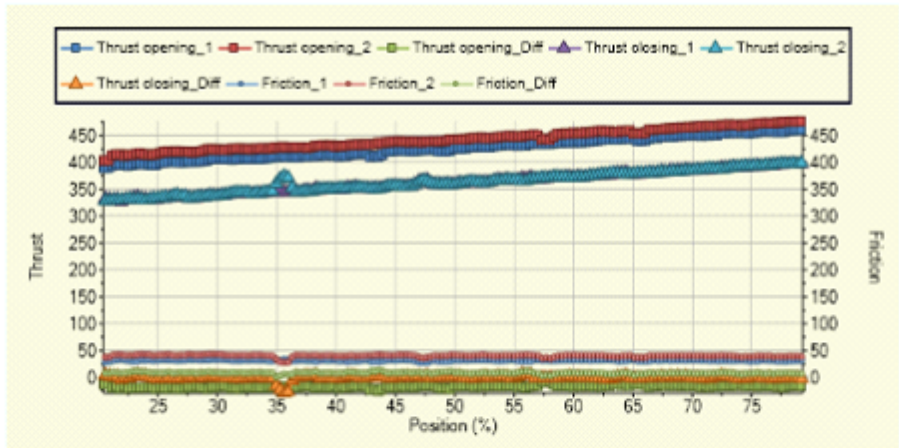
The graphs are identical to those shown in the ramp test (Ramp Test, Pressure vs. Position, Signal vs. Command and Friction/Thrust); but, they each show the data for both files along with differences between the two files.

The **"Print Report"** button sends a printer friendly version of the comparison data to a printer. Remember to check the **Add to report** check box to print the desired graph(s) on the report.





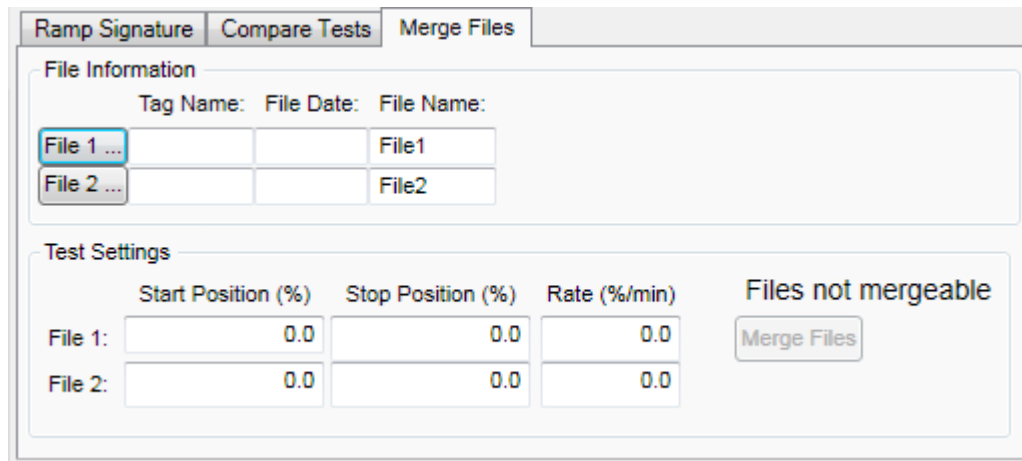






## Merge Files

The **Merge Files** tab allows the user to select two opposing files and merge them into a bidirectional signature.



File Information		
Tag Name:	File Date:	File Name:
File 1 ...		File1
File 2 ...		File2

Test Settings			Files not mergeable
Start Position (%)	Stop Position (%)	Rate (%/min)	
File 1: 0.0	0.0	0.0	Merge Files
File 2: 0.0	0.0	0.0	

Clicking *File 1...* opens a file open dialog allowing one to select the first segment of the merge.

Clicking *File 2...* opens a file open dialog allowing one to select the second segment of the merge.

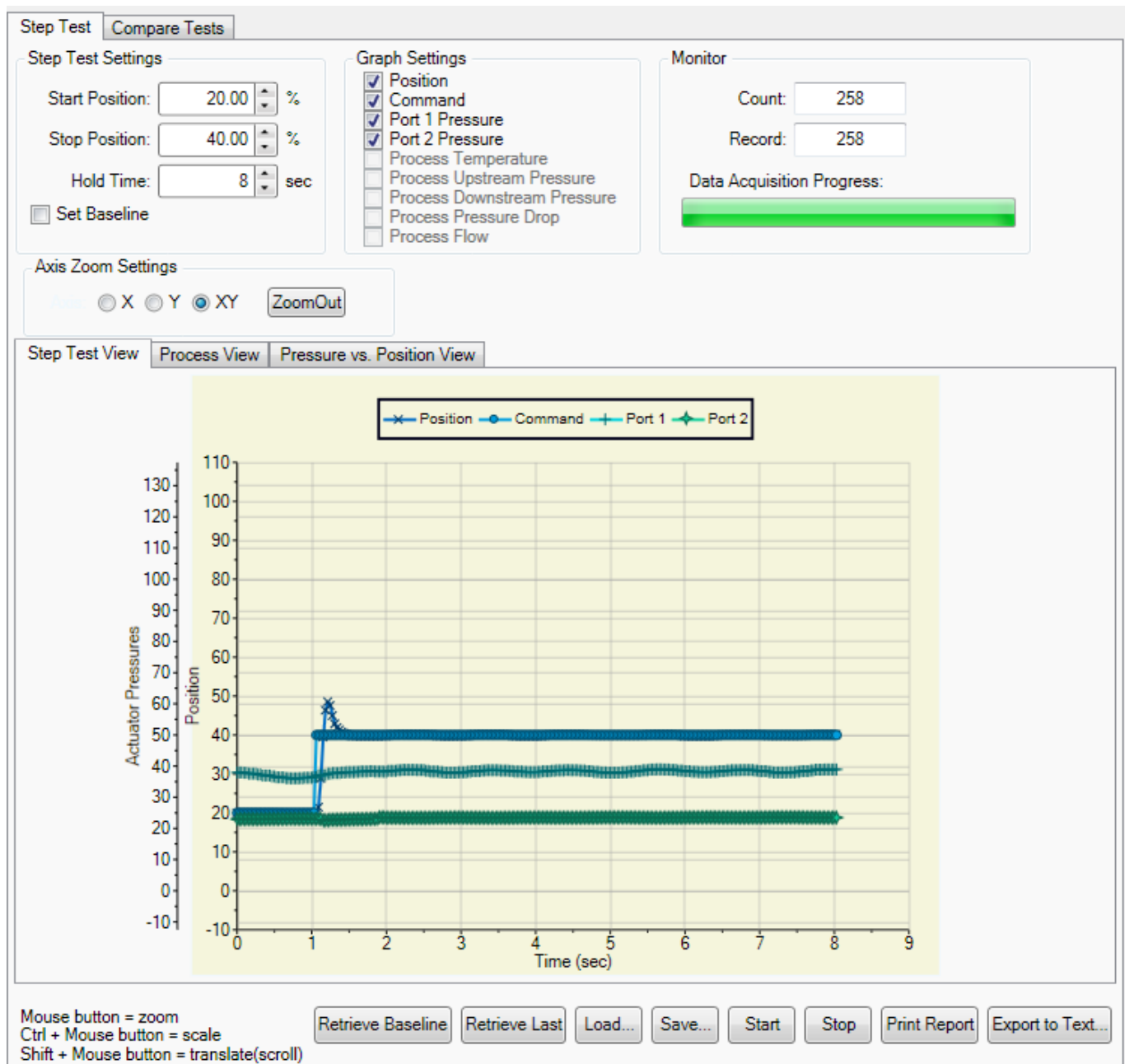
The files are then analyzed to ascertain whether they can be merged. The result of the analysis is displayed on the right side of the **Test Settings** group box. If the files can be merged, the Merge Files button becomes available; otherwise, a notification indicating the files cannot be merged is displayed. Files will not merge if the start and stop position are not opposing or the rates are different.

Clicking *Merge Files* opens a file save dialog allowing the user to save the newly merged file to the disk. The user may then open the new file as if it were a bidirectional signature file.

## Step Test

Step signatures are a powerful tool for bench testing valves in a shop; or, installed valves that are not in service and can be fully or partially stroked. By stepping the valve with a known input and monitoring the response, changes over time can be noted and used to pinpoint developing or existing problems.

**Warning: During a step test the valve will not respond to control signals and movement of the valve stem will occur.**



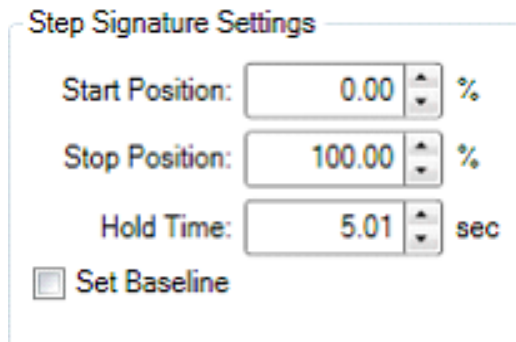
## Step Signature Settings

The *Start Position* and *Stop Position* are used to specify where the valve position will begin and end during the step test. Normally the most informative signatures cover the full range of travel of the valve

and the characteristic saturation at each end of travel. Each signature contains a large number of data points which may vary depending on the step setting.

The *Hold Time* is the amount of time the test will run. Flowserve suggests longer hold times for larger actuators and longer stroke lengths.

The *Set Baseline* check box indicates the signature will be stored in a different memory location in the positioner. This baseline will remain in the positioner even if other tests are completed and can be retrieved at any time.



Step Signature Settings

Start Position:  %

Stop Position:  %

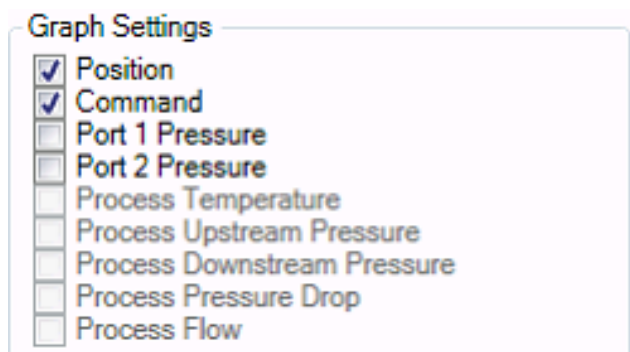
Hold Time:  sec

☐ Set Baseline

Before starting a step test, the **Step Test Settings** should be set to the desired settings. The **Start Position** and **Stop Position** fields are used to specify beginning and end positions of the ramp test. Normally the most informative signatures cover the full range of travel of the valve and the characteristic saturation at each end of travel. For this reason, having a -5% start position and a 105% stop position is a good practice. Each signature contains a large number of data points; so, if any problems are seen from the larger signature, then a smaller range signature can be run specifically in an area of interest for greater resolution. Generally, large valves should use longer hold times to allow the StarPac to complete the test from start to stop.

The **Graph Settings** box allows one to select the items (**Position, Command, Port 1 Pressure, Port 2 Pressure, Process Temperature, Process Upstream Pressure, Process Downstream Pressure, Process Pressure Drop, and Process Flow**) to be shown on the graph. All of the data is acquired regardless of this setting. Any item can be shown or hidden after the data has been downloaded from the positioner.

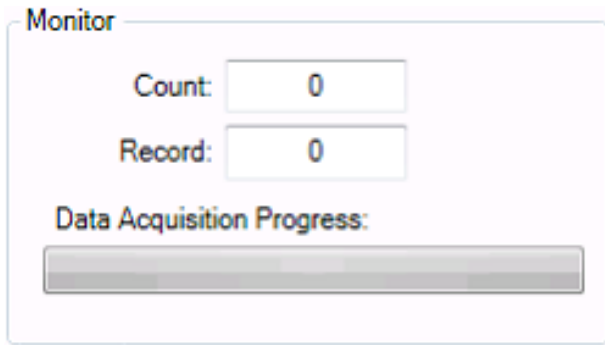
**Note:** Some items will only show in specific tabs of the graph.



Graph Settings

- ☒ Position
- ☒ Command
- ☐ Port 1 Pressure
- ☐ Port 2 Pressure
- ☐ Process Temperature
- ☐ Process Upstream Pressure
- ☐ Process Downstream Pressure
- ☐ Process Pressure Drop
- ☐ Process Flow

The **Monitor** box shows information regarding the **Signature Count, Record, and the Data Acquisition Progress** of the test.



Monitor

Count:

Record:

Data Acquisition Progress:

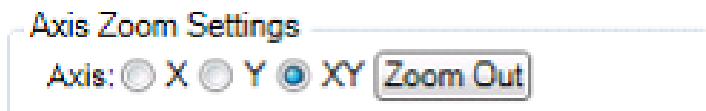
At the top, left of the graph window is the **Axis Zoom Settings** box.

Select the X radio button to cause all zoom operations to occur exclusively along the x-axis.

Select the Y radio button to cause all zoom operations to occur exclusively along the y-axis.

Select the XY radio button to cause all zoom operations to occur on both axes.

Click the *Zoom Out* button to undo any previously performed zoom actions.



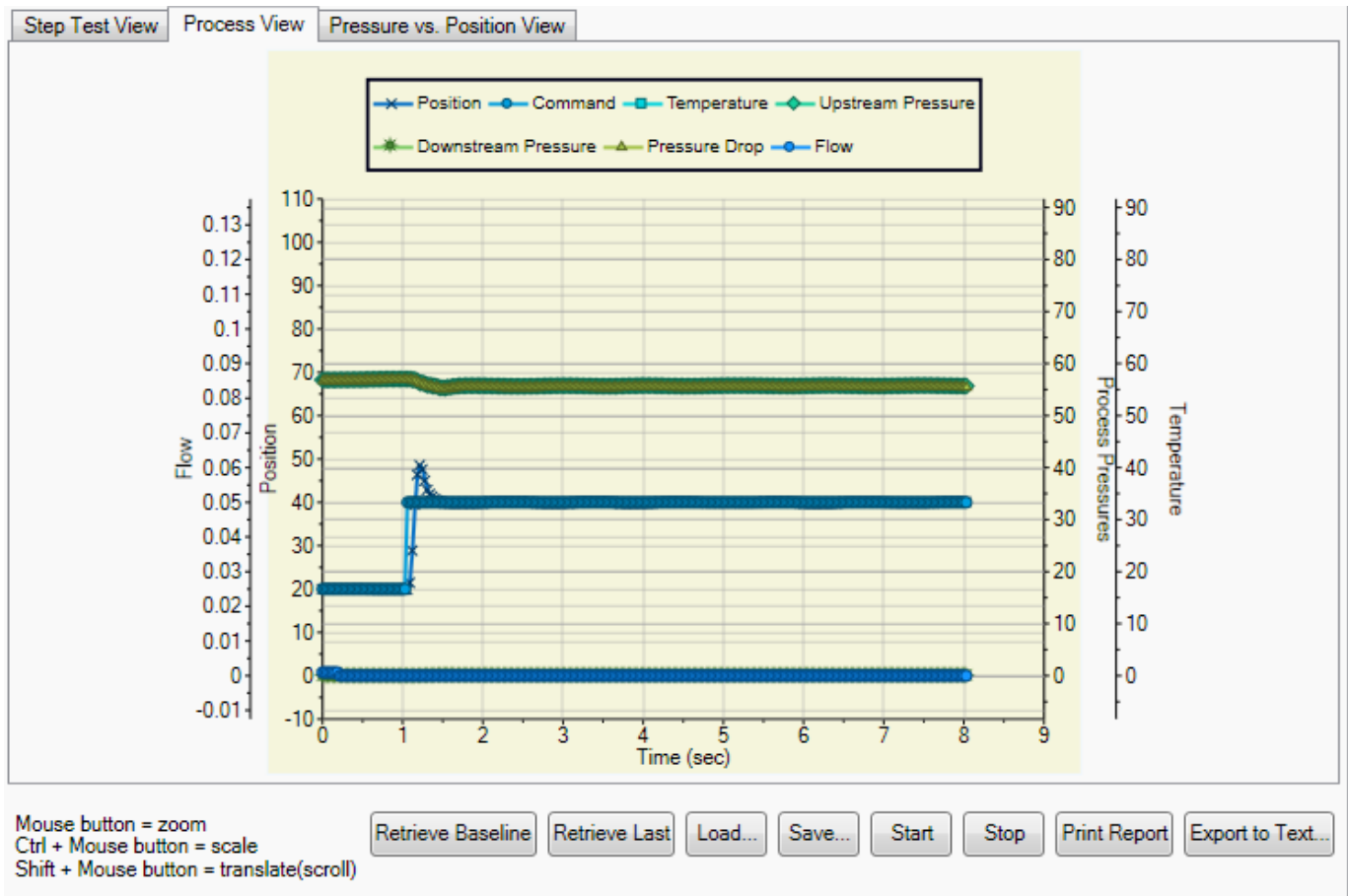
Axis Zoom Settings

Axis: ☐ X ☐ Y ☒ XY

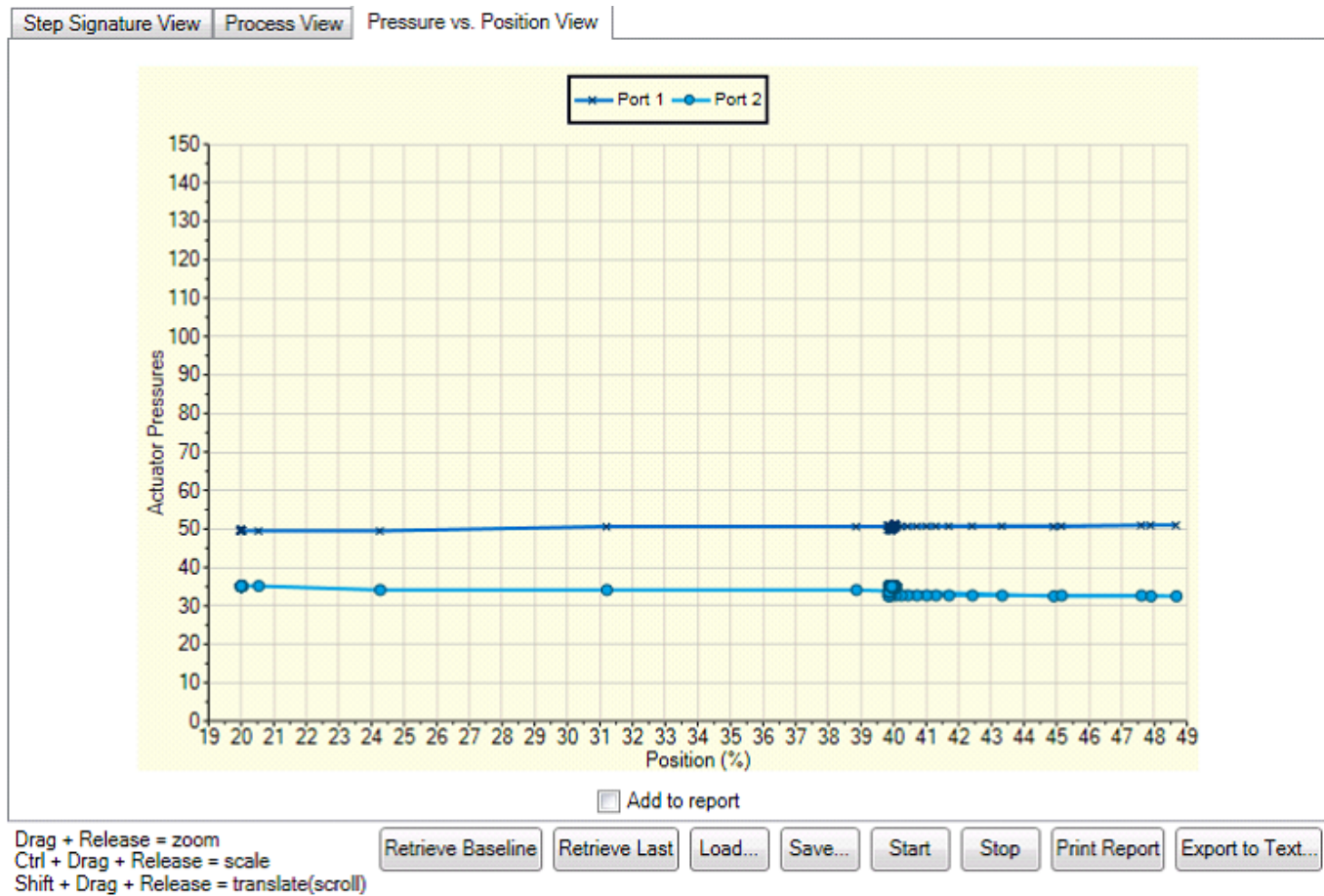
The three tabs after the axis controls allow viewing the acquired data.

The "**Positioner**" tab shows all of the positioner signals data relative to time.

The "**Process**" tab shows all of the process data relative to time.



The "**Pressure vs. Position**" tab sets up the graph to show the position on the x-axis with the corresponding pressures on the y-axis. The pressures are only shown for positions from 5-95% of the whole range of the test. This removes the effects of saturating the actuator at the ends of travel. Any spikes or irregularities in the pressure can indicate problems at that point in the valve travel where the irregularity occurs.



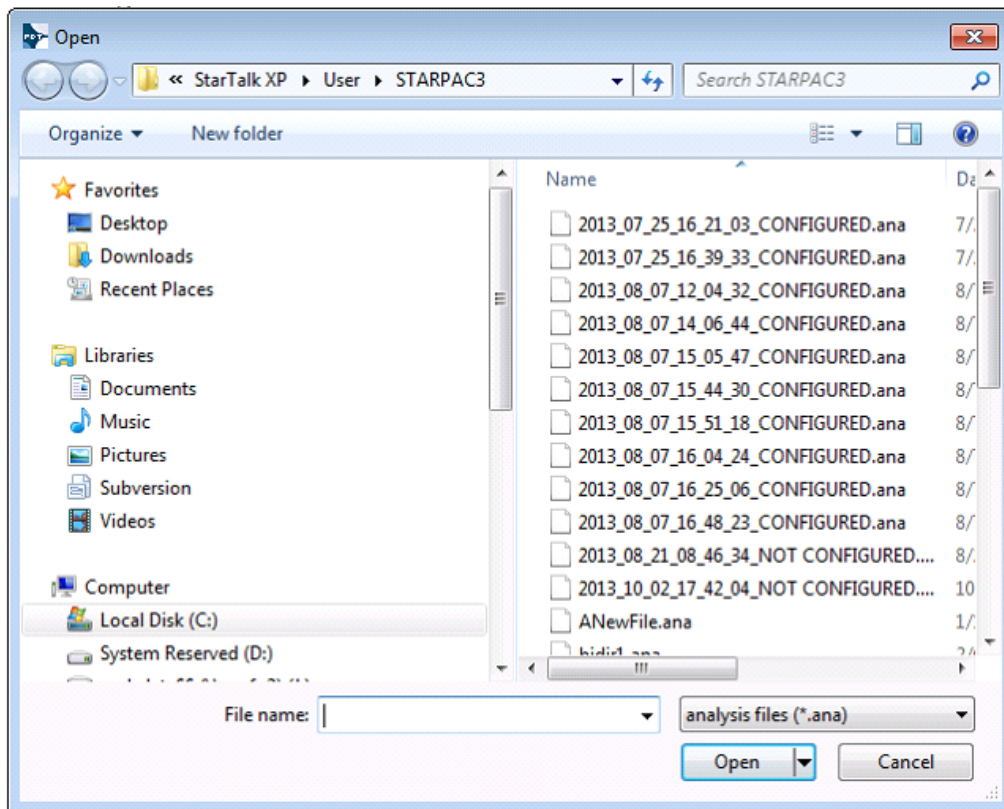
Under the graph display area is a set of buttons allowing the user to perform various actions.



Clicking *Retrieve Baseline* downloads a previously stored signature. To acquire a baseline signature one must check the Set Baseline check box; then, click the *Start* button. When the test completes, the data is stored on the device for future retrieval.

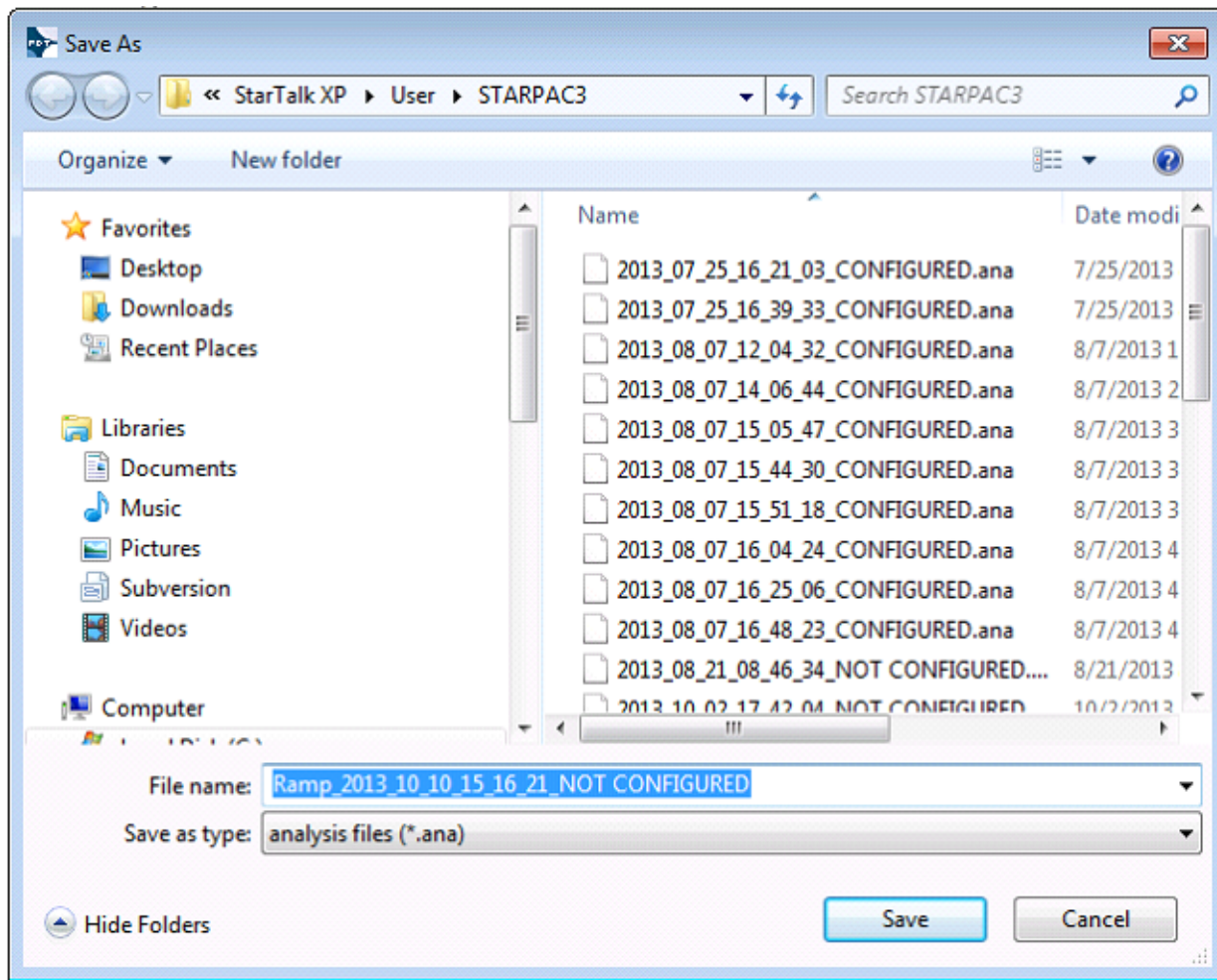
Clicking *Retrieve Last* downloads the last completed signature. If the last test was a ramp, then that is what will be downloaded and displayed.

Clicking *Load...* Opens a file selection dialog which allows opening of a previously saved signature.



Clicking Save... opens a file save dialog which allows saving of the currently displayed signature.



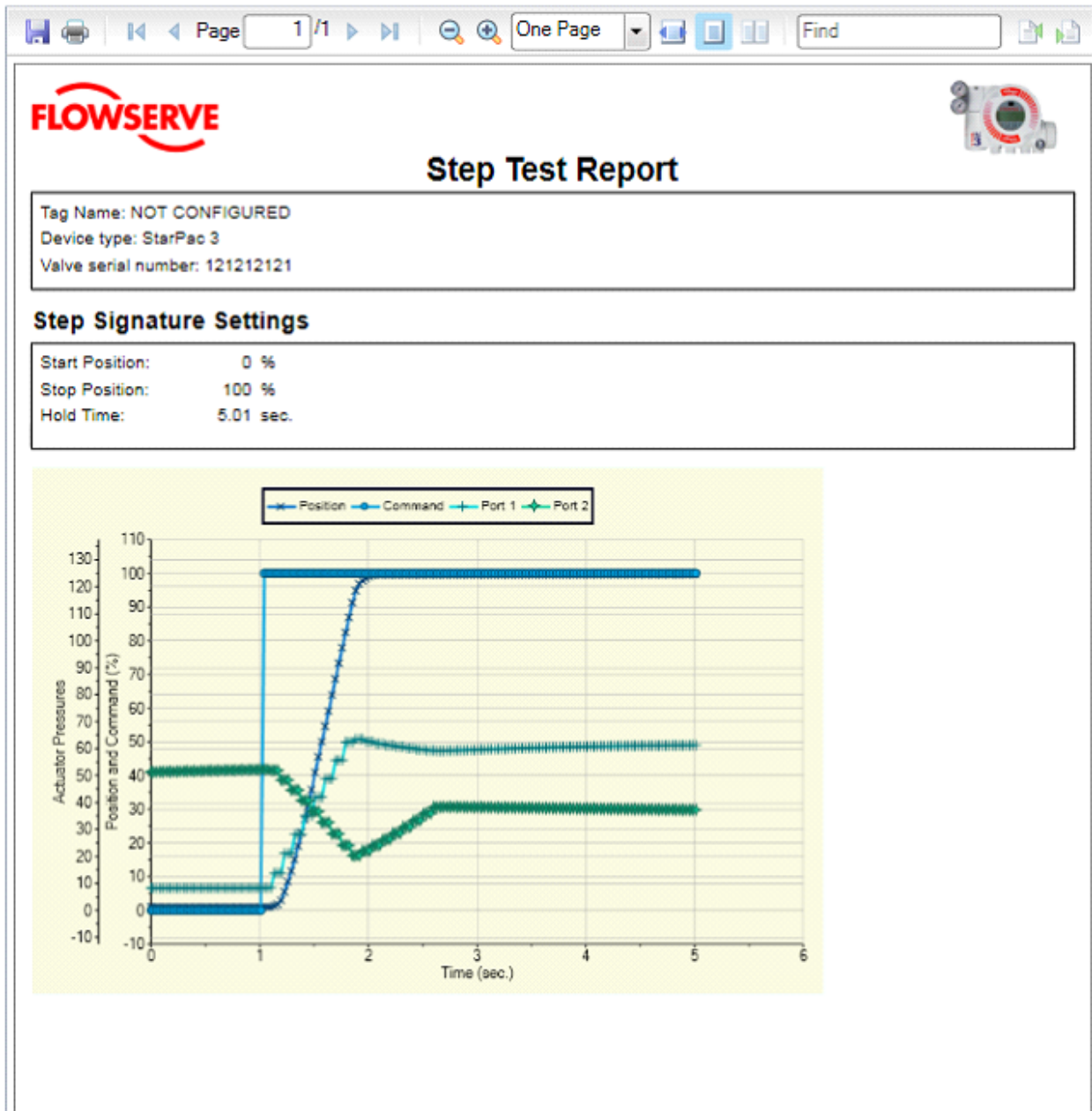


Clicking *Start* initiates a new signature using the Ramp Signature Settings and also clears all from the graphs.

Clicking *Stop* aborts a currently running test; or, stops a retrieve operation.

Clicking *Print Report* opens a Print Preview tab. In order to print a graph, you must check the **Add to report** check box under the desired graph. The generated report is in PDF format and can be saved or printed from the preview.





Clicking *Export to Text...* opens a file save dialog allowing you to save a tab delimited file containing the data for the currently displayed signature.

## Step Test Compare

The Step Test Comparison page displays two previously saved step test files for an overlay comparison. The comparison includes file information, step test settings, and graphed data. Difference data is also displayed on the graphs.

The **File Information** area allows the user to load two files. The files are loaded by selecting the "1..." and "2..." buttons. This area then shows the tag ID, the date the file was saved, and the file name for each file.

File Information

	Tag Name:	File Date:	File Path:
File 1 ...	FV342	10/2/2013	C:\Users\esilva\Desktop\tests\Sig_test\2013_10_02_10_09_15
File 2 ...	FV342	10/2/2013	C:\Users\esilva\Desktop\tests\Sig_test\2013_10_02_10_09_15

The **Graph Settings** area allows the user to select which information will be displayed on the graphs. The user can select between data sets from file 1, file 2, and the differences. Each difference data point is calculated by subtracting the value of the data point in the second file from the corresponding data point in the first file.

Graph Settings

1	2	Δ	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Position
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Command
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Port 1 Pressure
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Port 2 Pressure
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Process Temperature
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Process Upstream Pressure
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Process Downstream Pressure
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Process Pressure Drop
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Process Flow

The **Step Test Settings** area contains the information used to run the step test and any other information that may affect the results. This information is shown for each file in a side-by-side comparison.

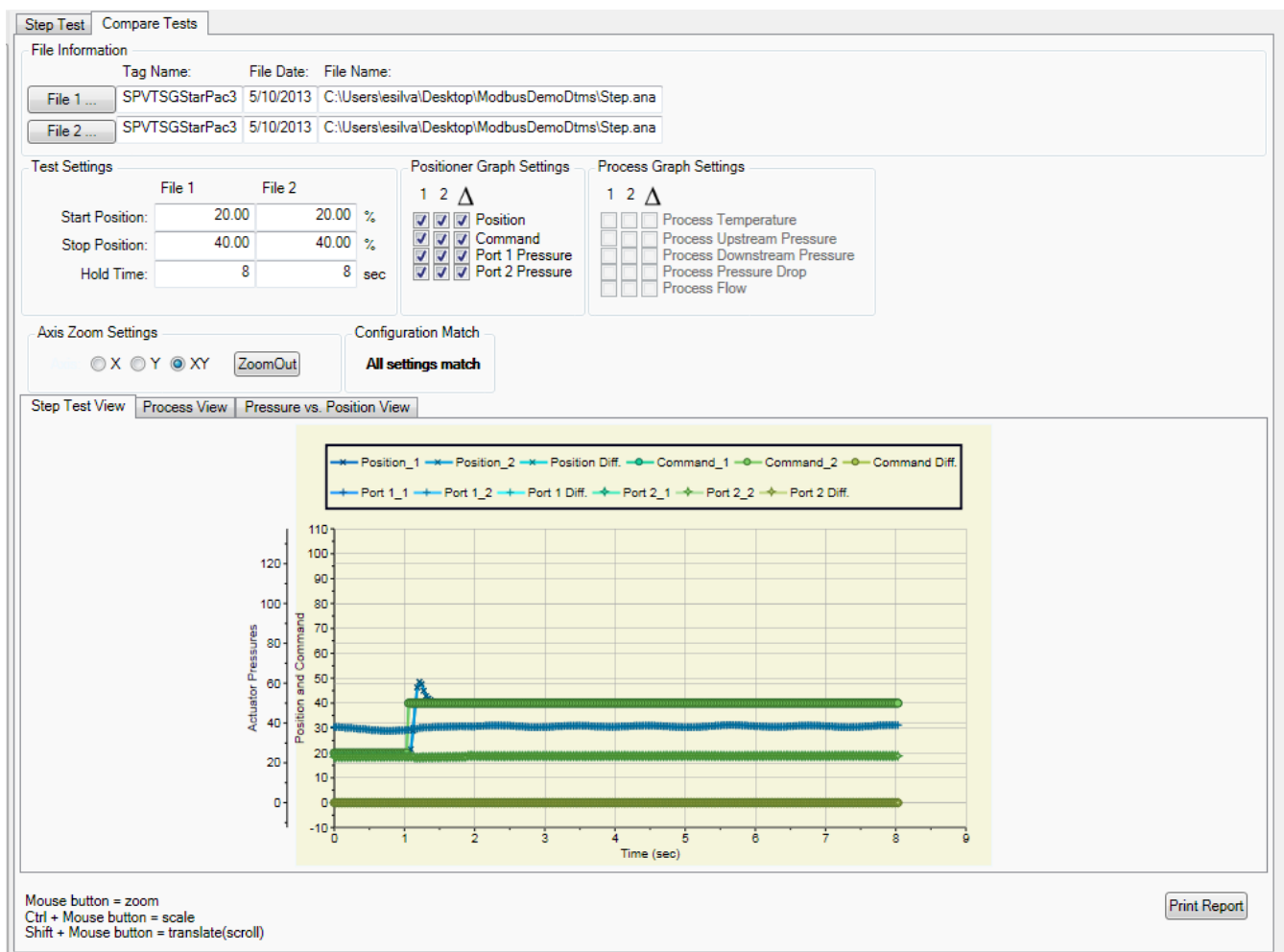
Test Settings

	File 1:	File 2:	
Start Position:	0.0	0.0	%
Stop Position:	0.0	0.0	%
Hold Time:	0.0	0.0	sec

The graphs are identical to those shown in the step test (Step Test, Process, Pressure vs. Position); but, they each show the data for both files along with differences between the two files.



## StarTalk™ DTM Help for StarPac 3 System



The **"Print Report"** button sends a printer friendly version of the comparison data to a printer. Remember to check the **Add to report** check box to print the desired graph(s) on the report.



## Step Test Comparison Report

## File Information

## File 1 ...

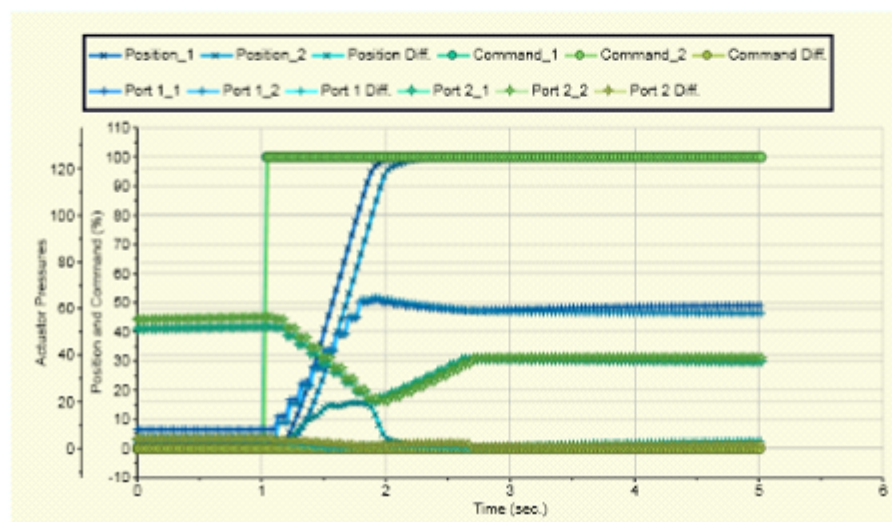
Tag Name: NOT CONFIGURED  
File Date: 10/10/2013  
File Path: C:\Program Files (x86)\Flowserve\StarTalk XP\User\STARPAC3\Step\_2013\_10\_10\_13\_21\_16\_NOT CONFIGURED

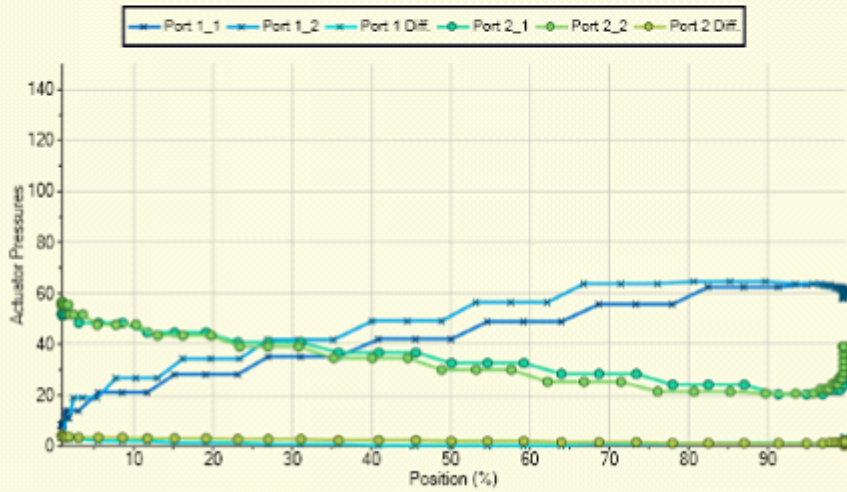
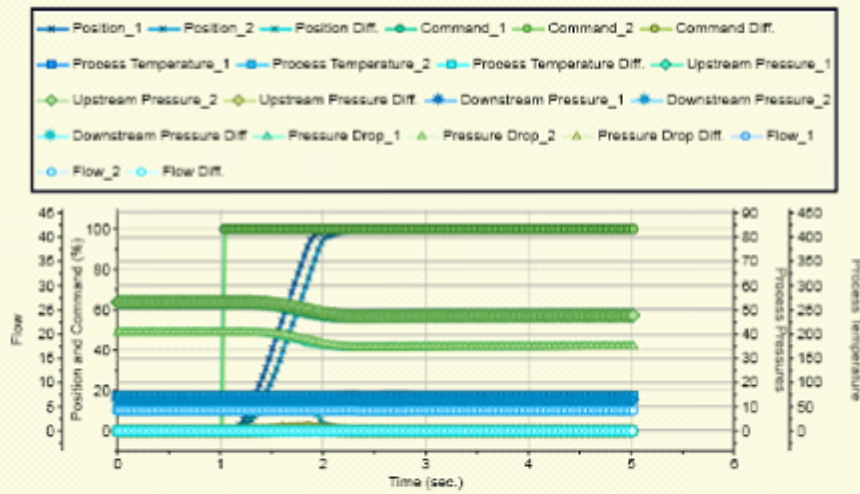
## File 2 ...

Tag Name: NOT CONFIGURED  
File Date: 10/10/2013  
File Path: C:\Program Files (x86)\Flowserve\StarTalk XP\User\STARPAC3\Step\_2013\_10\_10\_13\_28\_07\_NOT CONFIGURED

### Test Settings

	#1	#2
Start Position:	0.00	0.00
Stop Position:	100.00	100.00
Hold Time:	5	5

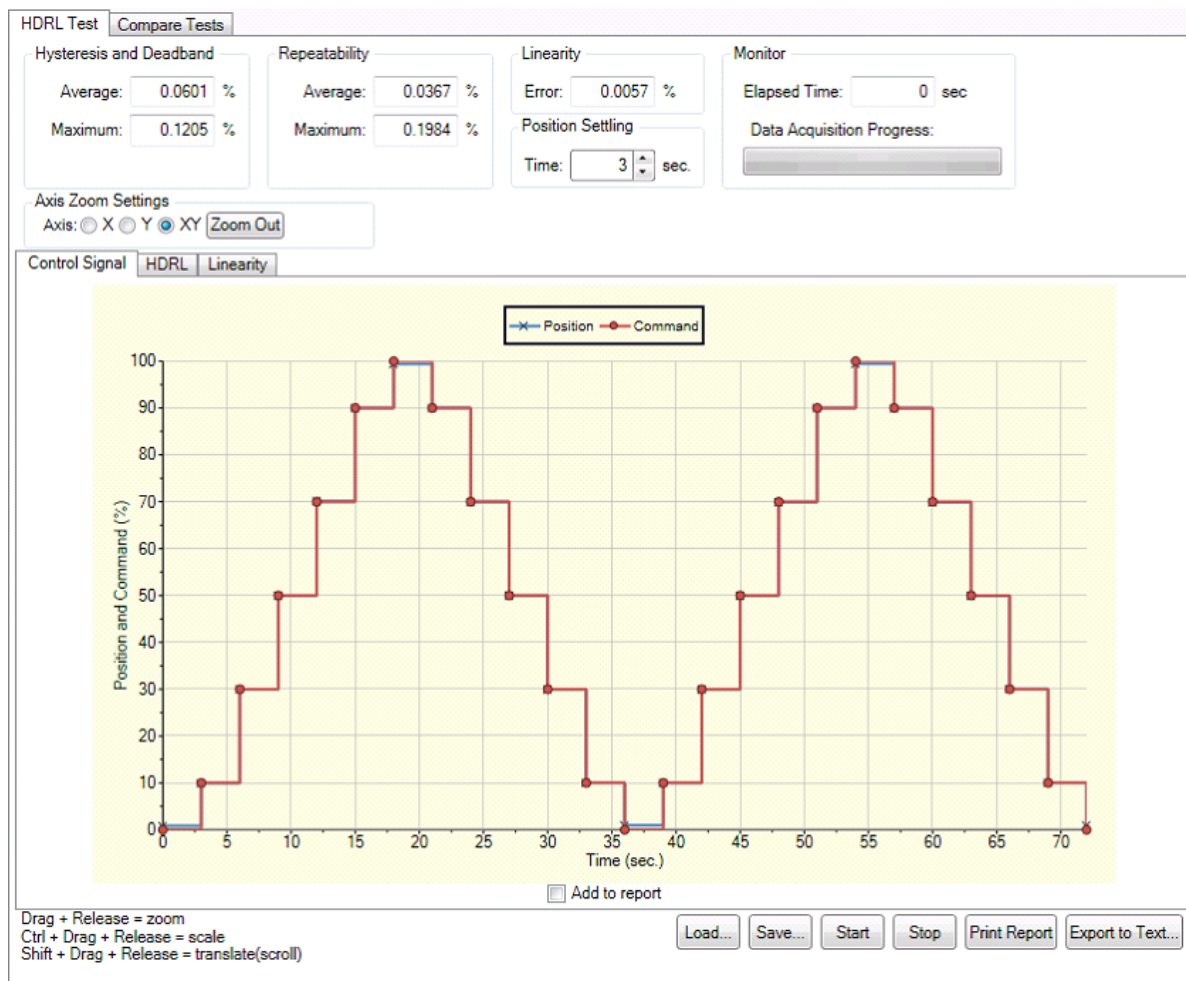




## HDRL

The HDRL page allows you to adjust settings and run an HDRL test. Hysteresis, Deadband, Repeatability and Linearity (HDRL) tests are powerful tools for bench marking valve performance in a shop or installed valves that are not in service. By stepping the valve up and down through these preset points and monitoring the response, a valve assembly can quickly be tested and verified that it is operating to specification.

**CAUTION: During a test the valve will not respond to control signals and movement of the valve stem will occur.**



### Hysteresis And Deadband

The Average and Maximum values from the test for the combined hysteresis and deadband are shown.

The positioner has no method to separate the hysteresis from the deadband. These values indicate how close the position feedback value gets to the same position when approaching that position from different directions.



Hysteresis and Deadband

Average:

0.0601

%

Maximum:

0.1205

%

## Repeatability

The Average and Maximum values from the test for the repeatability of the system are shown. Repeatability measures how close the position feedback comes to the same position when approached from the same direction each time.

Repeatability

Average:

0.0367

%

Maximum:

0.1984

%

## Linearity

The Linearity value shows how closely the system follows a straight line, best fit to the response.

Linearity

Error:

0.0057

%

## Position Settling

Set this value to allow the position to settle after the command change. Larger actuators usually require this time to be set to higher values.

Position Settling

Time:

3

sec.

The **Monitor** box shows information regarding the **Elapsed Time**, and the **Data**

Monitor

Elapsed Time:

0

sec

Data Acquisition Progress:

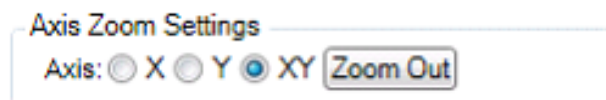
At the top, left of the graph window is the **Axis Zoom Settings** box.

Select the X radio button to cause all zoom operations to occur exclusively along the x-axis.

Select the Y radio button to cause all zoom operations to occur exclusively along the y-axis.

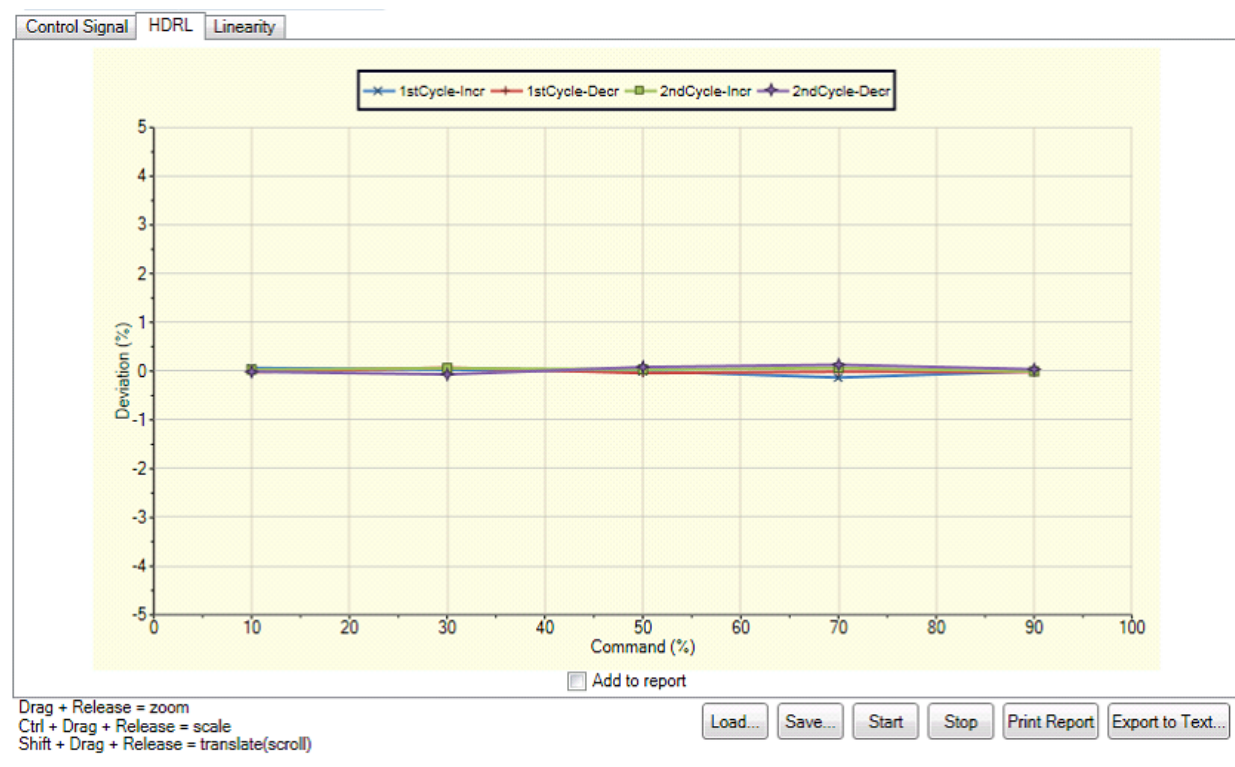
Select the XY radio button to cause all zoom operations to occur on both axes.

Click the *Zoom Out* button to undo any previously performed zoom actions.



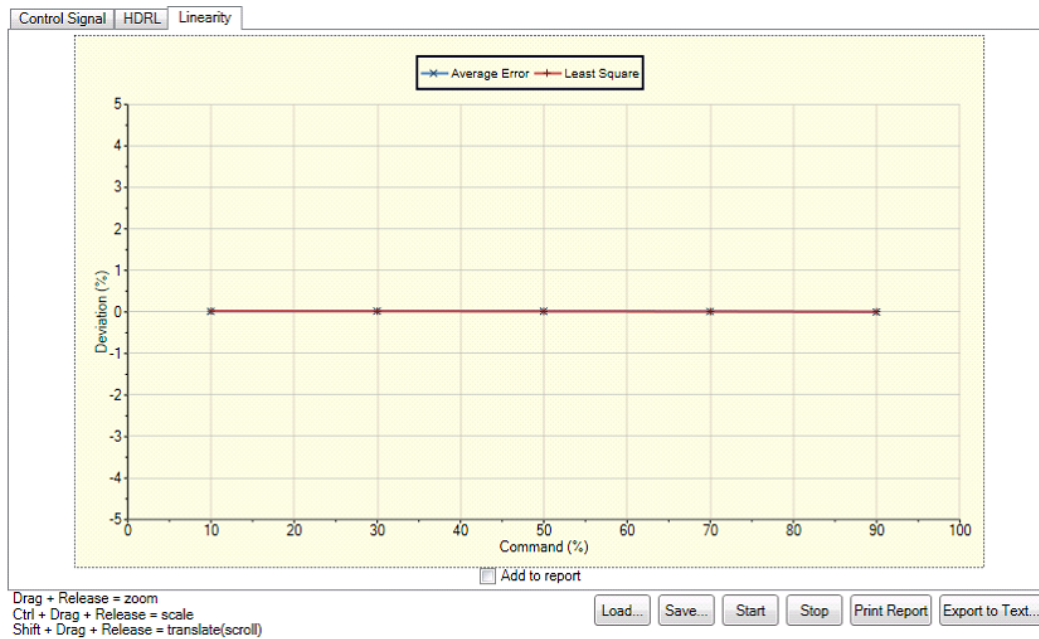
The three tabs after the axis controls allow viewing the acquired data.

This graph shows the calculated hysteresis + deadband and repeatability values over the command.



This graph shows the position error (or how closely the valve follows a straight line) over the commanded position.

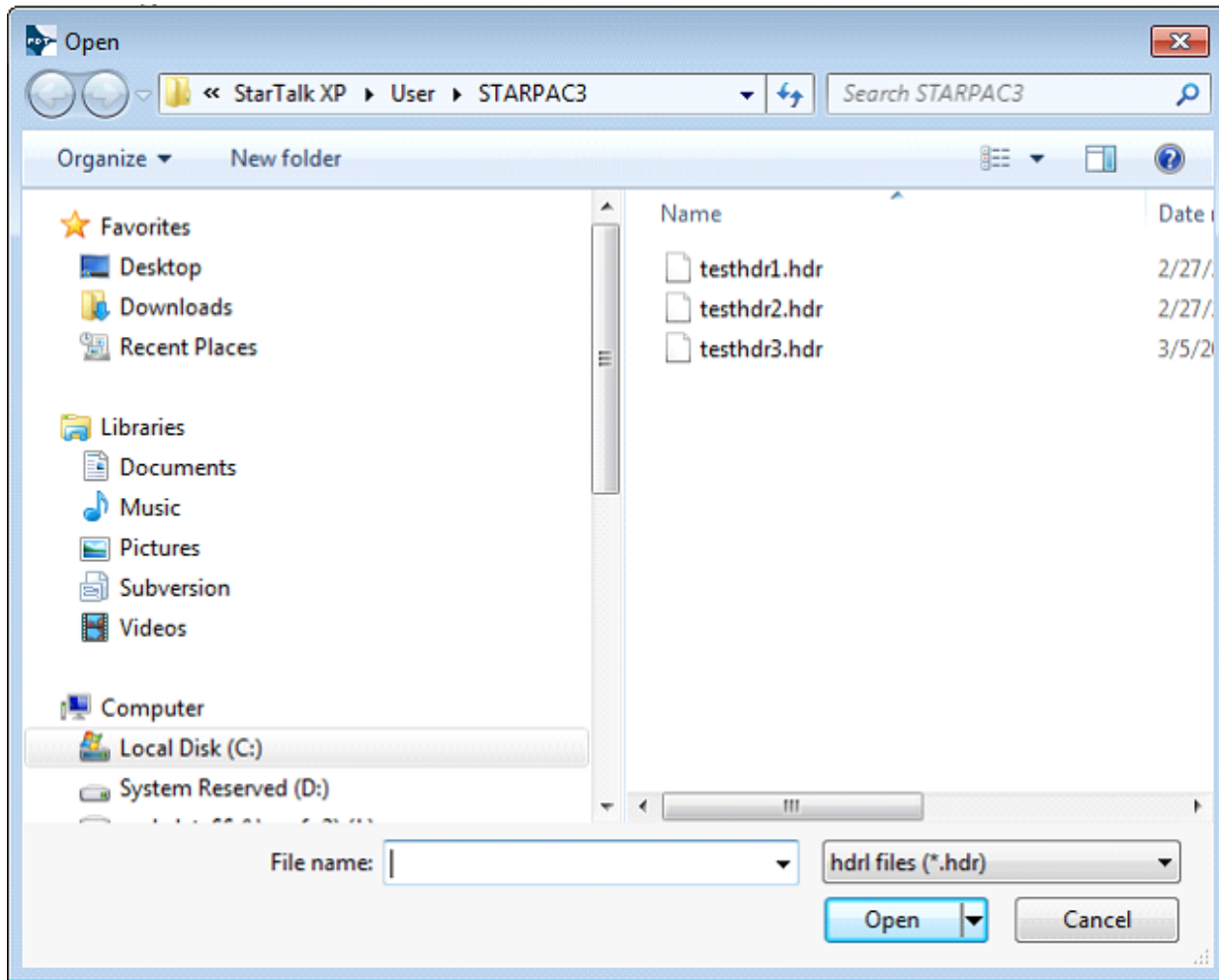




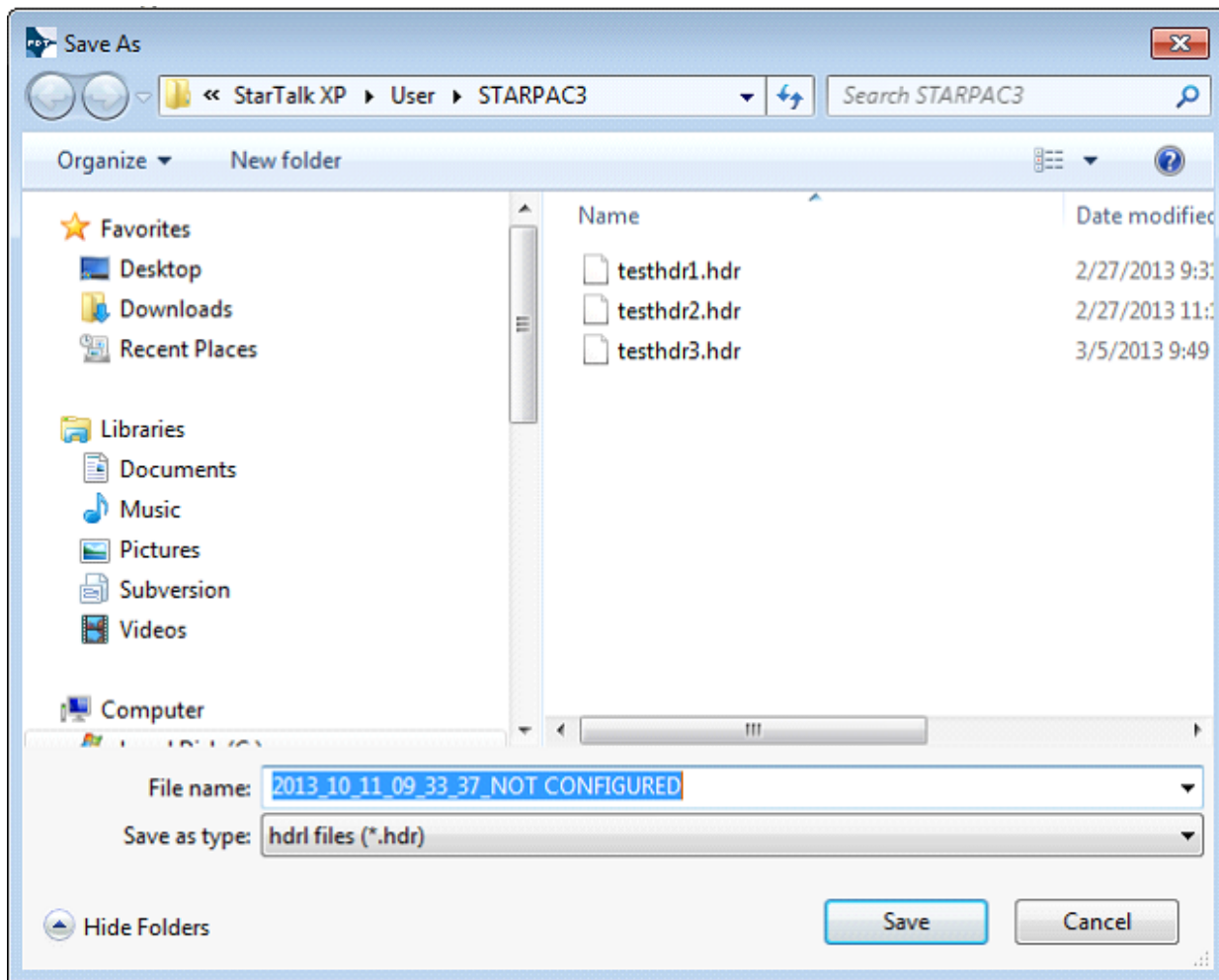
Under the graph display area is a set of buttons allowing the user to perform various actions.



Clicking *Load...* Opens a file selection dialog which allows opening of a previously saved test.



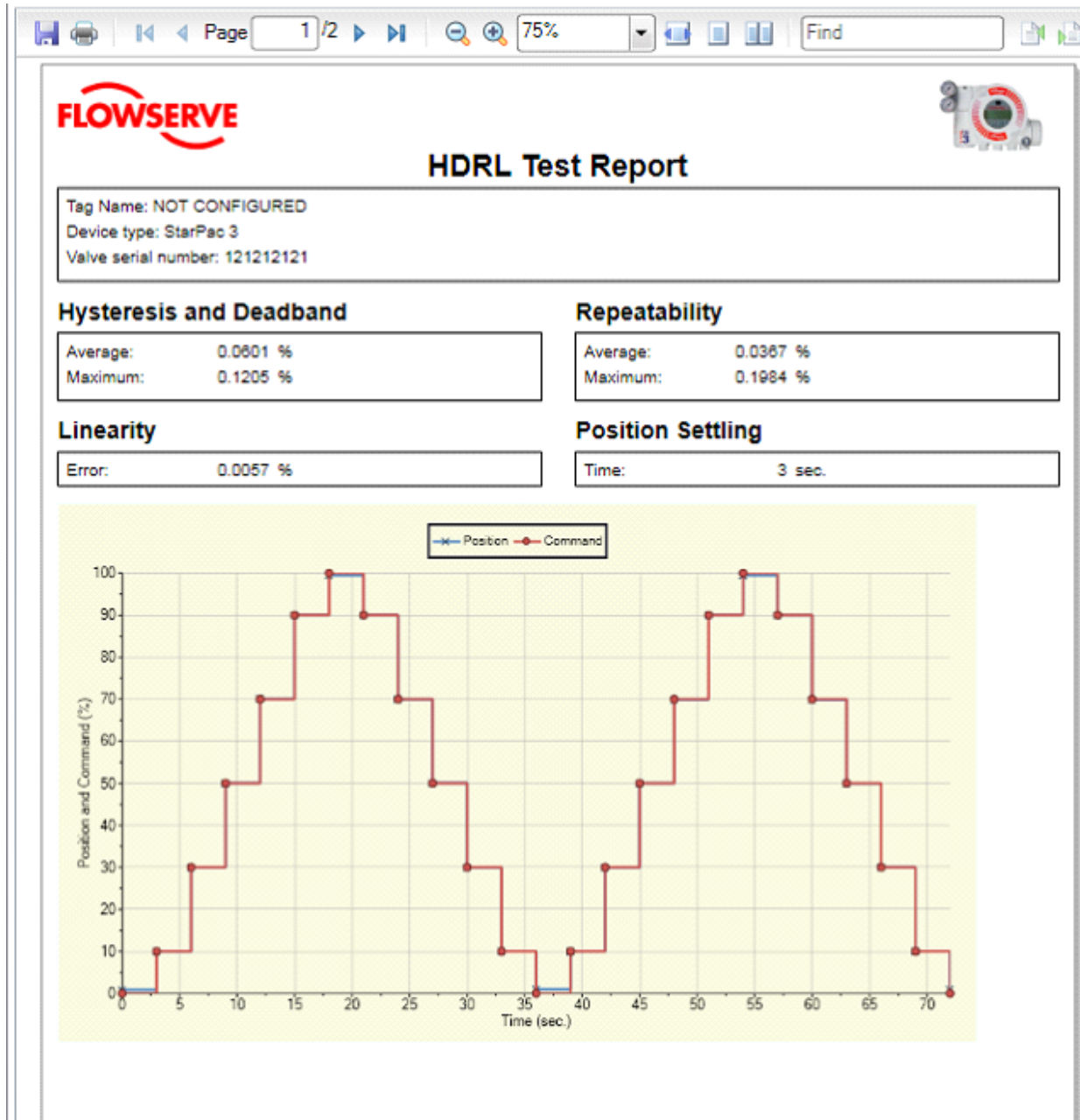
Clicking **Save...** opens a file save dialog which allows saving of the currently displayed test.

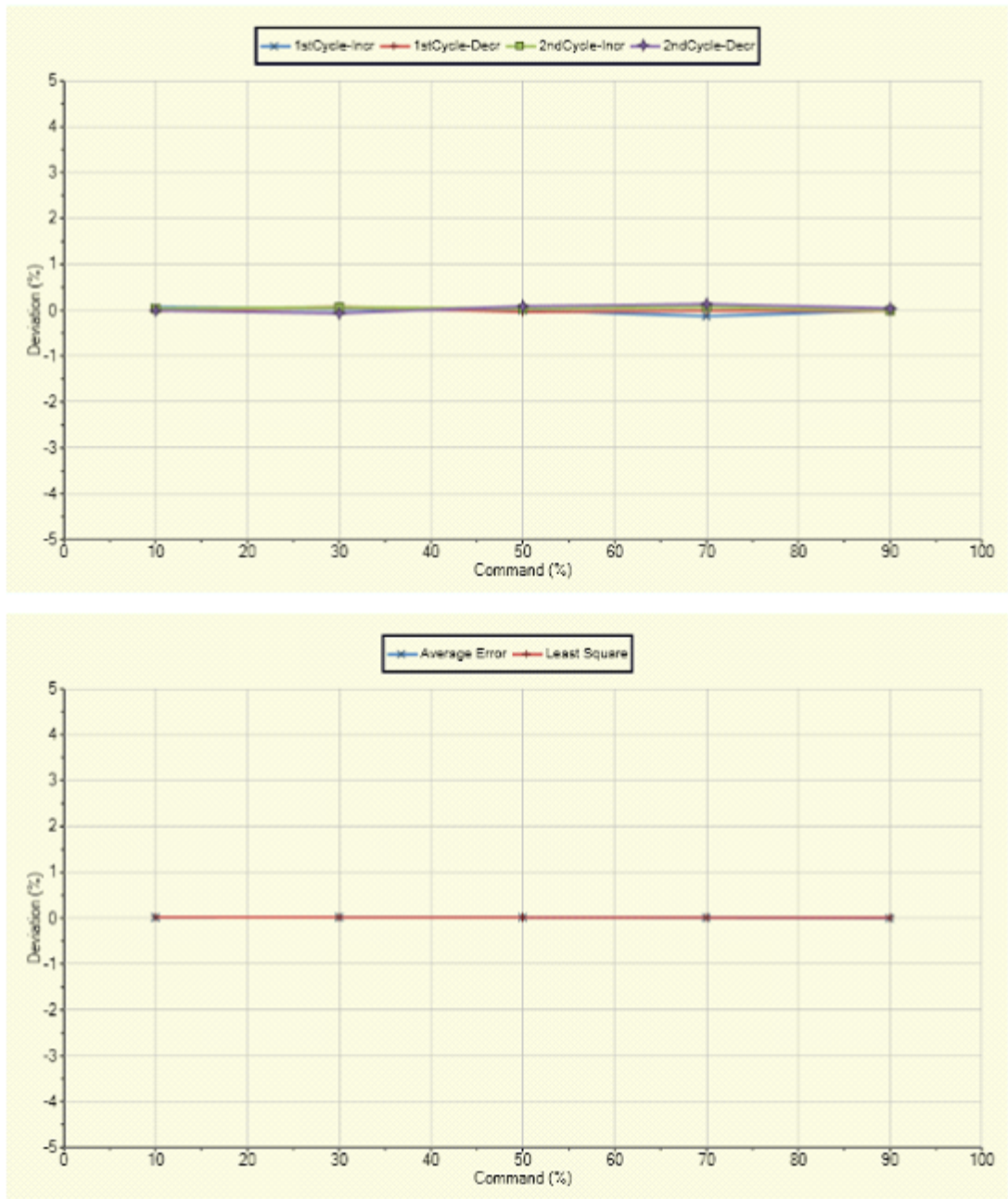


Clicking *Start* initiates a new test using the Position Settings and also clears all data from the graphs.

Clicking *Stop* aborts a currently running test.

Clicking *Print Report* opens a Print Preview tab. In order to print a graph, you must check the **Add to report** check box under the desired graph. The generated report is in PDF format and can be saved or printed from the preview.



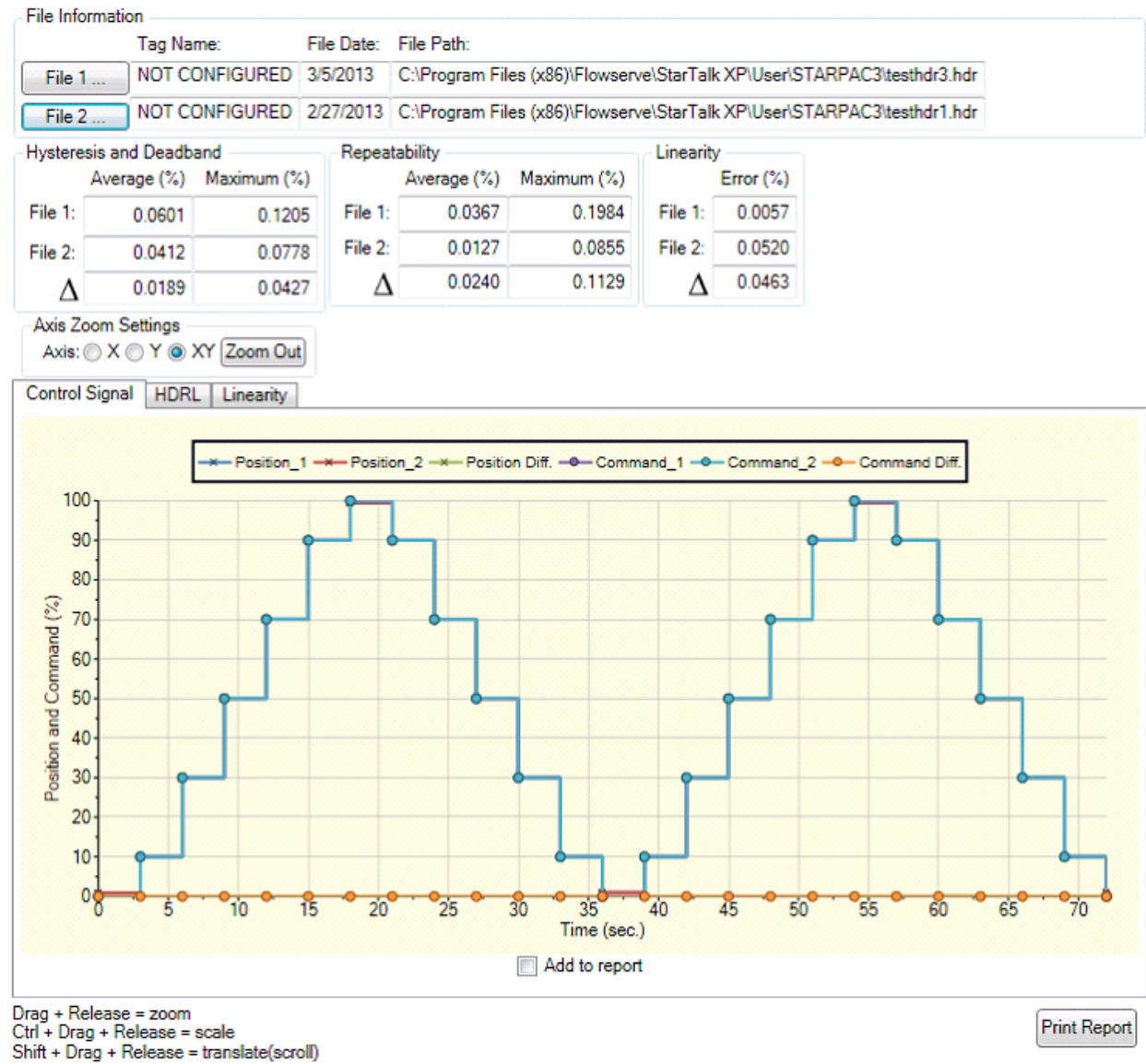


Clicking *Export to Text...* opens a file save dialog allowing you to save a tab delimited file containing the data for the currently displayed test.



## HDRL Compare Tests

The HDRL Compare page displays two previously saved HDRL files for an overlay comparison. The comparison includes file information, hysteresis and deadband, repeatability, linearity error and graphed data.



### File Information

The files are loaded by selecting the "1..." and "2..." buttons. This area then shows the tag ID, the date the file was saved, the file name and the position settling time for each file.

File Information

	Tag Name:	File Date:	File Path:
File 1 ...	NOT CONFIGURED	2/27/2013	C:\Program Files (x86)\Flowserve\StarTalk XP\User\STARPAC3\testhdr1.hdr
File 2 ...	NOT CONFIGURED	3/5/2013	C:\Program Files (x86)\Flowserve\StarTalk XP\User\STARPAC3\testhdr3.hdr

### Hysteresis and Deadband



This area shows the values for the average and maximum combined hysteresis and deadband. It also shows the difference between the values of the first file compared to the second file.

Hysteresis and Deadband		
	Average (%)	Maximum (%)
File 1:	0.0412	0.0778
File 2:	0.0601	0.1205
$\Delta$	0.0189	0.0427

### Repeatability

The Repeatability area shows the values for the average and maximum repeatability. It also shows the difference between the values from the first file compared to the second file.

Repeatability		
	Average (%)	Maximum (%)
File 1:	0.0127	0.0855
File 2:	0.0367	0.1984
$\Delta$	0.0240	0.1129

### Linearity Error

The Linearity Error area shows the values of linearity. It also shows the difference between the values from the first file compared to the second file.

Linearity	
	Error (%)
File 1:	0.0520
File 2:	0.0057
$\Delta$	0.0463

At the top, left of the graph window is the **Axis Zoom Settings** box.

Select the X radio button to cause all zoom operations to occur exclusively along the x-axis.

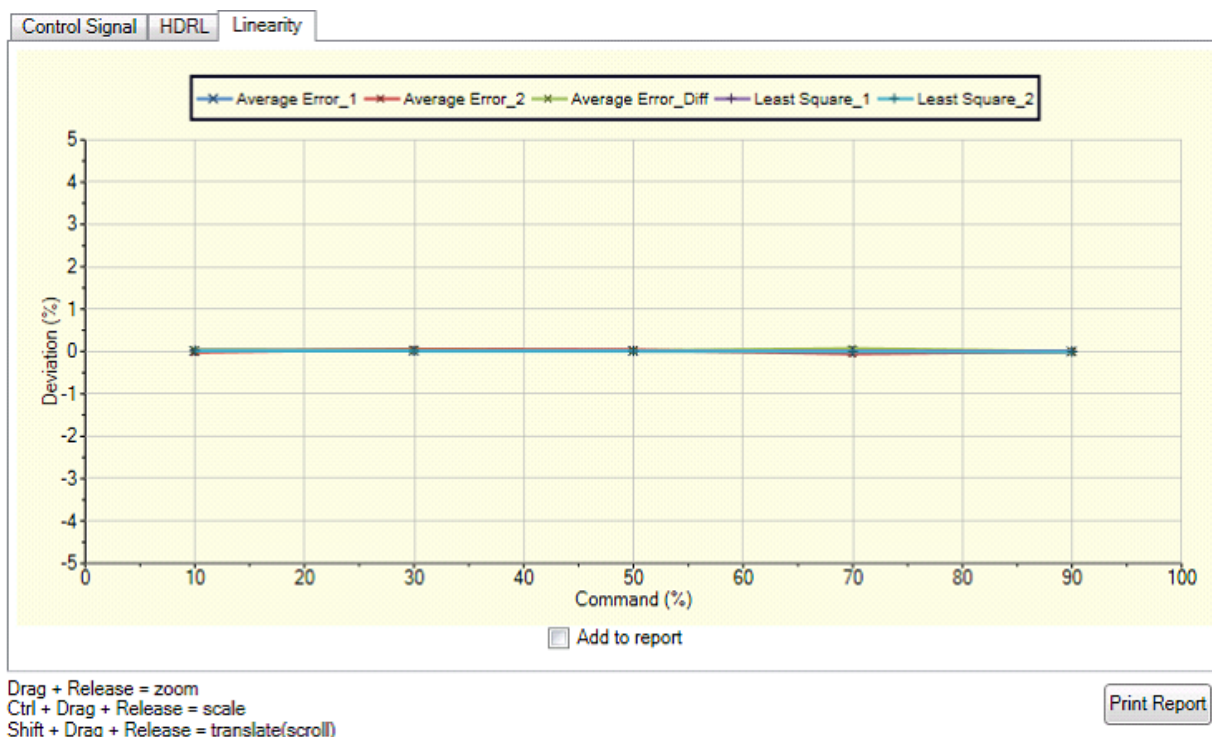
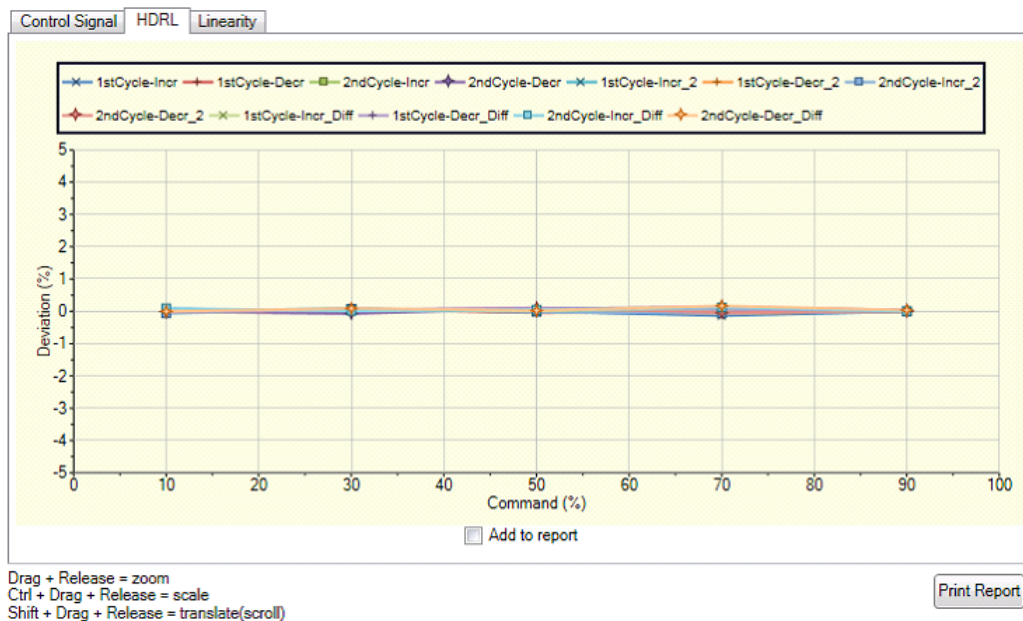
Select the Y radio button to cause all zoom operations to occur exclusively along the y-axis.

Select the XY radio button to cause all zoom operations to occur on both axes.

Click the *Zoom Out* button to undo any previously performed zoom actions.

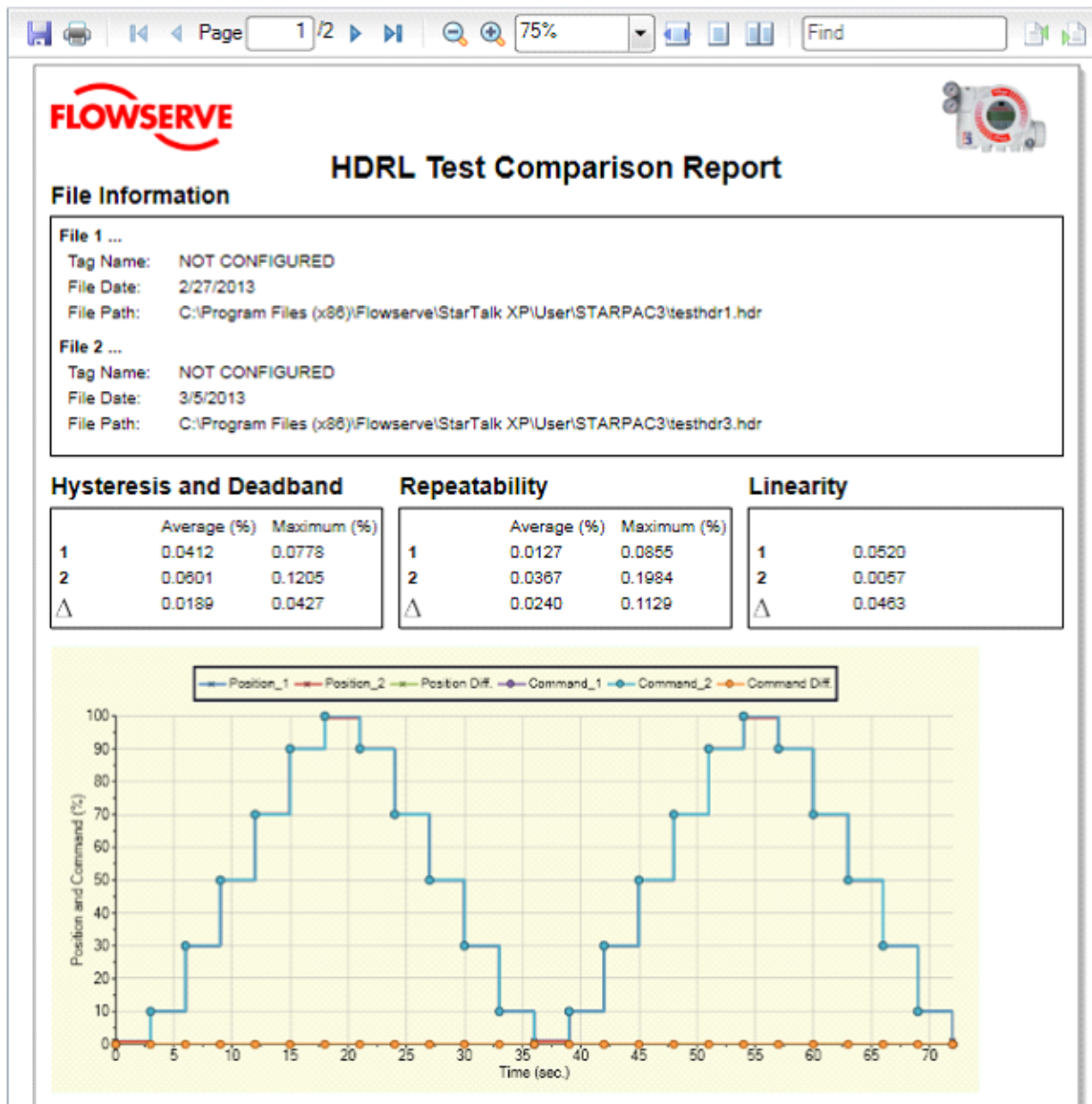
Axis Zoom Settings	
Axis: <input type="radio"/> X <input type="radio"/> Y <input checked="" type="radio"/> XY	<input type="button" value="Zoom Out"/>

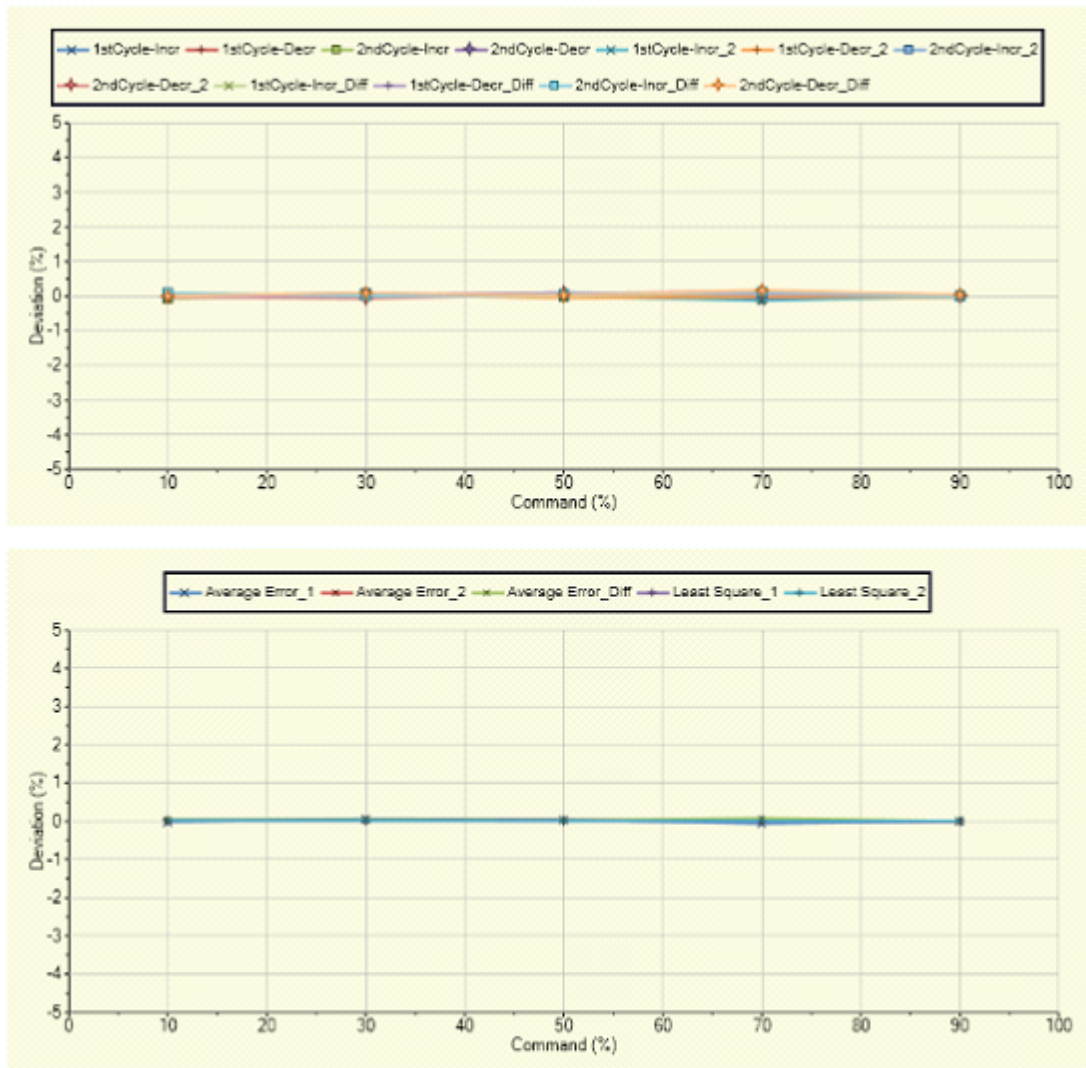
The three tabs after the axis controls allow viewing the comparison data.



The **"Print Report"** button sends a printer friendly version of the comparison data to a printer. Remember to check the **Add to report** check box to print the desired graph(s) on the report.









## ***StarTalk™ DTM Help for StarPac 3 System***

### **Calibration**

---

*Calibration* pages allow simple calibration of all sensors and functions. This selection automatically redirects to the *Actuator Calibration* page.



### Actuator Calibration

Calibrates the actuator pressure sensors in the unit. The process requires that the valve stroke from full open to full closed. Because the valve will change position during this process, you must confirm that you want to proceed. You will then be prompted for the instrument air supply pressure to the unit. If the air supply varies by more than 1 psi during the calibration, the test may abort. Hence, a regulator may be required if the air supply is not stable. The unit will then complete the calibration process by stroking the valve open and closed over 30 to 60 seconds. Upon successful completion, the display will momentarily flash the message “Calibration Successful”.

**WARNING:** Notify personnel working nearby that the valve will stroke during this procedure; otherwise, serious injury may occur.

The STARPAC 3 performs the entire operation. Enter the supply pressure and click start. The Calibration will commence and take ~2-5 minutes.

Calibration Status

Air supply pressure    psig

Actuator last calibrated

Port 1 A/D value

Port 2 A/D value



## StarTalk™ DTM Help for StarPac 3 System

### Analog Input 1 Calibration

Calibrate the first analog input of the StarPac system. During the calibration, a reference milliamp source should be connected to terminals 24(-) and 25(+) (StarPac II) or 3(+) and 4(-) (StarPac I) or 4(+) and 13(-) (StarPac 3) of the terminal block. The display will give instructions to adjust the signal until the reference meter reads 4 mA. When the 4 mA value has been accepted, the user is then prompted to set the 20 mA value. If the CANCEL key is pressed at any time, all of the calibration values are returned to their original value. The number shown at the end of the second line indicates the raw A/D value that the unit is receiving and is only for reference during calibration.

Follow the Wizard pages below to complete the calibration.

Introduction

Preparation

Step 1

Step 2

Step 3

Step 4

Step 5

#### Introduction

The following procedure performs a linear, two point, calibration on a 4-20 mA input channel. It does so by recording the A/D converter readings for 4 mA and 20 mA and then by calculating a calibration factor.

**WARNING: During this procedure you may need to open the User Interface Terminal cover. NEVER do so in an explosive environment. Refer to your company practices and procedures for such situations.**

Next

Introduction	Preparation	Step 1	Step 2	Step 3	Step 4	Step 5
--------------	-------------	--------	--------	--------	--------	--------

**Preparation**

The following items are needed to perform the calibration.

1. 4 - 20 mA current source
2. Small "flat head" screwdriver

Introduction	Preparation	Step 1	Step 2	Step 3	Step 4	Step 5
--------------	-------------	--------	--------	--------	--------	--------

**Step 1) Connect the current source**

1. Remove the StarPac 3 User Interface cover.
2. Locate posts 4 and 13.
3. Using the small screwdriver, attach the positive lead to post 4.
4. Attach the negative lead to post 13.
5. Click Next to continue.



## StarTalk™ DTM Help for StarPac 3 System

Introduction

Preparation

Step 1

Step 2

Step 3

Step 4

Step 5

**Step 2) 4 mA point**

1. Set the current source to 0%. (Typically 4 mA.)
2. Wait until the A/D reading stabilizes. (< 5 units change)
3. Click Next to continue.

0% mA A/D value

Calibration Status

Waiting for 4 mA setting...

Back

Next

Introduction

Preparation

Step 1

Step 2

Step 3

Step 4

Step 5

**Step 3) 20 mA point**

1. Set the current source to 100%. (Typically 20 mA.)
2. Wait until the A/D reading stabilizes. (< 5 units change)
3. Click Next to continue.

100% mA A/D value

Calibration Status

Waiting for 20 mA setting...

Back

Next



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Step 1
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Step 3
Step 4
Step 5

## Step 4) Accept Calibration

1. You may edit the 0% and 100% mA A/D values.
2. You may click Design to use default values.
3. Click Apply to accept the displayed values and continue.

Low A/D value

High A/D value

A/D Factor

Calibration Status

Waiting to apply settings and continue...

Design

Back

Apply

Introduction
Preparation
Step 1
Step 2
Step 3
Step 4
Step 5

## Step 5) Check Calibration

1. Set the current source to 0% mA and compare the Calibrated Reading with the setting on the current source.
2. Perform step 1 of this procedure with 50% mA and 100% mA.
3. Click Finish to return to beginning of calibration.

(NOTE: Calibration assumes 4 & 20 mA were used as calibration end points.)

Calibrated Reading
mA

Calibrated Reading
%

Back

Finish

## Analog Input 2 Calibration

Calibrate the second analog input of the StarPac II or 3 system. During the calibration, a reference milliamp source should be connected to terminals 22(-) and 23(+) or 14(-) and 5(+) of the terminal block. The display will give instructions to adjust the signal until the reference meter reads 4 mA.

When the 4 mA value has been accepted, you are then prompted to set the 20 mA value. If the CANCEL key is pressed at any time, all of the calibration values are returned to their original value. The number shown at the end of the second line indicates the raw A/D value that the unit is receiving and is only for reference during calibration.

Follow the Wizard pages below to complete the calibration.

Introduction

Preparation

Step 1

Step 2

Step 3

Step 4

Step 5

### Introduction

The following procedure performs a linear, two point, calibration on a 4-20 mA input channel. It does so by recording the A/D converter readings for 4 mA and 20 mA and then by calculating a calibration factor.

**WARNING:** During this procedure you may need to open the User Interface Terminal cover. NEVER do so in an explosive environment. Refer to your company practices and procedures for such situations.

Next

Introduction	Preparation	Step 1	Step 2	Step 3	Step 4	Step 5
--------------	-------------	--------	--------	--------	--------	--------

**Preparation**

The following items are needed to perform the calibration.

1. 4 - 20 mA current source
2. Small "flat head" screwdriver

Introduction	Preparation	Step 1	Step 2	Step 3	Step 4	Step 5
--------------	-------------	--------	--------	--------	--------	--------

**Step 1) Connect the current source**

1. Remove the StarPac 3 User Interface cover.
2. Locate posts 5 and 14.
3. Using the small screwdriver, attach the positive lead to post 5.
4. Attach the negative lead to post 14.
5. Click Next to continue.



## StarTalk™ DTM Help for StarPac 3 System

Introduction

Preparation

Step 1

Step 2

Step 3

Step 4

Step 5

**Step 2) 4 mA point**

1. Set the current source to 0%. (Typically 4 mA.)
2. Wait until the A/D reading stabilizes. (< 5 units change)
3. Click Next to continue.

0% mA A/D value

Calibration Status

Waiting for 4 mA setting...

Back

Next

Introduction

Preparation

Step 1

Step 2

Step 3

Step 4

Step 5

**Step 3) 20 mA point**

1. Set the current source to 100%. (Typically 20 mA.)
2. Wait until the A/D reading stabilizes. (< 5 units change)
3. Click Next to continue.

100% mA A/D value

Calibration Status

Waiting for 20 mA setting...

Back

Next

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Step 5

## Step 4) Accept Calibration

1. You may edit the 0% and 100% mA A/D values.
2. You may click Design to use default values.
3. Click Apply to accept the displayed values and continue.

Low A/D value

High A/D value

A/D Factor

Calibration Status

Waiting to apply settings and continue...

Design

Back

Apply

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Preparation
Step 1
Step 2
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Step 5

## Step 5) Check Calibration

1. Set the current source to 0% mA and compare the Calibrated Reading with the setting on the current source.
2. Perform step 1 of this procedure with 50% mA and 100% mA.
3. Click Finish to return to beginning of calibration.

(NOTE: Calibration assumes 4 & 20 mA were used as calibration end points.)

Calibrated Reading
mA

Calibrated Reading
%

Back

Finish



## Analog Output 1 Calibration

Calibrate the first analog output of the StarPac device. During the calibration procedure, a reference milliamp meter should be connected to terminals 9(-) and 10(+) of the terminal block. (Terminals 15(-) and 6(+) for StarPac 3) The display will give instructions to use the F1 and F2 keys to adjust the signal until the reference meter reads 4 mA. When the 4 mA value has been accepted, you will be prompted to set the 20 mA value. If the CANCEL key is pressed at any time, all of the calibration values are returned to their original value. The number shown at the end of the second line indicates the raw D/A value that the unit is outputting, which is only used for reference during calibration.

Follow the Wizard pages below to complete the calibration.

Introduction

Preparation

Step 1

Step 2

Step 3

Step 4

Step 5

### Introduction

The following procedure performs a linear, two point, calibration on a 4-20 mA output channel. It does so by recording the D/A converter values for 0% mA and 100% mA and then by calculating a calibration factor.

**WARNING:** During this procedure you may need to open the User Interface Terminal cover. NEVER do so in an explosive environment. Refer to your company practices and procedures for such situations.

Design reading

15.99

mA

Design reading

50.16

%

Next

Signal output

0

10000

20000

30000

40000

50000

60000

D/A output:

32835

Introduction
Preparation
Step 1
Step 2
Step 3
Step 4
Step 5

## Preparation

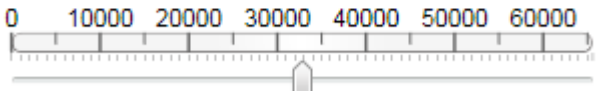
The following items are needed to perform the calibration.

1. Ammeter capable of measuring 4 to 20 mA.
2. Small "flat head" screwdriver

Design reading
mA

Design reading
%

Back
Next

Signal output


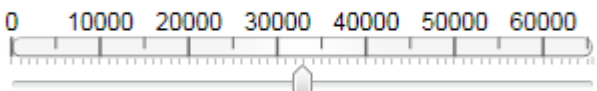
D/A output:

Introduction
Preparation
Step 1
Step 2
Step 3
Step 4
Step 5

## Step 1) Connect the current source

1. Remove the StarPac 3 User Interface cover.
2. Locate posts 6 and 15.
3. Using the small screwdriver, attach the positive lead to post 6.
4. Attach the negative lead to post 15.
5. Click Next to continue.

Back
Next

Signal output


D/A output:





## StarTalk™ DTM Help for StarPac 3 System

Introduction

Preparation

Step 1

Step 2

Step 3

Step 4

Step 5

**Step 2) 0% mA point**  
  

1. Adjust Signal Output until you read 4 mA on the ammeter or desired 0% mA value.

2. Observe Design Reading to help you get close to the 4 mA target.

3. Click Next to continue.

Note: Use the left and right arrow keys to "fine-tune" the adjustment.

0% mA A/D value

32835

Calibration Status

Waiting to set Analog Output channel 0% value.

Back

Next

Signal output

0

10000

20000

30000

40000

50000

60000

D/A output:

10922

Introduction

Preparation

Step 1

Step 2

Step 3

Step 4

Step 5

**Step 3) 100% mA point**  
  

1. Adjust Signal Output until you read 20 mA on the ammeter or the desired 100% value.

2. Once again, observe Design Reading to help you get close to the 20 mA target.

3. Click Next to continue.

Note: Use the left and right arrow keys to "fine-tune" the adjustment.

100% mA A/D value

10922

Calibration Status

Waiting to set Analog Output channel 100% value.

Back

Next

Signal output

0

10000

20000

30000

40000

50000

60000

D/A output:

54612

Introduction
Preparation
Step 1
Step 2
Step 3
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Step 5

## Step 4) Accept Calibration

1. You may edit the 0% and 100% mA A/D values.
2. You may click Design to use default values.
3. Click Apply to accept the displayed values and continue.

Low A/D value

High A/D value

A/D Factor

Calibration Status

Design

Back

Apply

Signal output

D/A output:

Introduction
Preparation
Step 1
Step 2
Step 3
Step 4
Step 5

## Step 5) Check Calibration

1. Adjust Signal Output to a minimum value and compare the Calibrated Reading with the reading on the ammeter.
2. Perform step 1 of this procedure with a mid-range and maximum value.
3. Click Finish to set the new calibration values to the device.

Calibrated Reading
mA

Calibrated Reading
%

Back

Finish

Signal output

D/A output:



## Analog Output 2 Calibration

Calibrate the second analog output of the StarPac II or 3 system. During the calibration procedure a reference milliamp meter should be connected to terminals 7(-) and 8(+) of the terminal block. (Terminals 16(-) and 7(+) for StarPac 3) The display will give instructions to use the F1 and F2 keys to adjust the signal until the reference meter reads 4 mA. When the 4 mA value has been accepted, the user is then prompted to set the 20 mA value. If the CANCEL key is pressed at any time, all of the calibration values will be returned to their original value. The number shown at the end of the second line indicates the raw D/A value that the unit is outputting, which is only used for reference during calibration. Configuration of the variable and scaling for the channel is performed in the Configuration Menu.

Follow the Wizard pages below to complete the calibration.

Introduction

Preparation

Step 1

Step 2

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Step 4

Step 5

Introduction

The following procedure performs a linear, two point, calibration on a 4-20 mA output channel. It does so by recording the D/A converter values for 0% mA and 100% mA and then by calculating a calibration factor.

WARNING: During this procedure you may need to open the User Interface Terminal cover. NEVER do so in an explosive environment. Refer to your company practices and procedures for such situations.

Design reading

15.99

mA

Design reading

50.16

%

Next

Signal output

0

10000

20000

30000

40000

50000

60000

D/A output:

32835

Introduction
Preparation
Step 1
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Step 5

## Preparation

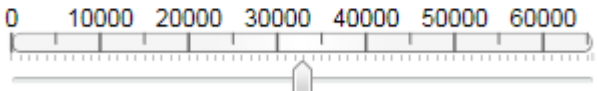
The following items are needed to perform the calibration.

1. Ammeter capable of measuring 4 to 20 mA.
2. Small "flat head" screwdriver

Design reading
mA

Design reading
%

Back
Next

Signal output


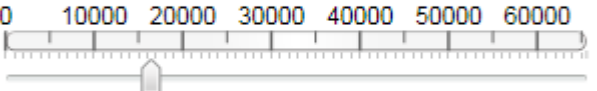
D/A output:

Introduction
Preparation
Step 1
Step 2
Step 3
Step 4
Step 5

## Step 1) Connect the current source

1. Remove the StarPac 3 User Interface cover.
2. Locate posts 7 and 16.
3. Using the small screwdriver, attach the positive lead to post 7.
4. Attach the negative lead to post 16.
5. Click Next to continue.

Back
Next

Signal output


D/A output:



## StarTalk™ DTM Help for StarPac 3 System

Introduction

Preparation

Step 1

Step 2

Step 3

Step 4

Step 5

**Step 2) 0% mA point**  
  

1. Adjust Signal Output until you read 4 mA on the ammeter or desired 0% mA value.

2. Observe Design Reading to help you get close to the 4 mA target.

3. Click Next to continue.

Note: Use the left and right arrow keys to "fine-tune" the adjustment.

0% mA A/D value

32835

Calibration Status

Waiting to set Analog Output channel 0% value.

Back

Next

Signal output

0

10000

20000

30000

40000

50000

60000

D/A output:

10922

Introduction

Preparation

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Step 5

**Step 3) 100% mA point**  
  

1. Adjust Signal Output until you read 20 mA on the ammeter or the desired 100% value.

2. Once again, observe Design Reading to help you get close to the 20 mA target.

3. Click Next to continue.

Note: Use the left and right arrow keys to "fine-tune" the adjustment.

100% mA A/D value

10922

Calibration Status

Waiting to set Analog Output channel 100% value.

Back

Next

Signal output

0

10000

20000

30000

40000

50000

60000

D/A output:

54612

Introduction
Preparation
Step 1
Step 2
Step 3
Step 4
Step 5

## Step 4) Accept Calibration

1. You may edit the 0% and 100% mA A/D values.
2. You may click Design to use default values.
3. Click Apply to accept the displayed values and continue.

Low A/D value

High A/D value

A/D Factor

Calibration Status

Design

Back

Apply

Signal output

0 10000 20000 30000 40000 50000 60000

D/A output:

Introduction
Preparation
Step 1
Step 2
Step 3
Step 4
Step 5

## Step 5) Check Calibration

1. Adjust Signal Output to a minimum value and compare the Calibrated Reading with the reading on the ammeter.
2. Perform step 1 of this procedure with a mid-range and maximum value.
3. Click Finish to set the new calibration values to the device.

Calibrated Reading
mA

Calibrated Reading
%

Back

Finish

Signal output

0 10000 20000 30000 40000 50000 60000

D/A output:



### Pressure Transducer Calibration

---

Simultaneously calibrates the process pressure sensors in the unit and is the recommended sensor calibration method. Because it calibrates both sensors at the same time, this procedure automatically moves the valve's stroke to mid-stroke. This calibration should always be done with the flow through the valve blocked. If there is flow through the valve you must use the individual calibration options. Because the valve will change position during this process, you must confirm that you want to proceed. You will then have three more menu options to set for Zero, Span and Sensor Gain.

**Zero** - Apply the atmospheric pressure or the minimum pressure you want to use for your reference and press ACCEPT. The two numbers on the right side of the display are register values that indicate how steady the pressure is in the valve body. Next, enter the actual pressure applied in the indicated engineering units and press ACCEPT.

**Span** - Apply the maximum pressure you want to use for your reference and press ACCEPT. The two numbers on the right side of the display indicate how steady the pressure is in the valve body. Next, enter the actual pressure applied in the indicated engineering units and press ACCEPT.

**Sensor Gain** - This option configures the input amplifier range for the installed sensors using the Up and Dn function keys. Flowserve's standard sensors normally use the 39mV < out < 78mV selection. Normally, you should not have to change this option. If you have questions, consult your Flowserve representative.

**P1** - Calibrates the upstream process pressure sensor in the unit. You will then have two more menu options to set for Zero and Span.

- **Zero** - Apply the atmospheric pressure or the minimum pressure you want to use for your reference and press ACCEPT. The number on the right side of the display indicates how steady the pressure is in the valve body. Next, enter the actual pressure applied in the indicated engineering units and press ACCEPT.
- **Span** - Apply the maximum pressure you want to use for your reference and press ACCEPT. The numbers on the right side of the display indicate how steady the pressure is in the valve body. Next, enter the actual pressure applied in the indicated engineering units and press ACCEPT.

**P2** - Calibrates the downstream process pressure sensor in the unit. You will then have two more menu options to set for Zero and Span.

- **Zero** - Apply the atmospheric pressure or the minimum pressure you want to use for your reference and press ACCEPT. The number on the right side of the display indicates how steady the pressure is in the valve body. Next, enter the actual pressure applied in the indicated engineering units and press ACCEPT.
- **Span** - Apply the maximum pressure you want to use for your reference and press ACCEPT. The number on the right side of the display indicates how steady the pressure is in the valve body. Next, enter the actual pressure applied in the indicated engineering units and press ACCEPT.



## StarTalk™ DTM Help for StarPac 3 System

Follow the Wizard pages below to complete the calibration.

Select Introduction Preparation Step 1 Step 2 Step 3 Step 4 Step 5 Validation

Select transducer(s) to calibrate

☐ Upstream Sensor (P1)

☐ Downstream Sensor (P2)

☒ Both Upstream and Downstream Sensors (P1 and P2)

Next

Select Introduction Preparation Step 1 Step 2 Step 3 Step 4 Step 5 Validation

**Introduction**

The following procedure performs a linear, two point, calibration on one or both process pressure transducers. The output from each transducer is linear and temperature compensated. Pressures applied during the procedure are referred to as "reference pressures."

**WARNING:** During this procedure you may want to remove the transducers from the valve body. NEVER do so with the valve body pressurized. NEVER do so in an explosive atmosphere. NEVER do so if caustic or toxic fluids can leak from the valve body. Refer to your company practices and procedures governing such situations.

P1 Last calibration 5/20/2013

P2 Last calibration 5/20/2013

Next

Select Introduction Preparation Step 1 Step 2 Step 3 Step 4 Step 5 Validation

**Preparation**

You will need to apply two different reference pressures for a full calibration, a minimum and a high pressure. The minimum pressure should be at local atmospheric conditions or at the minimum process pressure. The high pressure should be at the maximum process pressure or at least mid-range. Because a point-slope calibration method is used, you can adjust the calibration by providing new references for the minimum or high pressure. The local atmospheric pressure reference is also updated during this calibration. You will be asked to verify this pressure for your location.

**Note:** Calibration can only be accurately done with the flow deadheaded to get static conditions.

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## StarTalk™ DTM Help for StarPac 3 System

Select	Introduction	Preparation	Step 1	Step 2	Step 3	Step 4	Step 5	Validation
--------	--------------	-------------	--------	--------	--------	--------	--------	------------

**Step 1) Local atmospheric pressure**  

1. Enter the correct atmospheric pressure for your location.
2. Click Next to continue.

Note: Local airports are a good source for determining local atmospheric pressure.

Atmospheric pressure  psi a

Select	Introduction	Preparation	Step 1	Step 2	Step 3	Step 4	Step 5	Validation
--------	--------------	-------------	--------	--------	--------	--------	--------	------------

**Step 2) Open or close the valve**  
Skip this step if you have removed the transducers from the valve body.  
  
To perform a calibration on both transducers you will need to open the valve so both transducers receive the same pressure. Click the button labeled "Open valve (Simultaneous)".  
  

1. Decide which calibration you want to perform.
2. Click the appropriate button.
3. Click Next to continue.

**WARNING: TAKE APPROPRIATE SAFETY PRECAUTIONS BEFORE CAUSING THE VALVE TO OPEN OR CLOSE.**



## StarTalk™ DTM Help for StarPac 3 System

Select Introduction Preparation Step 1 Step 2 Step 3 Step 4 Step 5 Validation

**Step 3) Set minimum pressure reference point**

You may skip this step if you are calibrating **ONLY** the high pressure reference point.

1. Apply atmospheric or minimum pressure to the transducer(s).
2. Wait until the A/D reading(s) stabilizes. (+/- 5 units change).
3. Enter the reference pressure(s).
4. Click Next to continue.

Reference pressure

0.00

psig

P1 A/D Value

3237

P2 A/D Value

3065

Calibration Status

Waiting to accept minimum process pressure calibration point.

Back

Skip

Next

Select Introduction Preparation Step 1 Step 2 Step 3 Step 4 Step 5 Validation

**Step 4) Set high pressure reference point**

You may skip this step if you are calibrating **ONLY** the minimum pressure reference point.

1. Apply a pressure that is at least one half the maximum process pressure.
2. Wait until the A/D reading(s) stabilizes. (+/- 5 units change).
3. Enter the reference pressure(s).
4. Click Next to continue.

Reference pressure

-23.89

psig

P1 A/D Value

18488

P2 A/D Value

18355

Calibration Status

Waiting to accept maximum process pressure calibration point.

Back

Skip

Next



## StarTalk™ DTM Help for StarPac 3 System

Select Introduction Preparation Step 1 Step 2 Step 3 Step 4 Step 5 Validation

### Step 5) Accept calibration

1. You may edit the minimum and high A/D values.
2. Click Next to continue.

Note: The value in the minimum column is derived from a calculation based on the minimum and maximum pressure and the Atmospheric pressure entered during Step 1.

Upstream Pressure (P1) A/D		Downstream Pressure (P2) A/D	
P1 A/D minimum value	3238	P2 A/D minimum value	3065
P1 A/D Low value	3238	P2 A/D Low value	3065
P1 A/D High value	18434	(P2ADHigh)	18302
P1 A/D factor	-0.001572	P2 A/D factor	-0.001568

Calibration Status

Waiting to apply calibrated values.

Back Skip Apply

Select Introduction Preparation Step 1 Step 2 Step 3 Step 4 Step 5 Validation

### Step 6) Check Calibration

1. If possible, apply minimum pressure to the transducer(s).
2. Compare the applied pressure(s) with the reading(s) below.
3. Repeat the above 2 steps for a mid-range and a maximum pressure.
4. You may finish the calibration if the reading(s) match the applied pressure(s) to your satisfaction.
5. Click Finish to complete the calibration and apply the new calibration values to the StarPac.

**Warning: Click Finish only when values are acceptable.**

Upstream Pressure (P1)		Downstream Pressure (P2)	
Calibrated Reading	-23.86	Calibrated Reading	-23.86
P1 Last calibration	6/3/2013	P2 Last calibration	6/3/2013

Calibration Status

Click Finish to end the calibration.

Back Finish

## Stroke Calibration

Calibrate the position feedback sensor in the unit. The process requires that the valve stroke from full open to full closed. Because the valve will change position during this process you must confirm that you want to proceed. You will then be prompted for the valve type; linear or rotary. If the air supply varies by more than 1 psi during the calibration, the test may abort. Hence, a regulator may be required if the air supply is not stable. The unit will then complete the calibration process by stroking the valve open and closed over one to five minutes. Upon successful completion of the process, the system will momentarily flash the message “Calibration Successful”.

**WARNING:** Notify personnel working nearby that the valve will stroke during this procedure; otherwise, serious injury may occur.

The STARPAC 3 performs the entire operation. Enter the mechanical stroke length, then click Start. The calibration will commence and take ~2-4 minutes. You may press Abort at anytime to stop the calibration.

Calibration Status Completed

Stroke length  (in.)

Positioner A/D value

Port 1 pressure  psig

Port 2 pressure  psig

Explanation: Saturation level = Percentage of supply pressure used to saturate the actuator at both extents of travel.

### Thermocouple Calibration

#### StarPac I and II instructions.

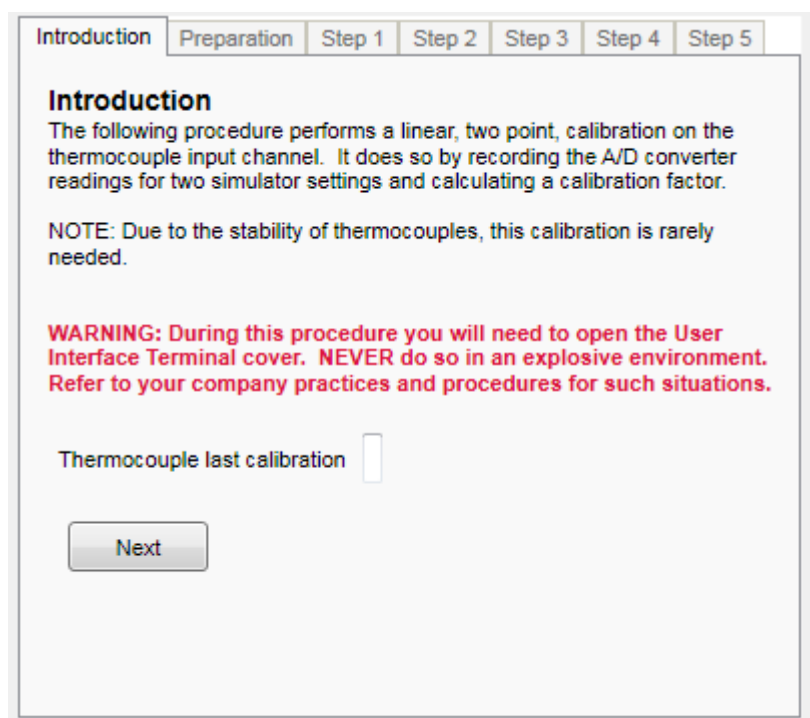
Calibrate the Type-K thermocouple temperature sensor in the unit. You will then have two more menu options to set for Zero and Span. Normally this calibration is done using a temperature controlled bath or a Type-K thermocouple simulator connected to terminals 5 (yellow) and 6 (red).

**StarPac 3 instructions.** This calibration requires you to remove the outer cover and the keypad from the StarPac 3 unit. The keypad will hang on the keypad cable while you calibrate the thermocouple. If the keypad detaches from the unit, follow these instructions. Normally this calibration is done using a temperature controlled bath or a Type-K thermocouple simulator connected to terminals 9(yellow) and 10(red), the connection points that are the farthest to the right on the terminal block under the keyboard.

**Zero** - Apply a signal equal to the minimum temperature you want to use for your reference and press ACCEPT. The number on the right side of the display indicates how steady the temperature input is reading. Next enter the actual temperature applied in the indicated engineering units and press ACCEPT.

**Span** - Apply a signal equal to the maximum temperature you want to use for your reference and press ACCEPT. The number on the right side of the display indicates how steady the temperature input is reading. Next, enter the actual temperature applied in the indicated engineering units and press ACCEPT.

Follow the Wizard pages below to complete the calibration.



The screenshot shows a web-based wizard interface for thermocouple calibration. At the top, there is a navigation bar with tabs for 'Introduction', 'Preparation', 'Step 1', 'Step 2', 'Step 3', 'Step 4', and 'Step 5'. The 'Introduction' tab is currently selected. Below the navigation bar, the 'Introduction' section contains the following text: 'The following procedure performs a linear, two point, calibration on the thermocouple input channel. It does so by recording the A/D converter readings for two simulator settings and calculating a calibration factor.' Below this text is a 'NOTE' stating: 'Due to the stability of thermocouples, this calibration is rarely needed.' Further down is a 'WARNING' in red text: 'During this procedure you will need to open the User Interface Terminal cover. NEVER do so in an explosive environment. Refer to your company practices and procedures for such situations.' At the bottom of the introduction section, there is a label 'Thermocouple last calibration' followed by an empty text input field. Below the input field is a 'Next' button.

Introduction	Preparation	Step 1	Step 2	Step 3	Step 4	Step 5
--------------	-------------	--------	--------	--------	--------	--------

**Preparation**

The following items are needed to perform the calibration.

1. Thermocouple simulator
2. Small "flat head" screwdriver

Back

Next

Introduction	Preparation	Step 1	Step 2	Step 3	Step 4	Step 5
--------------	-------------	--------	--------	--------	--------	--------

**Step 1) Connect the thermocouple calibrator**

1. Remove the StarPac 3 cover.
2. Carefully remove the keypad interface.
3. Locate connection points 9 and 10 on the sensor interface block.
4. Detach the thermocouple leads from these posts.
5. Attach the chromel lead (Yellow) from the calibrator to post 9.
6. Attach the alumel lead (Red) from the calibrator to post 10
7. Click Next to continue.

Back

Next



## StarTalk™ DTM Help for StarPac 3 System

Introduction Preparation Step 1 **Step 2** Step 3 Step 4 Step 5

**Step 2) Low process temperature**

1. Set the calibrator to simulate a low temperature.
2. Enter the simulated temperature value into the Reference Temperature.
3. Click Next to continue.

Temperature A/D Value

Reference Temperature  °F

Calibration Status  
Waiting to set minimum process temperature...

Back Skip Next

Introduction Preparation Step 1 Step 2 **Step 3** Step 4 Step 5

**Step 3) High process temperature**

1. Set the calibrator to simulate a high temperature.
2. Enter the simulated temperature value into the Reference Temperature.
3. Click Next to continue.

Temperature A/D Value

Reference Temperature  °F

Calibration Status  
Waiting to set maximum process temperature...

Back Skip Next



## StarTalk™ DTM Help for StarPac 3 System

Introduction

Preparation

Step 1

Step 2

Step 3

Step 4

Step 5

**Step 4) Accept Calibration**  

1. You may edit the Low and High A/D values.

2. Click Next to accept the displayed values and continue.

Low A/D value

1715

High A/D value

0

A/D Factor

-0.058309

Calibration Status

Waiting to apply thermocouple calibration values...

Back

Skip

Apply

Introduction

Preparation

Step 1

Step 2

Step 3

Step 4

Step 5

**Step 5) Check Calibration**  

1. Set the simulator to a low temperature setting and compare the Calibrated Reading with the setting on simulator.

2. Perform step 1 of this procedure with mid-range temperature and high temperature settings.

3. Click Finish to set the new calibration values to the device

Temperature calibrated reading

384 °F

Calibration Status

Click Finish to end the calibration.

Back

Finish





### Quick Calibration

Calibrates the actuator pressure sensors in the unit and the position feedback sensor in the unit. The process requires that the valve stroke from full open to full closed. Because the valve will change position during this process, you must confirm that you want to proceed. You will then be prompted for the instrument air supply pressure to the unit. If the air supply varies by more than 1 psi during the calibration, the test may abort. Hence, a regulator may be required if the air supply is not stable.

The unit will then complete the calibration process by stroking the valve open and closed over 30 to 60 seconds. Upon successful completion, the display will momentarily flash the message “Calibration Successful”.

**WARNING:** Notify personnel working nearby that the valve will stroke during this procedure; otherwise, serious injury may occur.

NOTE: The STARPAC 3 performs three operations at once. Actuator calibration, Stroke Calibration, and Auto Tune. Enter the supply pressure and click Start. The calibration will commence and take ~2-5 minutes.

Calibration Status

Completed

Air supply pressure  psig

Actuator last calibrated

Positioner last calibrated

Port 1 A/D value

Port 2 A/D value

Positioner A/D value

### Commissioning Wizard

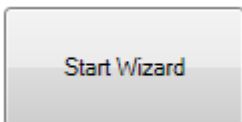
---

The commissioning Wizard will reuse existing pages of the DTM in one continuous configuration wizard to help the user know the minimum required configuration at commissioning.

The pages of the Wizard are as following:

- [Units](#)
- [Air Action](#)
- [Analog Input 1 \(AI1\)](#)
- [Analog Input 2 \(AI2, Aux\)](#)
- [Analog Output 1 \(AO1\)](#)
- [Analog Output 2 \(AO2\)](#)
- Pressure Verification (Compare the reading of the pressure sensor to make sure it is reading correctly)
- Temperature Verification (Compare the reading of the temperature sensor to make sure it is reading correctly)
- [Process Variables](#)
- [Positioner Tuning](#)
- [Process Control Tuning](#)

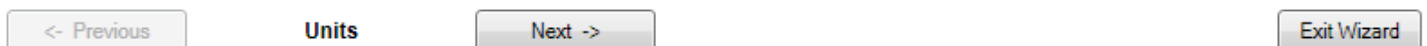
*Click the "Start Wizard" button to display the wizard pages*



The picture below are a representation of the wizard pages.

**Note:** all the wizard pages are duplicate pages from the Calibration and configuration pages.

*Configuration -> Units Page*





## StarTalk™ DTM Help for StarPac 3 System

Units of measurement

Liquid flow	<input type="text" value="gpm"/>
Gas flow	<input type="text" value="lbs/hr"/>
Process pressure	<input type="text" value="psig"/>
Actuator pressure	<input type="text" value="psig"/>
Process temperature	<input type="text" value="°F"/>
Atmospheric pressure	<input type="text" value="psia"/>

Custom flow units

Rate unit label	<input type="text" value="KG/S"/>
Total unit label	<input type="text" value="KG/S"/>
Conversion factor	<input type="text" value="0.00"/>
Time base	<input type="text" value="sec"/>

### Configuration -> Air Action page

**Air action**

Air Action Settings

☒ Air-to-open (ATO)  
☐ Air-to-close (ATC)

### Configuration -> Analog Input 1 (AI1) page

**Analog Input 1 (AI1)**

Analog 1 Input (Setpoint)

Command Configuration	4-20 mA Signal Polarity
<input type="radio"/> Analog	<input type="radio"/> Normal
<input checked="" type="radio"/> Digital	<input type="radio"/> Inverted
<input type="radio"/> Remote	

### Configuration -> Analog Input 2 (AI2, AUX) page

**Analog Input 2 (AI2, AUX)**



## StarTalk™ DTM Help for StarPac 3 System

Analog 2 Input (AUX IN)

Function	Input to Flow calculation
Flow Calc Variable	Pressure Drop
Abbreviated unit label	
Value at 4 mA	0.00
Value at 20 mA	100.00

Apply Retrieve

### Configuration -> Analog Output 1 (AO1) page

<- Previous    **Analog Output 1 (AO1)**    Next ->

Analog Output 1

Register to output	2 - ADC value for 4-20mA command
Register Name	ADC value for 4-20mA command
Abbreviated unit label	
Value at 4 mA	0.00
Value at 20 mA	100.00

Apply Retrieve

### Configuration -> Analog Output 2 (AO2) page

<- Previous    **Analog Output 2 (AO2)**    Next ->

Analog Output 2 (AO2):

Variable to Output	Position
Value at 4 mA	0.00
Value at 20 mA	100.00

Apply Retrieve

### Calibration -> Actuator Calibration page

<- Previous    **Actuator Calibration**    Next ->



## StarTalk™ DTM Help for StarPac 3 System

The STARPAC 3 performs the entire operation. Enter the supply pressure and click start. The Calibration will commence and take ~2-5 minutes.

Calibration Status

Completed

Air supply pressure  psig

Actuator last calibrated

Port 1 A/D value

Port 2 A/D value

### Pressure Verification Page

*Note: This page is for verification purpose only, if the process pressure it is not accurate, please go to the calibration -> Process Pressure calibration page and re-calibrate the pressure sensors*

**Pressure Verification**

### Process Pressure Verification

1. If possible, apply minimum pressure to the transducers.
2. Compare the applied pressures with the readings below. Validate the readings at a lower pressure.
3. If possible, apply mid-range and a maximum pressure to the transducers.
4. Compare the applied pressures with the readings below. Validate the readings at a mid-range and maximum range pressure.
5. If not calibrated correctly, please go to the Pressure Transducer calibration page and perform the calibration.

Upstream Pressure (P1)	Downstream Pressure (P2)
Calibrated Reading <input type="text" value="-24"/> psig	Calibrated Reading <input type="text" value="-24"/> psig
P1 Last calibration <input type="text" value="6/3/2013"/>	P2 Last calibration <input type="text" value="6/3/2013"/>

### Temperature Verification Page

*Note: This page is for verification purpose only, if the process temperature it is not accurate, please go to the calibration -> Process Temperature calibration page and re-calibrate the temperature sensors*

**Temperature Verification**

### Temperature calibration verification

1. Set the current source to 0% mA and compare the Calibration Reading with the setting on the current source.
2. Compare the actual or source temperature with the readings below. Validate the readings at a low, mid-range, and maximum temperature when possible.
3. If not calibrated correctly, please go to the Temperature calibration page and perform the calibration.

Temperature calibrated reading  °F

*Configuration -> Process Variables page*



## StarTalk™ DTM Help for StarPac 3 System

<- Previous

Process Variables

Next ->

Process Variable Settings

Process variable

Gas flow

Full scale value

11.00

lbs/hr

Offset

0.00

lbs/hr

Action

☐ Reverse

☒ Direct

Apply

Retrieve

Configuration -> Positioner Tuning page

<- Previous

Positioner Tuning

Next ->

*Process Control Tuning page*



## StarTalk™ DTM Help for StarPac 3 System

### Controller

Mode source

Mode

Action

Process

### Input signal

Source

Command  %

Step size

### PID Settings

Gain

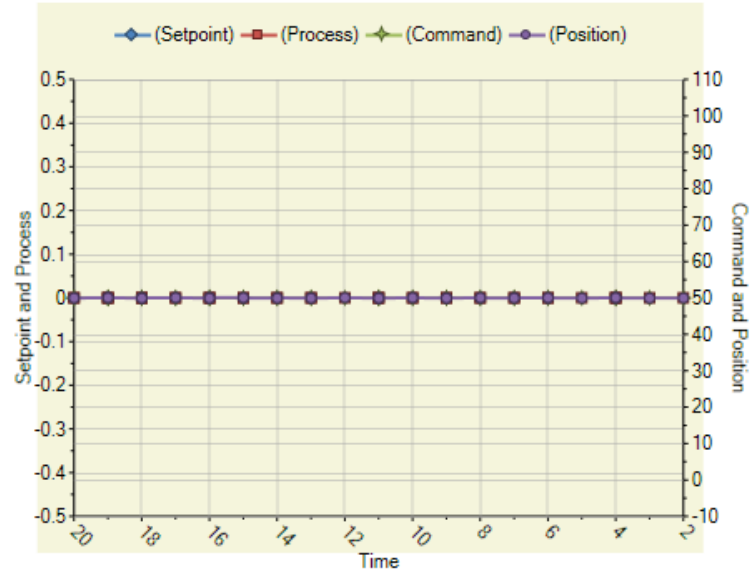
Integral  reps/min

Derivative  min.

### Chart recorder

Setpoint  lbs/h      Command  %

Process  lbs/h      Position  %







### **Configuration**

---

*Configuration* pages provide easy ways to configure the positioner. This selection automatically redirects to the Analog Input 1 configuration page.

Note: All of the configuration pages are sorted alphabetic.

## Air Action

Air Action Settings

☒ Air-to-open (ATO)
   
☐ Air-to-close (ATC)

Apply
 Retrieve

Used to set up the StarPac for the configured actuator failure mode. ATO (Air-to-Open) is normally used for fail-closed valves, ATC (Air-to-Close) is normally used for fail-open valves. If ATC is selected and you will be using an analog command source, configure the analog command to reverse so that 4 mA equals the 100 percent position (open). The following table lists the possible configurations:

Failure Mode	Output 2 (bottom port) is Connected to:	Output 1 (top port) is Connected to:	Spring Failure Position	Air Action
Air Loss, fail-closed: Power Loss; fail-close	Actuator Top	Actuator bottom	above piston	ATO
Air Loss, fail-close: Power Loss; fail-open	Actuator bottom	Actuator Top	above piston	ATC
Air Loss, fail-open: Power Loss; fail-open	Actuator bottom	Actuator Top	below piston	ATC
Air Loss, fail-open: Power Loss; fail-close	Actuator Top	Actuator bottom	below piston	ATO

### Action Buttons

The *Apply* button will save changes to the connected device.

Apply

The *Retrieve* button will retrieve the latest information from the device related to this page.


Retrieve

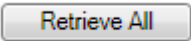
Manage Configuration (VCT) Dataset

Retrieve All
 Load VCT
 Save VCT

Retrieve Configuration from Device Status

Register Count: 0
 Register Record: 358
 Data Acquisition Progress:
 


 Abort

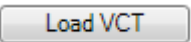
A rectangular button with a light gray background and a thin border, containing the text "Retrieve All" in a blue, sans-serif font.

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

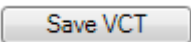
The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

A rectangular button with a light gray background and a thin border, containing the text "Load VCT" in a blue, sans-serif font.

The *Load VCT* button will open an *open file dialog* to allow the select of a VCT file to be load into memory.

A rectangular button with a light gray background and a thin border, containing the text "Save VCT" in a blue, sans-serif font.

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

A rectangular button with a light gray background and a thin border, containing the text "Abort" in a blue, sans-serif font.

The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## Analog Input 1 (AI1)

Analog1 Input (Set point)

Command Configuration

☐ Analog
☒ Digital
☐ Remote

4-20 mA Signal Polarity

☐ Normal
☐ Inverted

Apply

Retrieve

### Analog Input 1

Sets up the first analog input (analog No. 1) in the StarPac system. This analog channel is reserved as a control input. The signal is used either as a valve position command, if the StarPac is in Manual mode, or as the controller setpoint if the StarPac is in Auto mode. (The source of the command or setpoint is selected in the Tune Menu after it has been configured here.) When this option is selected you are first prompted for the interpretation of the analog signal. The signal can be interpreted as Normal (4-20 mA = 0-100%), which means that 4 mA will indicate the 0 percent signal, or as Reverse (4-20 mA = 100-0%), which then interprets 20 mA as the 0 percent signal.

### Loss of Command Configuration

You are prompted for the hold time (in seconds) that you want the system to hold the last command if the 4-20 mA signal should be lost (defined as having the signal drop below 3 mA). The last prompt requests a ramp rate that the system will use to fail the valve if the signal has been lost and the hold time has expired.

### Action Buttons

The *Apply* button will save changes to the connected device.

Apply

The *Retrieve* button will retrieve the latest information from the device related to this page.

Retrieve

Manage Configuration (VCT) Dataset

Retrieve All

Load VCT

Save VCT


Retrieve Configuration from Device Status

Register Count: 0

Register Record: 358

Data Acquisition Progress:

Abort

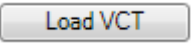
A rectangular button with a light gray background and a thin border, containing the text "Retrieve All" in a blue, sans-serif font.

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

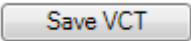
The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

A rectangular button with a light gray background and a thin border, containing the text "Load VCT" in a blue, sans-serif font.

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

A rectangular button with a light gray background and a thin border, containing the text "Save VCT" in a blue, sans-serif font.

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

A rectangular button with a light gray background and a thin border, containing the text "Abort" in a blue, sans-serif font.

The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## Analog Input 2 (AI2, AUX)

Analog 2 Input (AUX IN)

Function:

Flow Calc. Variable:

Abbreviated unit label:

Value at 4 mA:

Value at 20 mA:

### Analog In 2 configuration

Configure the second analog input in the StarPac system. The input can be used as an external input that is used with the internal PID controller, or as an external sensor input for the StarPac to use in its internal operation. If you wish to use the input as a controller input, you must select the NOT CONNECTED option since the scaling for the PID input is done in the Tune menu with the Process variable selection. If you want to feed an external variable into the StarPac, select the variable from the list using the NEXT and PREVIOUS function keys on the menu. Next, you will be asked for a full scale input value in your user-defined units. (This is the process value that corresponds to the 100 percent signal.) The last step is to enter the offset or Zero input value in your user-defined units. (This is the process value that corresponds to the 0 percent signal). The available input variables are:

- Not Connected
- Process Temperature
- Upstream Pressure
- Down Stream Pressure
- Valve Delta Pressure
- Molecular Weight
- Specific Gravity
- Liquid Fudge Factor
- Gas Fudge Factor

### Not Connected

Configures the StarPac unit to ignore the input as an internal variable, but the input may still be used as an input to the controller that is configured with the process variable selection.

### Process Temperature

Uses the value from the Auxiliary input channel as the process temperature for all internal calculations in place of the StarPac sensor. The electronics assumes that the Auxiliary input channel gets its signal from a temperature transmitter.

### Upstream Pressure

Uses the signal from an external pressure transmitter connected to the Auxiliary input channel as the upstream process pressure for all internal calculations in place of the StarPac sensor.



## StarTalk™ DTM Help for StarPac 3 System

### Down Stream Pressure

Uses an external pressure input as the downstream process pressure for all internal calculations in place of the StarPac sensor.

### Valve Delta Pressure

Uses an external pressure input as the process differential pressure for all internal calculations (in place of the StarPac differential pressure calculated by the difference from the StarPac internal pressure sensors). The most common example is when a separate differential pressure transmitter is used for cases when the application cannot withstand pressure drops of at least ten percent of inlet pressure.

### Molecular Weight

Uses an external molecular weight input for all internal calculations in place of the static value stored in the StarPac configuration.

### Specific Gravity

Uses an external Specific Gravity input for all internal calculations in place of the static value stored in the StarPac configuration.

### Liquid Fudge Factor

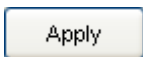
Input that allows you to make dynamic adjustments to the liquid flow calculation based on the value of the input.

### Gas Fudge Factor

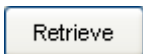
Input that allows you to make dynamic adjustments to the gaseous flow calculation based on the value of the input.

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page.



**Manage Configuration (VCT) Dataset**  

Retrieve All

Load VCT

Save VCT

**Retrieve Configuration from Device Status**  

Register Count:

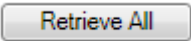
0

Register Record:

358

Data Acquisition Progress:

Abort

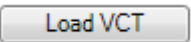
A rectangular button with a light gray background and a thin border. The text "Retrieve All" is centered in a blue, sans-serif font.

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

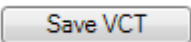
The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

A rectangular button with a light gray background and a thin border. The text "Load VCT" is centered in a blue, sans-serif font.

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

A rectangular button with a light gray background and a thin border. The text "Save VCT" is centered in a blue, sans-serif font.

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

A rectangular button with a light gray background and a thin border. The text "Abort" is centered in a blue, sans-serif font.

The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.





### Analog Output 1 (AO1)

---

**Analog Output 1**  
Register to Output:   
Register Name:   
Abbreviated unit label:   
Value at 4 mA:   
Value at 20 mA:

#### Analog Out 1 configuration

Configures the first analog output channel. Select a variable from the list using the NEXT and PREVIOUS function keys on the menu. You will then be asked for a full scale output value in your selected user units. (This is the process value that corresponds to 20 mA.) The last step is to enter the offset or Zero output value in your selected user units. (This is the process value that corresponds to 4 mA.) Available output variables are:

- Valve Position
- Liquid Flow
- ISA Up Stream Press
- ISA Dn Stream Press
- ISA Delta Pressure
- Process Temperature
- Gas Flow
- Auxiliary 4-20 Input
- Register Number

#### Valve Position

Current valve position.

#### Liquid Flow

Current liquid flow rate.

#### ISA Up Stream Press

Current compensated upstream line pressure (defined as two pipe diameters upstream of the valve).

#### ISA Dn Stream Press

Current compensated downstream line pressure (defined as six pipe diameters downstream of the valve).

#### ISA Delta Pressure

Current differential pressure using the pressure definitions above.



## StarTalk™ DTM Help for StarPac 3 System

### Process Temperature

Current process temperature.

### Gas Flow

Current gaseous flow rate.

### Auxiliary 4-20 Input

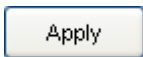
Re-transmits the 4-20 mA signal from analog in No. 2.

### Register Number

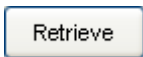
Allows the selection of any internal register value as an output. If a string register is selected, zero will be displayed in the data field.

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page.



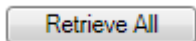
Manage Configuration (VCT) Dataset

Retrieve Configuration from Device Status

Register Count:

Register Record:

Data Acquisition Progress:

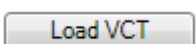


Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

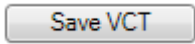
Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.





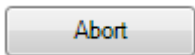
## ***StarTalk™ DTM Help for StarPac 3 System***

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.



The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

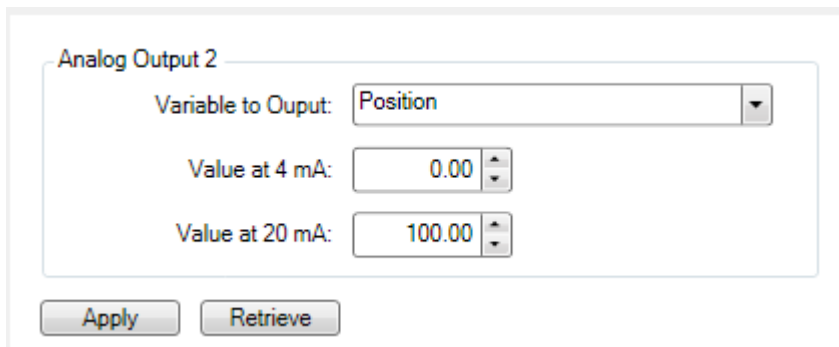
Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.



The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## Analog Output 2 (AO2)



### Analog Out 2 configuration

Configures the second analog output channel. Select a variable from the list using the NEXT and PREVIOUS function keys on the menu. You will then be asked for a full scale output value in your selected user units. (This is the process value that corresponds to 20 mA.) The last step is to enter the offset or zero output value in your selected user units. (This is the process value that corresponds to 4 mA.) Available output variables are:

- Valve Position
- Liquid Flow
- ISA Up Stream Press
- ISA Dn Stream Press
- ISA Delta Pressure
- Process Temperature
- Gas Flow
- Auxiliary 4-20 Input

### Valve Position

Current valve position.

### Liquid Flow

Current liquid flow rate.

### ISA Up Stream Press

Current compensated upstream line pressure (defined as two pipe diameters upstream of the valve).

### ISA Dn Stream Press

Current compensated downstream line pressure (defined as six pipe diameters downstream of the valve).

### ISA Delta Pressure

Current differential pressure using the pressure definitions above.

### Process Temperature

Current process temperature.

### Gas Flow



## StarTalk™ DTM Help for StarPac 3 System

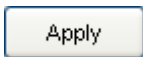
Current gaseous flow rate.

### Auxiliary 4-20 Input

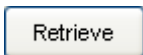
Re-transmits the 4-20 mA signal from analog in No. 2.

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page.



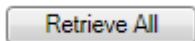
Manage Configuration (VCT) Dataset

Retrieve Configuration from Device Status

Register Count:

Register Record:

Data Acquisition Progress:

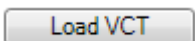


Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

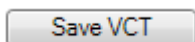
The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.



The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

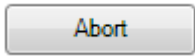


The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.



## ***StarTalk™ DTM Help for StarPac 3 System***

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.



The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.



## StarTalk™ DTM Help for StarPac 3 System

### COMM Access

There are two ports for serial communication from the Starpac 3. These are labeled PortA and PortB. Each port is independently configurable with baud rate, parity, and Modbus protocol. PortA is fixed as an RS485 port. PortB is selectable between RS485, INFRARED, and USB. The factory default values are as follows:

Parameter	Default	Variable in Scroll Menu Table 7
Dev Addr:	1	
Baud Rate	19200	baud_scroll
Parity	Odd	parity_scroll
RTU/Ascii	RTU	modbus_scroll
Port Access	A=R/W B=R/W	access_scroll
TxDelay	3.5 characters	delay_scroll
Port B Protocol	INFRARED	protocol_scroll

When the RTU/Ascii selection is changed to Ascii then the Parity is set to NO Parity.

**Serial Ports Access Rights**  
☒ Port A read/write; Port B read/write  
☐ Port A read/write; Port B read only  
☐ Port A read only; Port B read/write

**RTX Delay Settings**  
Port Response Time:

#### Port A

Port A is hard wired to only support the RS485 interface. All of the above parameters and settings apply to Port A with the exception of the Port B Protocol.

#### Port B

##### RS485

When RS485 is selected as the Port B Protocol then Port B will operate identical to Port A.

##### INFRARED

This is the default selection for the Port B Protocol. With this selection the IR in the Starpac is looking for keypress codes from the IR input device. This option only works in conjunction with the StarKey PDA product.



## StarTalk™ DTM Help for StarPac 3 System

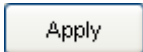
### USB

Port B Protocol is automatically set to USB whenever a valid USB is detected on the port. When the USB is detected the Baud Rate will be set to 57600.

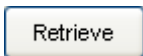
The USB port will operate the same as the RS485 port when connected to StarTalk XP.

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page.



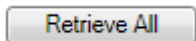
Manage Configuration (VCT) Dataset

Retrieve Configuration from Device Status

Register Count:

Register Record:

Data Acquisition Progress:

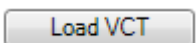


Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

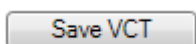
The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.



The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.



The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.





## ***StarTalk™ DTM Help for StarPac 3 System***

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.



The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

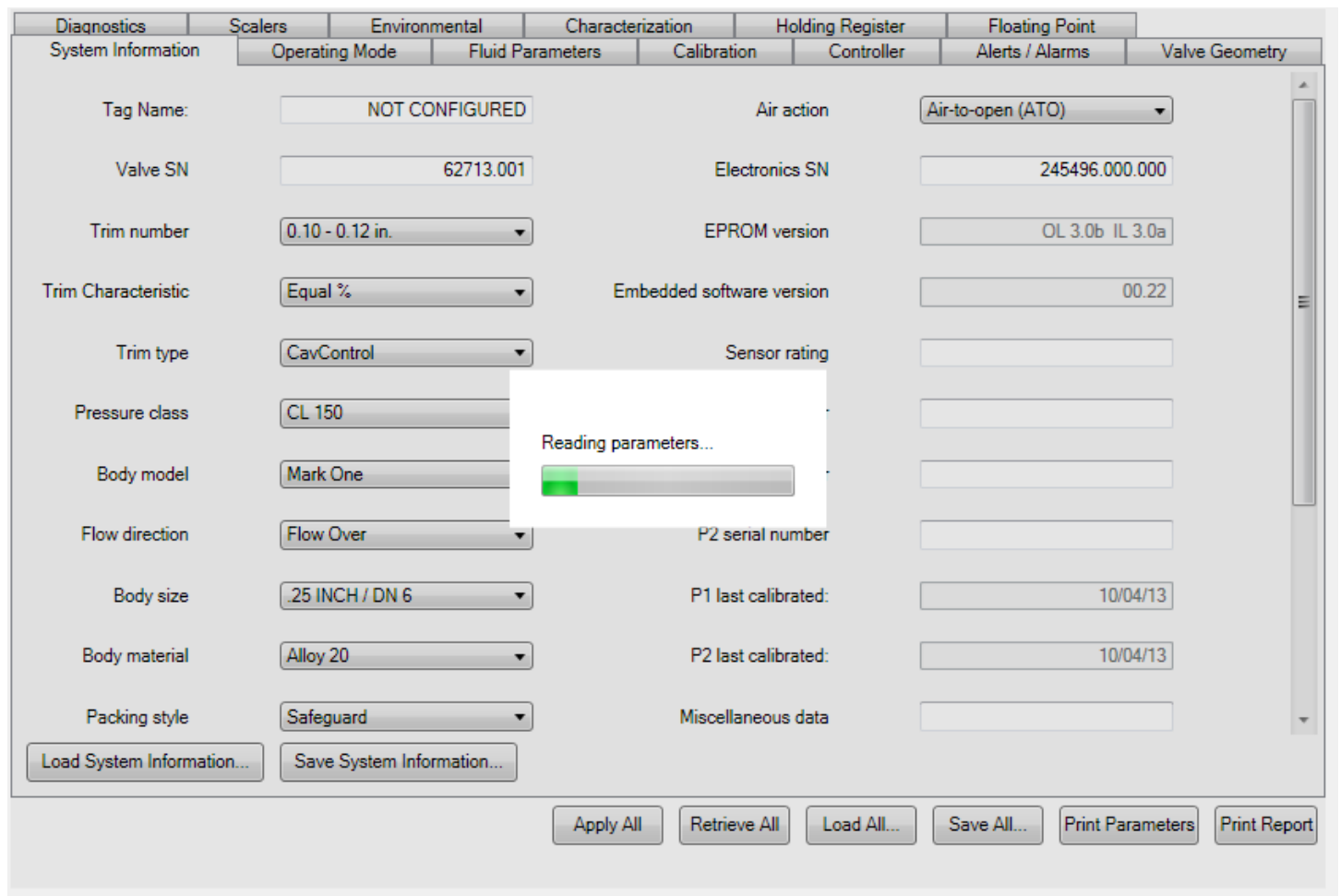
## Configuration Files

The Configuration Files page allow the user to perform the following functionality:

- Download from device all the necessary parameters
- Load to device all the necessary parameters
- Save to file (VCT) the device configuration
- Load from file (VCT) the device configuration
- Load and Save each set of configuration included in each tab separately

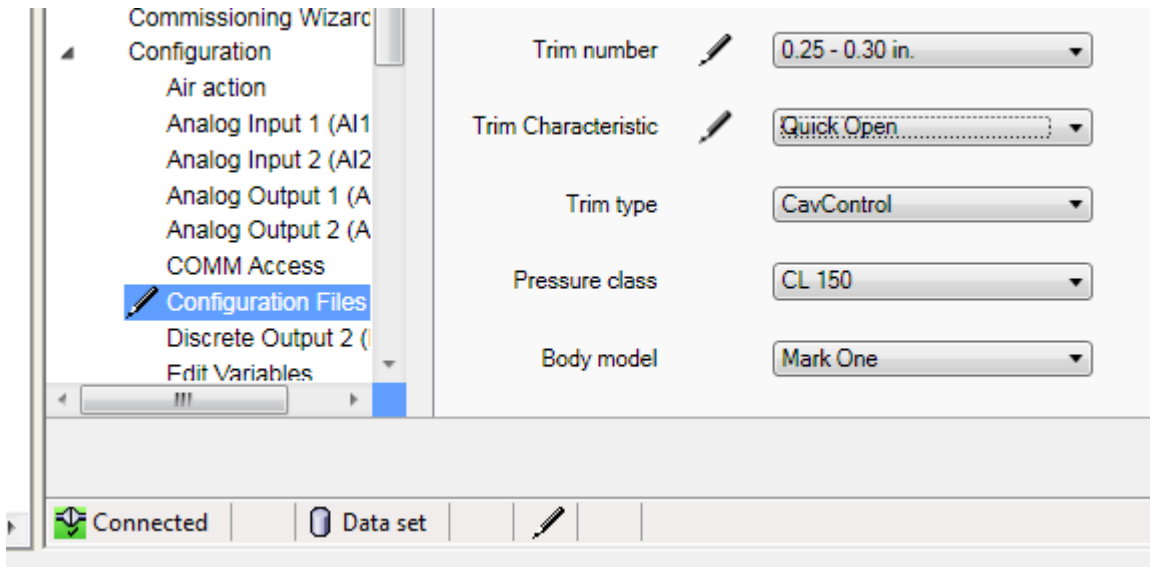
When you first start the Configuration Files page, the components on the page will be disabled until the DTM retrieves all the Configuration information from the Device.

Note: Depending on the Baud Rate and connection speed, the retrieval of the entire configuration may take a few minutes.



### Modifications:

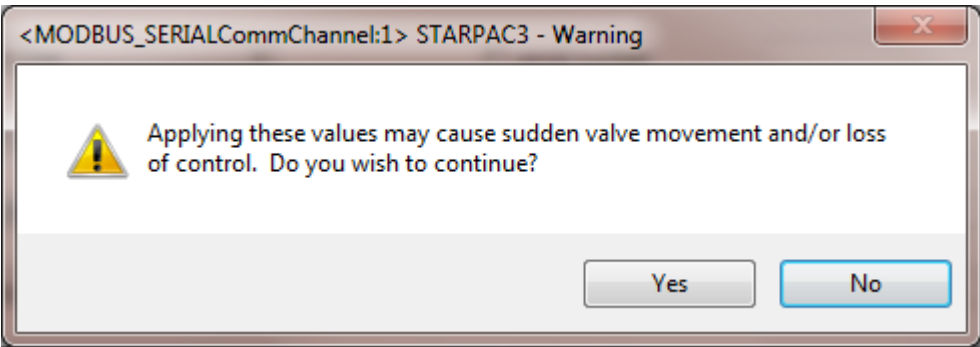
New modifications to the configuration file will be displayed by the pencil mark (✎). The pencil mark will appear next to the parameter modified, On the menu tree page where the parameter was modified, and on the bottom of the Frame.



Apply All

The "Apply All" button will apply and the modified parameters from all tabs. The Apply All will only apply the changes to the parameters with a pencil or modified parameters.

**WARNING: Applying the configuration changed to the parameter values may cause sudden valve movement and/or loss of control.**




Retrieve All

The "Retrieve All" button will retrieve the entire configuration from the device.

Note: If a parameter was modified and displayed the pencil mark, after the Retrieve All from the device the pencil mark will disappear and the parameter value will be the same as the value in the device.

Load All...

The "Load All" button will open an open file dialog to select a StarPac configuration file (\*.VCT). Once the file is loaded into the DTM, differences between and the file will be displayed by the Pencil Mark (  ).

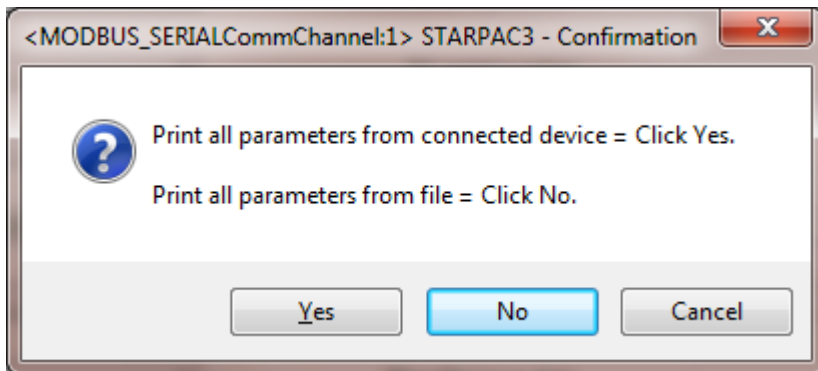
Note: The entire configuration is load into the DTM memory and displayed with the pencil mark. To apply the parameter changed, click the Apply All button.

Save All...

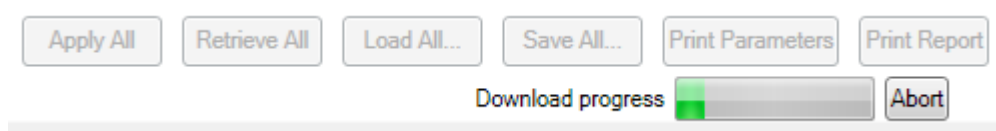
The "Save All" button will open a save file dialog to save the entire configuration to a selected StarPac configuration File (\*.VCT)

Print Parameters

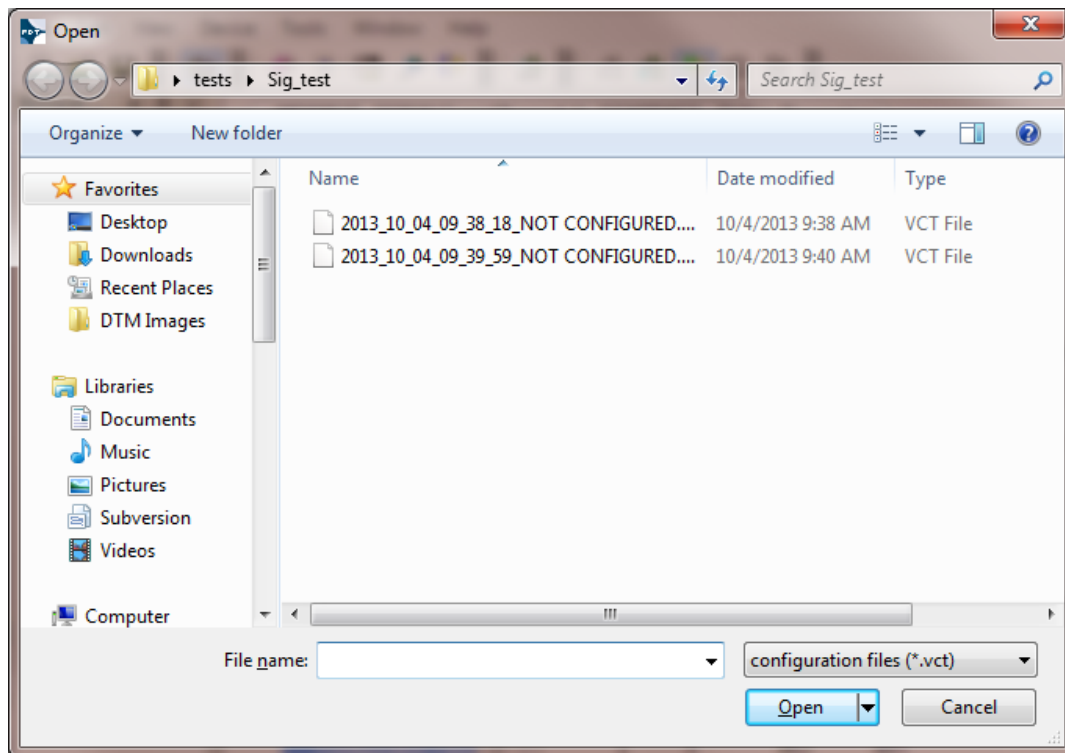
The "Print Parameters" button will display a dialog to select to print a download from device or the loaded configuration from file.



Clicking "Yes" will start the download from the device and disable all buttons on the page.

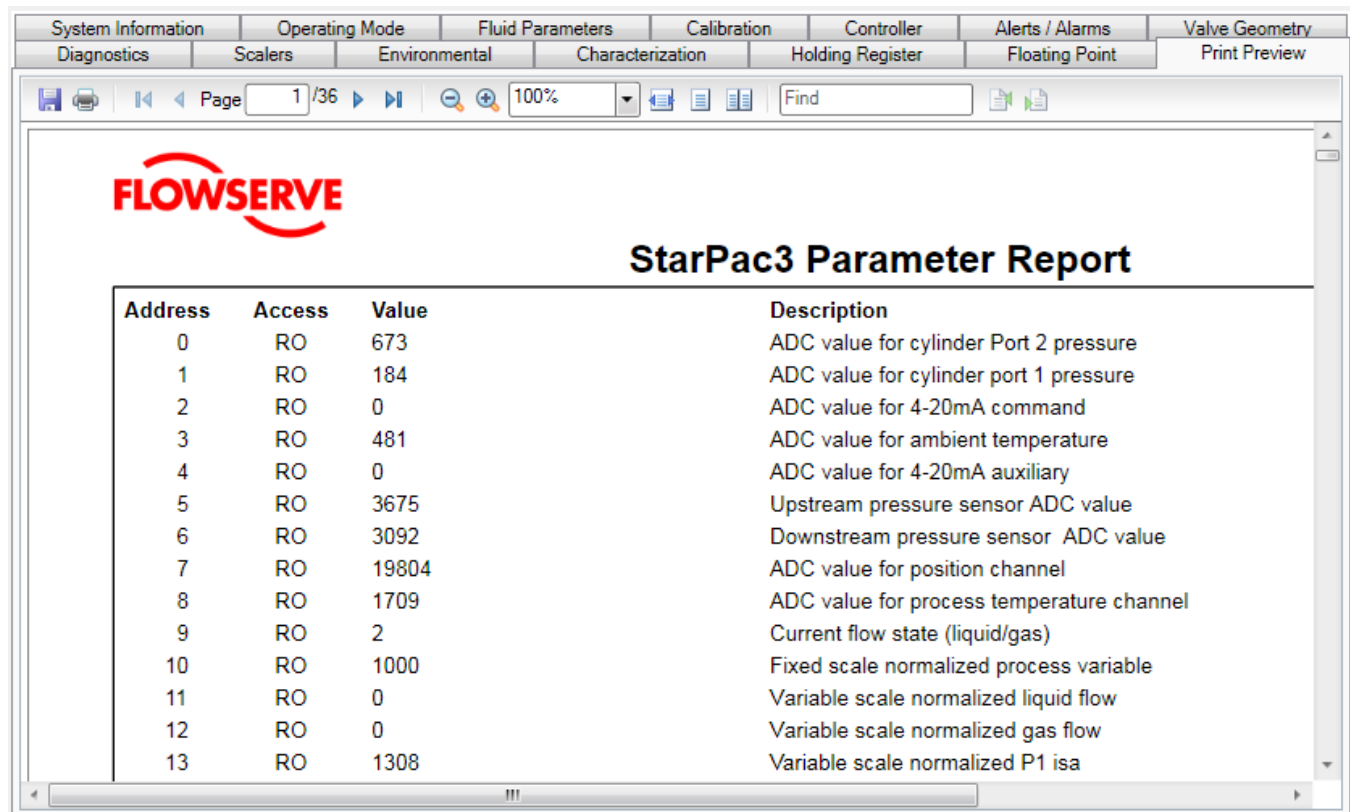


Clicking "No" will open an open file dialog to select the configuration file to print the parameter / values list.



A "Print Preview" tab will display the pdf version of the print parameters report.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.



Address	Access	Value	Description
0	RO	673	ADC value for cylinder Port 2 pressure
1	RO	184	ADC value for cylinder port 1 pressure
2	RO	0	ADC value for 4-20mA command
3	RO	481	ADC value for ambient temperature
4	RO	0	ADC value for 4-20mA auxiliary
5	RO	3675	Upstream pressure sensor ADC value
6	RO	3092	Downstream pressure sensor ADC value
7	RO	19804	ADC value for position channel
8	RO	1709	ADC value for process temperature channel
9	RO	2	Current flow state (liquid/gas)
10	RO	1000	Fixed scale normalized process variable
11	RO	0	Variable scale normalized liquid flow
12	RO	0	Variable scale normalized gas flow
13	RO	1308	Variable scale normalized P1 isa



## StarTalk™ DTM Help for StarPac 3 System

Print Report

The "Print Report" button will load the configuration into an organized print report where all parameters are listed into groups as it appears in the tabs of the configuration file page.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

StarPac3 Configuration Report			
Tag Name: NOT CONFIGURED			
Device type: StarPac 3			
Valve serial number: 62713.001			
<b>System Information</b>			
Trim number:	0.25 - 0.30 in.	Air action:	Air-to-open (ATO)
Trim type:	CavControl	Electronics SN:	245496.000.000
Trim Characteristic:	Linear	EPROM version:	OL 3.0b IL 3.0a
Pressure class:	CL 150	Embedded software version:	00.22
Body model:	Mark One	Sensor rating:	
Flow direction:	Flow Over	Sensor drawing number:	
Body size:	.25 INCH / DN 6	P1 serial number:	
Body material:	Alloy 20	P2 serial number:	
Packing:	AFPI	P1 last calibrated:	10/04/13
		P2 last calibrated:	10/04/13

Apply All   Retrieve All   Load All...   Save All...   Print Parameters   **Print Report**



## StarTalk™ DTM Help for StarPac 3 System

### System

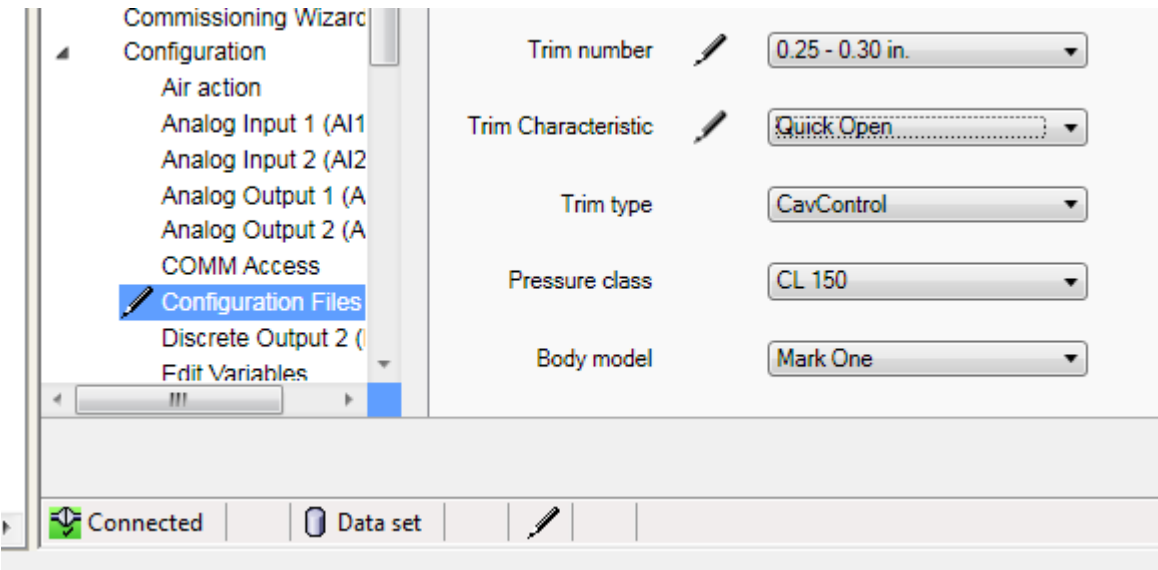
The System Information tab allows the user to perform the following functionality about the system information:

- Download from device
- Load to device
- Save to file (VCT)
- Load from file (VCT)

Valve Geometry	Diagnostics	Scalars	Environmental	Characterization	Holding Register	Floating Point
System Information	Operating Mode	Fluid Parameters	Calibration	Controller	Alerts / Alarms	
Tag name	BPVTSGStarPac3		Air action	Air-to-open (ATO)		
Valve SN	EW SETUP123		Electronics SN	082508000P		
Trim number	Other		EPROM version	OL 3.0b IL 3E0a		
Trim Characteristic	linear		Embedded software version	00.22		
Trim type	Standard		Sensor rating	0-50		
Pressure class	150		Sensor drawing number			
Body model	Mark One		P1 serial number			
Flow direction	Flow under		P2 serial number			
Body size	.5 inch in.		P1 last calibrated:	4/23/2013		
Body material	Carbon steel		P2 last calibrated:	4/23/2013		
Packing style	Std. V		Miscellaneous data			
Packing	Teflon TFE		Miscellaneous data			
Gasket material	Teflon TFE					
Actuator size	25					
Failure action						
Spring type	Single					
<div>Load System Information... Save System Information...</div>						
<div>Apply All Retrieve All Load All... Save All...</div>						

Modifications:

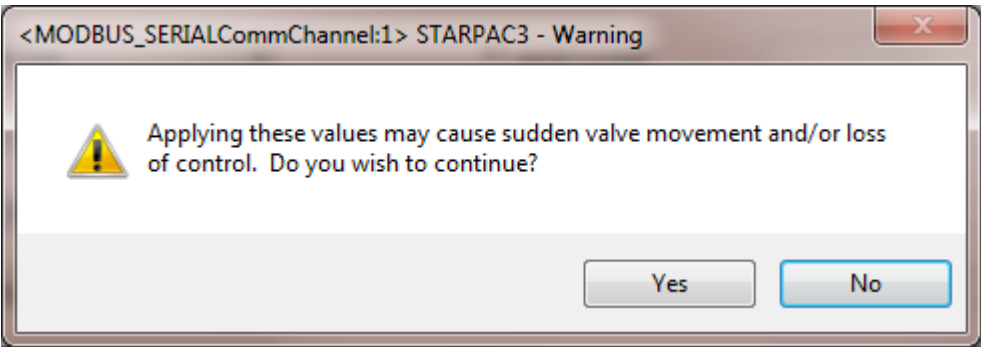
New modifications to the configuration file will be displayed by the pencil mark (✎). The pencil mark will appear next to the parameter modified, On the menu tree page where the parameter was modified, and on the bottom of the Frame.



Apply All

The "Apply All" button will apply and the modified parameters from all tabs. The Apply All will only apply the changes to the parameters with a pencil or modified parameters.

**WARNING: Applying the configuration changed to the parameter values may cause sudden valve movement and/or loss of control.**




Retrieve All

The "Retrieve All" button will retrieve the entire configuration from the device.

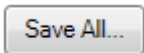
Note: If a parameter was modified and displayed the pencil mark, after the Retrieve All from the device the pencil mark will disappear and the parameter value will be the same as the value in the device.

Load All...

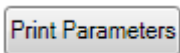


The "Load All" button will open an open file dialog to select a StarPac configuration file (\*.VCT). Once the file is loaded into the DTM, differences between and the file will be displayed by the Pencil Mark (  ).

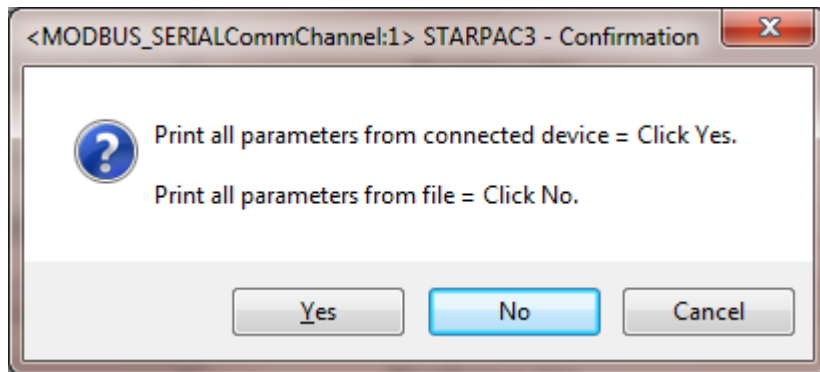
Note: The entire configuration is load into the DTM memory and displayed with the pencil mark. To apply the parameter changed, click the Apply All button.



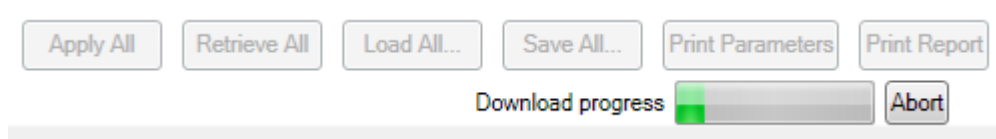
The "Save All" button will open a save file dialog to save the entire configuration to a selected StarPac configuration File (\*.VCT)



The "Print Parameters" button will display a dialog to select to print a download from device or the loaded configuration from file.



Clicking "Yes" will start the download from the device and disable all buttons on the page.



Clicking "No" will open an open file dialog to select the configuration file to print the parameter / values list.





## StarTalk™ DTM Help for StarPac 3 System

The "Print Report" button will load the configuration into an organized print report where all parameters are listed into groups as it appears in the tabs of the configuration file page.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

**StarPac3 Configuration Report**

Tag Name: NOT CONFIGURED  
Device type: StarPac 3  
Valve serial number: 62713.001

**System Information**

Trim number:	0.25 - 0.30 in.	Air action:	Air-to-open (ATO)
Trim type:	CavControl	Electronics SN:	245496.000.000
Trim Characteristic:	Linear	EPROM version:	OL 3.0b IL 3.0a
Pressure class:	CL 150	Embedded software version:	00.22
Body model:	Mark One	Sensor rating:	
Flow direction:	Flow Over	Sensor drawing number:	
Body size:	.25 INCH / DN 6	P1 serial number:	
Body material:	Alloy 20	P2 serial number:	
Packing:	AFPI	P1 last calibrated:	10/04/13

Apply All   Retrieve All   Load All...   Save All...   Print Parameters   **Print Report**

## Operating Mode

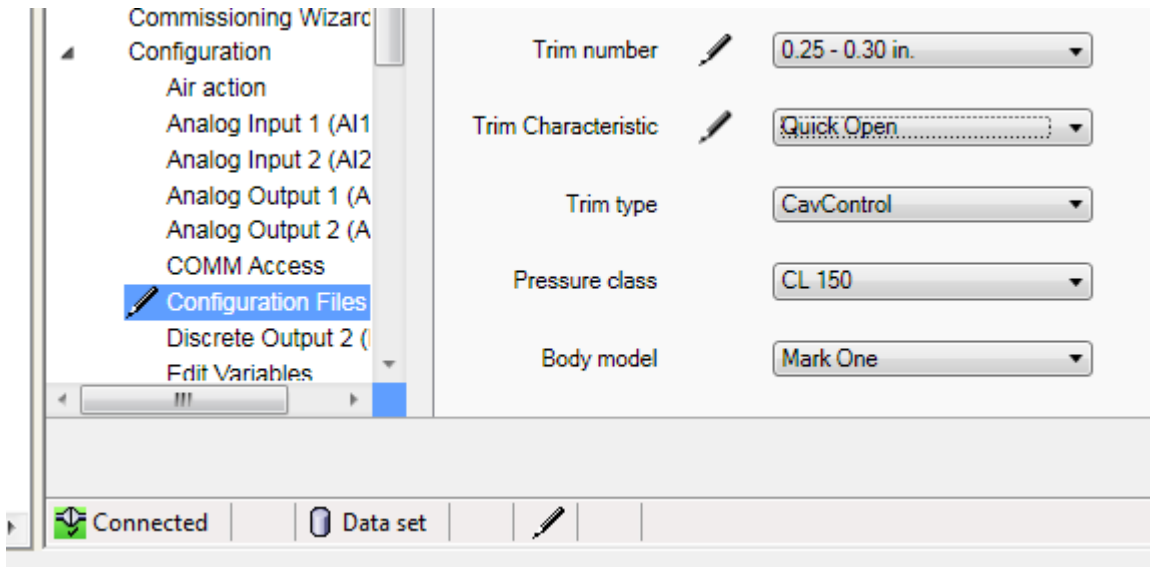
The Operating Mode tab allows the user to perform the following functionality about the operating mode:

- Download from device
- Load to device
- Save to file (VCT)
- Load from file (VCT)

Valve Geometry	Diagnostics	Scalars	Environmental	Characterization	Holding Register	Floating Point
System Information	Operating Mode	Fluid Parameters	Calibration	Controller	Alerts / Alarms	
<div> <div>Controller mode</div> <div>Auto</div> </div> <div> <div>Controlled variable</div> <div>Gas flow</div> </div> <div> <div>Command source</div> <div>Digital</div> </div> <div> <div>Mode selector source</div> <div>Modbus</div> </div> <div> <div>Analog output variable</div> <div>Position</div> </div> <div> <div>Controller action</div> <div>Normal</div> </div> <div> <div>Totalizer selection</div> <div>Gas flow</div> <div>(units)</div> </div> <div> <div>Positioner characterization enable</div> <div>Linear response</div> </div>						
<div> <div>Load Operating Mode...</div> <div>Save Operating Mode...</div> </div>						
<div> <div>Apply All</div> <div>Retrieve All</div> <div>Load All...</div> <div>Save All...</div> </div>						

### Modifications:

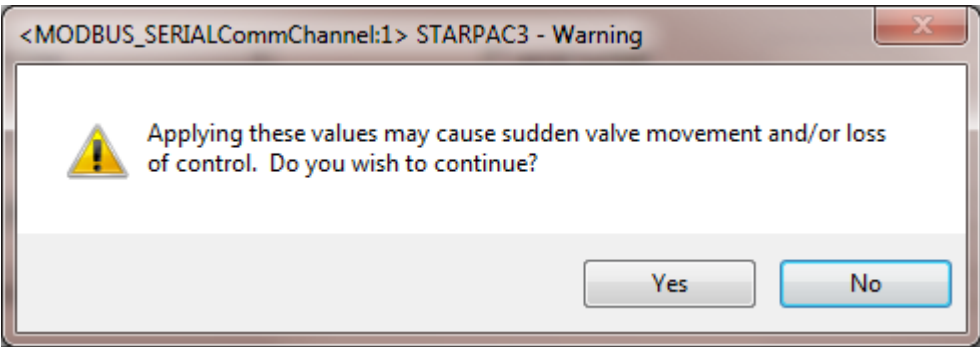
New modifications to the configuration file will be displayed by the pencil mark (✎). The pencil mark will appear next to the parameter modified, On the menu tree page where the parameter was modified, and on the bottom of the Frame.



Apply All

The "Apply All" button will apply and the modified parameters from all tabs. The Apply All will only apply the changes to the parameters with a pencil or modified parameters.

**WARNING: Applying the configuration changed to the parameter values may cause sudden valve movement and/or loss of control.**




Retrieve All

The "Retrieve All" button will retrieve the entire configuration from the device.

Note: If a parameter was modified and displayed the pencil mark, after the Retrieve All from the device the pencil mark will disappear and the parameter value will be the same as the value in the device.

Load All...

The "Load All" button will open an open file dialog to select a StarPac configuration file (\*.VCT). Once the file is loaded into the DTM, differences between and the file will be displayed by the Pencil Mark (  ).

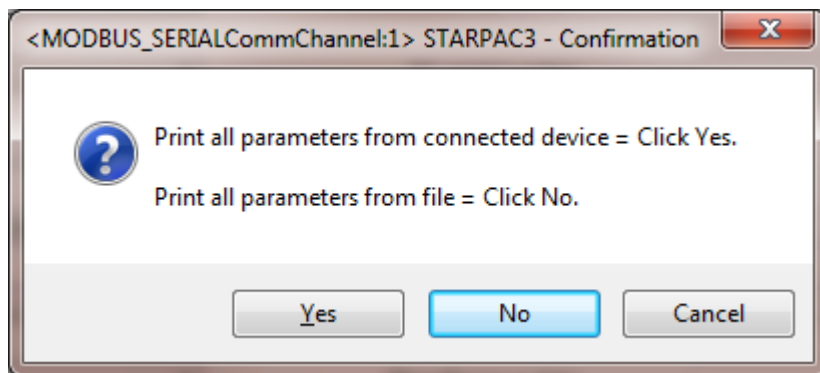
Note: The entire configuration is load into the DTM memory and displayed with the pencil mark. To apply the parameter changed, click the Apply All button.

Save All...

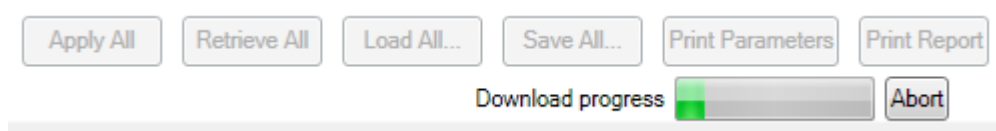
The "Save All" button will open a save file dialog to save the entire configuration to a selected StarPac configuration File (\*.VCT)

Print Parameters

The "Print Parameters" button will display a dialog to select to print a download from device or the loaded configuration from file.



Clicking "Yes" will start the download from the device and disable all buttons on the page.



Clicking "No" will open an open file dialog to select the configuration file to print the parameter / values list.





## StarTalk™ DTM Help for StarPac 3 System

The "Print Report" button will load the configuration into an organized print report where all parameters are listed into groups as it appears in the tabs of the configuration file page.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

**StarPac3 Configuration Report**

Tag Name: NOT CONFIGURED  
Device type: StarPac 3  
Valve serial number: 62713.001

**System Information**

Trim number:	0.25 - 0.30 in.	Air action:	Air-to-open (ATO)
Trim type:	CavControl	Electronics SN:	245496.000.000
Trim Characteristic:	Linear	EPROM version:	OL 3.0b IL 3.0a
Pressure class:	CL 150	Embedded software version:	00.22
Body model:	Mark One	Sensor rating:	
Flow direction:	Flow Over	Sensor drawing number:	
Body size:	.25 INCH / DN 6	P1 serial number:	
Body material:	Alloy 20	P2 serial number:	
Packing:	AFPI	P1 last calibrated:	10/04/13
		P2 last calibrated:	10/04/13

Apply All   Retrieve All   Load All...   Save All...   Print Parameters   **Print Report**




## Fluid Parameters

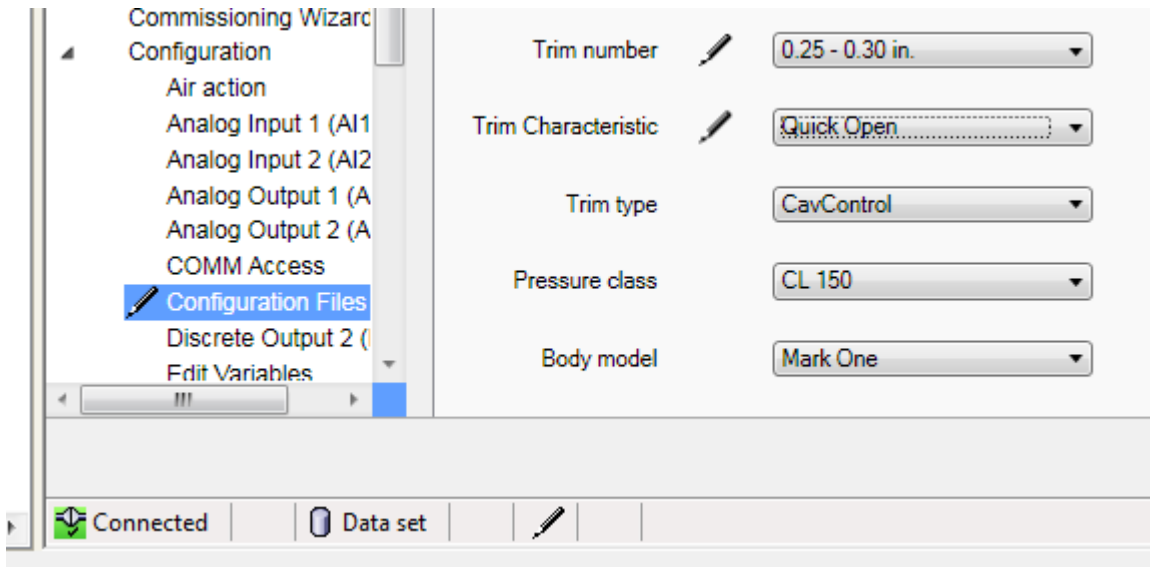
The Fluid Parameter tab allows the user to perform the following functionality about the fluid parameter:

- Download from device
- Load to device
- Save to file (VCT)
- Load from file (VCT)

Valve Geometry	Diagnostics	Scalars	Environmental	Characterization	Holding Register	Floating Point
System Information	Operating Mode	Fluid Parameters		Calibration	Controller	Alerts / Alarms
Current fluid		<input type="text" value="AIR"/>		Compressibility factor for gas		<input type="text" value="1.00056"/>
Critical pressure (psia)		<input type="text" value="492.445"/>	psia	Antoine's A value		<input type="text" value="11.009"/>
Critical temperature (*R)		<input type="text" value="227.16"/>	*R	Antoine's B value		<input type="text" value="1059.7"/>
Specific heat ratio		<input type="text" value="1"/>		Antoine's C value		<input type="text" value="11.88"/>
Molecular weight (gas)		<input type="text" value="28.98"/>		Viscosity A factor		<input type="text" value="1"/>
Reference temperature (*R)		<input type="text" value="140.6"/>	*R	Viscosity B factor		<input type="text" value="0"/>
Specific gravity at reference temperature		<input type="text" value="0.804"/>		Liquid flow scaler		<input type="text" value="1"/>
				Gas flow scaler		<input type="text" value="1"/>

### Modifications:

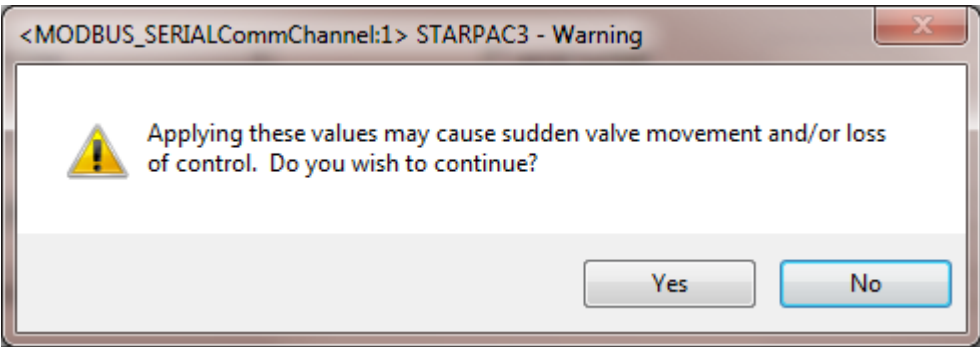
New modifications to the configuration file will be displayed by the pencil mark (  ). The pencil mark will appear next to the parameter modified, On the menu tree page where the parameter was modified, and on the bottom of the Frame.



Apply All

The "Apply All" button will apply and the modified parameters from all tabs. The Apply All will only apply the changes to the parameters with a pencil or modified parameters.

**WARNING: Applying the configuration changed to the parameter values may cause sudden valve movement and/or loss of control.**




Retrieve All

The "Retrieve All" button will retrieve the entire configuration from the device.

Note: If a parameter was modified and displayed the pencil mark, after the Retrieve All from the device the pencil mark will disappear and the parameter value will be the same as the value in the device.

Load All...

The "Load All" button will open an open file dialog to select a StarPac configuration file (\*.VCT). Once the file is loaded into the DTM, differences between and the file will be displayed by the Pencil Mark (  ).

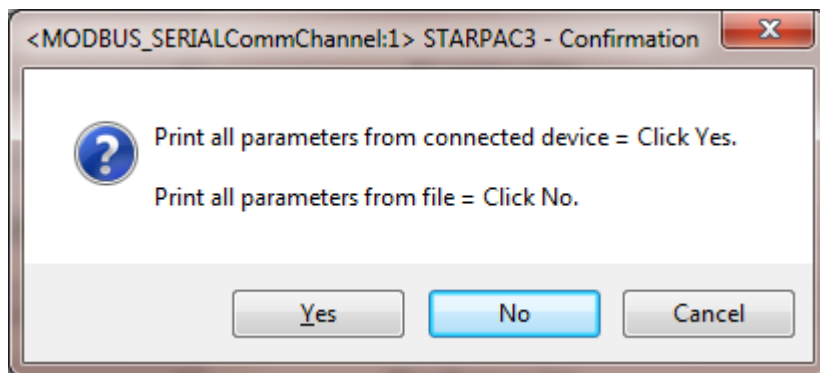
Note: The entire configuration is load into the DTM memory and displayed with the pencil mark. To apply the parameter changed, click the Apply All button.

Save All...

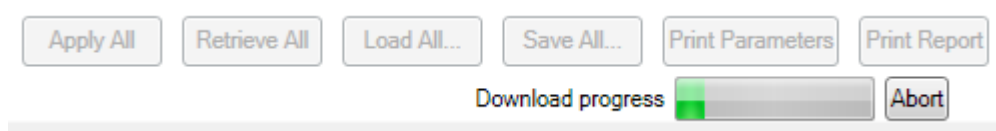
The "Save All" button will open a save file dialog to save the entire configuration to a selected StarPac configuration File (\*.VCT)

Print Parameters

The "Print Parameters" button will display a dialog to select to print a download from device or the loaded configuration from file.



Clicking "Yes" will start the download from the device and disable all buttons on the page.



Clicking "No" will open an open file dialog to select the configuration file to print the parameter / values list.





## StarTalk™ DTM Help for StarPac 3 System

The "Print Report" button will load the configuration into an organized print report where all parameters are listed into groups as it appears in the tabs of the configuration file page.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

**StarPac3 Configuration Report**

Tag Name: NOT CONFIGURED  
Device type: StarPac 3  
Valve serial number: 62713.001

**System Information**

Trim number:	0.25 - 0.30 in.	Air action:	Air-to-open (ATO)
Trim type:	CavControl	Electronics SN:	245496.000.000
Trim Characteristic:	Linear	EPROM version:	OL 3.0b IL 3.0a
Pressure class:	CL 150	Embedded software version:	00.22
Body model:	Mark One	Sensor rating:	
Flow direction:	Flow Over	Sensor drawing number:	
Body size:	.25 INCH / DN 6	P1 serial number:	
Body material:	Alloy 20	P2 serial number:	
Packing:	AFPI	P1 last calibrated:	10/04/13
		P2 last calibrated:	10/04/13

Apply All   Retrieve All   Load All...   Save All...   Print Parameters   **Print Report**



## **Calibration Information**

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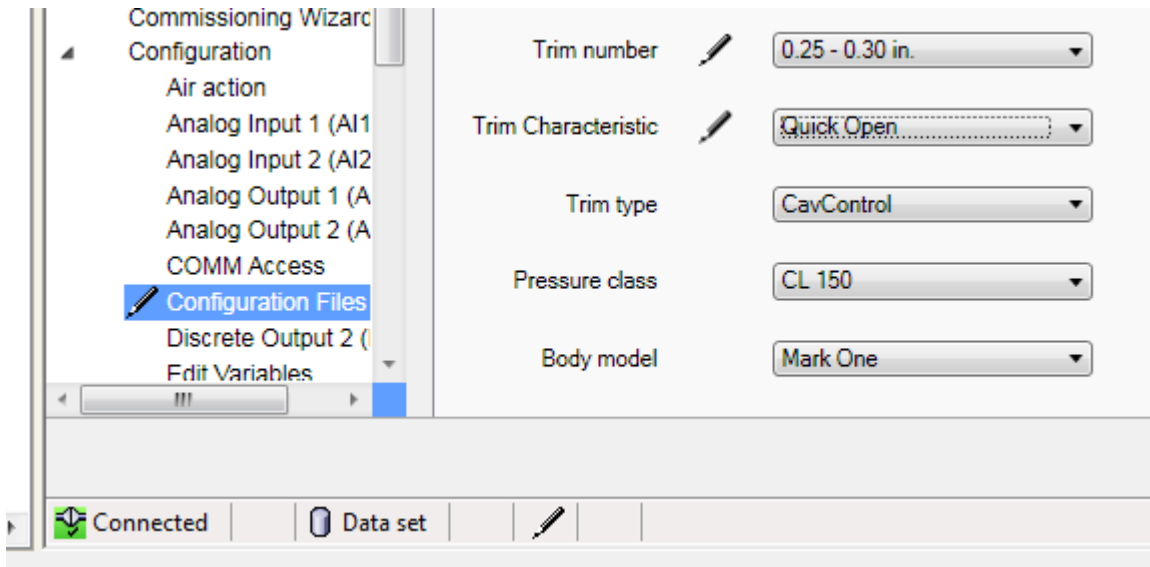
The Calibration Information tab allows the user to perform the following functionality about the calibration information:

- Download from device
- Load to device
- Save to file (VCT)
- Load from file (VCT)

Valve Geometry	Diagnostics	Scalars	Environmental	Characterization	Holding Register	Floating Point
System Information	Operating Mode	Fluid Parameters	Calibration	Controller	Alerts / Alarms	
<b>Positioner I/P Calibration</b> D/A value at zero percent <input type="text" value="10922"/> D/A value at 100 percent <input type="text" value="54612"/> D/A factor <input type="text" value="436.9"/>			<b>Position Sensor Calibration</b> A/D value at zero percent <input type="text" value="19785"/> A/D value at 100 percent <input type="text" value="-24012"/> A/D factor <input type="text" value="3.014628"/>			
<b>Actuator Top Pressure Calibration</b> A/D value at zero psig <input type="text" value="183"/> A/D value at maximum psig <input type="text" value="11178"/> A/D factor <input type="text" value="0.005457026"/>			<b>Actuator Bottom Pressure Calibration</b> A/D value at zero psig <input type="text" value="662"/> A/D value at maximum psig <input type="text" value="10690"/> A/D factor <input type="text" value="0.005983247"/>			
<b>Thermocouple Calibration</b> A/D value at minimum temperature <input type="text" value="0"/> A/D value at maximum temperature <input type="text" value="0"/> A/D factor <input type="text" value="0.223714"/>			<b>P1 Pressure Calibration</b> A/D value at atmospheric pressure <input type="text" value="3253"/> A/D value at maximum pressure <input type="text" value="18272"/> A/D factor <input type="text" value="0.00399494"/>			
<b>P2 Pressure Calibration</b> A/D value at atmospheric pressure <input type="text" value="3081"/> A/D value at maximum pressure <input type="text" value="18139"/> A/D factor <input type="text" value="0"/>			<b>4-20mA Process Output Calibration</b> D/A value at 4 mA <input type="text" value="0"/> D/A value at 20 mA <input type="text" value="0"/> D/A factor <input type="text" value="327.68"/>			
<b>4-20 mA Command Input Calibration</b> A/D value at 0 percent <input type="text" value="0"/> A/D value at 100 percent <input type="text" value="0"/> A/D factor <input type="text" value="0.0169578"/>			<b>4-20 mA Auxiliary Input Calibration</b> A/D value at 0 percent <input type="text" value="1470"/> A/D value at 100 percent <input type="text" value="7380"/> A/D factor <input type="text" value="0.01692047"/>			
<b>Miscellaneous Pressure Data</b> Cylinder supply pressure <input type="text" value="60"/> Atmospheric pressure <input type="text" value="12.5"/>						
<input type="button" value="Load Calibration Info..."/> <input type="button" value="Save Calibration Info..."/>						
			<input type="button" value="Apply All"/> <input type="button" value="Retrieve All"/> <input type="button" value="Load All..."/> <input type="button" value="Save All..."/>			

## Modifications:

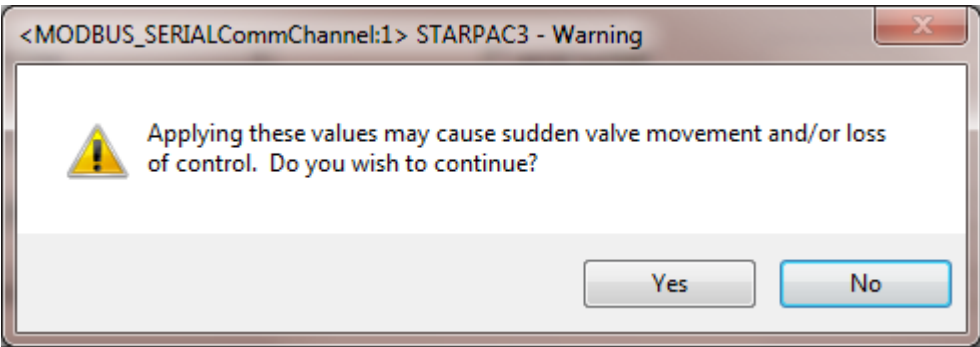
New modifications to the configuration file will be displayed by the pencil mark (✎). The pencil mark will appear next to the parameter modified, On the menu tree page where the parameter was modified, and on the bottom of the Frame.



Apply All

The "Apply All" button will apply and the modified parameters from all tabs. The Apply All will only apply the changes to the parameters with a pencil or modified parameters.

**WARNING: Applying the configuration changed to the parameter values may cause sudden valve movement and/or loss of control.**




Retrieve All

The "Retrieve All" button will retrieve the entire configuration from the device.

Note: If a parameter was modified and displayed the pencil mark, after the Retrieve All from the device the pencil mark will disappear and the parameter value will be the same as the value in the device.

Load All...

The "Load All" button will open an open file dialog to select a StarPac configuration file (\*.VCT). Once the file is loaded into the DTM, differences between and the file will be displayed by the Pencil Mark (  ).



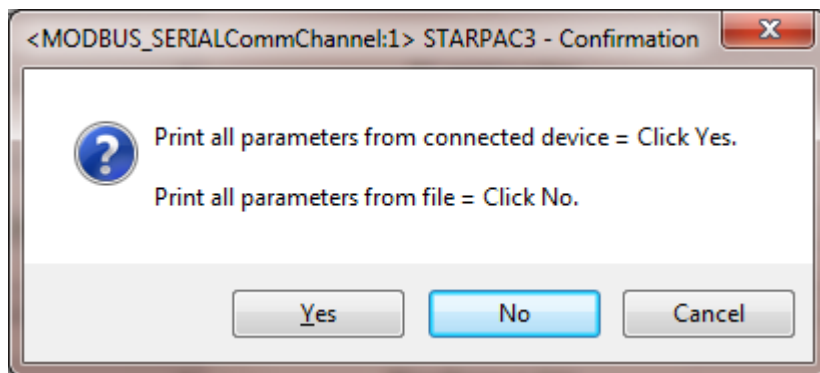
Note: The entire configuration is load into the DTM memory and displayed with the pencil mark. To apply the parameter changed, click the Apply All button.

Save All...

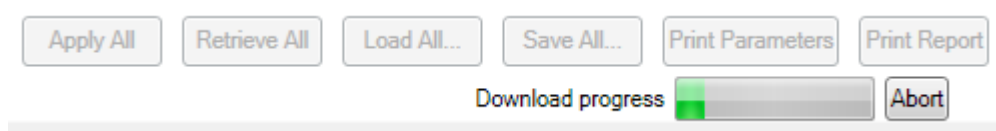
The "Save All" button will open a save file dialog to save the entire configuration to a selected StarPac configuration File (\*.VCT)

Print Parameters

The "Print Parameters" button will display a dialog to select to print a download from device or the loaded configuration from file.



Clicking "Yes" will start the download from the device and disable all buttons on the page.



Clicking "No" will open an open file dialog to select the configuration file to print the parameter / values list.





## StarTalk™ DTM Help for StarPac 3 System

The "Print Report" button will load the configuration into an organized print report where all parameters are listed into groups as it appears in the tabs of the configuration file page.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

**StarPac3 Configuration Report**

Tag Name: NOT CONFIGURED  
Device type: StarPac 3  
Valve serial number: 62713.001

**System Information**

Trim number:	0.25 - 0.30 in.	Air action:	Air-to-open (ATO)
Trim type:	CavControl	Electronics SN:	245496.000.000
Trim Characteristic:	Linear	EPROM version:	OL 3.0b IL 3.0a
Pressure class:	CL 150	Embedded software version:	00.22
Body model:	Mark One	Sensor rating:	
Flow direction:	Flow Over	Sensor drawing number:	
Body size:	.25 INCH / DN 6	P1 serial number:	
Body material:	Alloy 20	P2 serial number:	
Packing:	AFPI	P1 last calibrated:	10/04/13
		P2 last calibrated:	10/04/13

Apply All   Retrieve All   Load All...   Save All...   Print Parameters   **Print Report**

## Controller

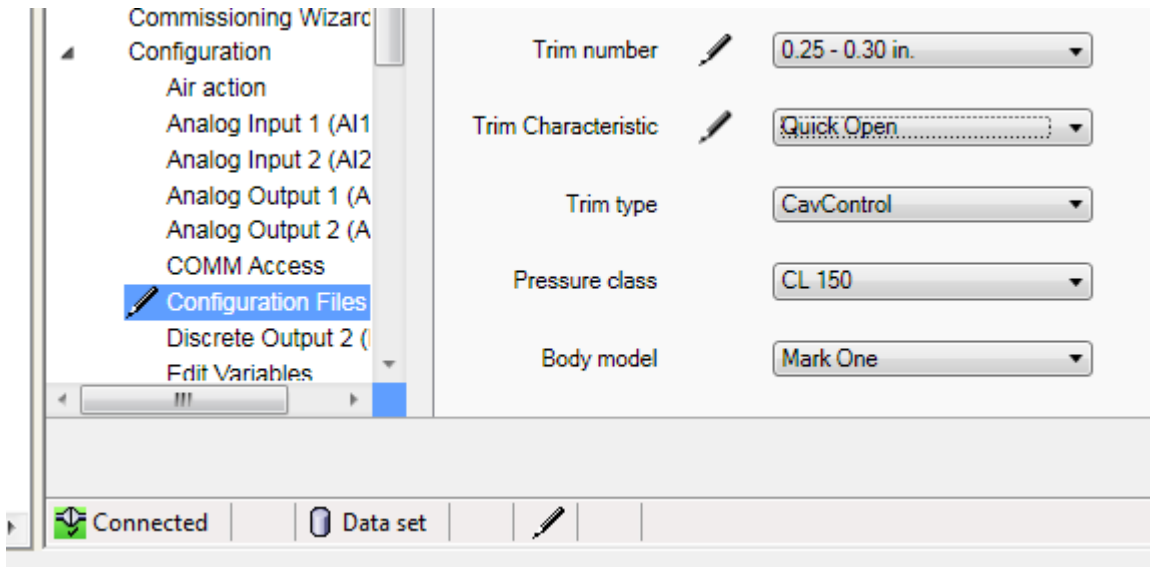
The Controller tab allows the user to perform the following functionality about the controller:

- Download from device
- Load to device
- Save to file (VCT)
- Load from file (VCT)

Valve Geometry	Diagnostics	Scalars	Environmental	Characterization	Holding Register	Floating Point
System Information	Operating Mode	Fluid Parameters	Calibration	Controller	Alerts / Alarms	
<b>Process Maximums</b>				<b>PID Gain Parameters</b>		
Liquid flow		<input type="text" value="100"/>	Proportional band		<input type="text" value="200"/>	%
Gas flow		<input type="text" value="11"/>	Integral reset time		<input type="text" value="2"/>	repeats/min.
Upstream pressure		<input type="text" value="100"/>	Derivative time		<input type="text" value="0"/>	minutes
Downstream pressure		<input type="text" value="40"/>				
Delta pressure		<input type="text" value="100"/>				
Temperature		<input type="text" value="100"/>				
Offset temperature		<input type="text" value="0"/>				
Auxiliary		<input type="text" value="100"/>				
<input type="button" value="Load Controller..."/> <input type="button" value="Save Controller..."/>				<input type="button" value="Apply All"/> <input type="button" value="Retrieve All"/> <input type="button" value="Load All..."/> <input type="button" value="Save All..."/>		

Modifications:

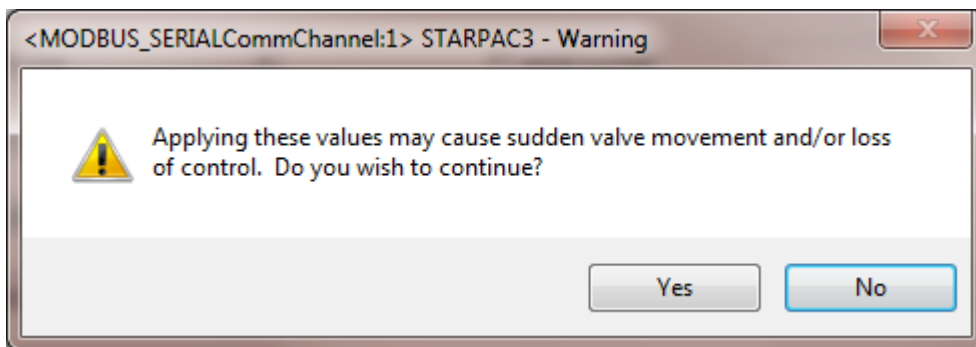
New modifications to the configuration file will be displayed by the pencil mark (✎). The pencil mark will appear next to the parameter modified, On the menu tree page where the parameter was modified, and on the bottom of the Frame.



Apply All

The "Apply All" button will apply and the modified parameters from all tabs. The Apply All will only apply the changes to the parameters with a pencil or modified parameters.

**WARNING: Applying the configuration changed to the parameter values may cause sudden valve movement and/or loss of control.**




Retrieve All

The "Retrieve All" button will retrieve the entire configuration from the device.

Note: If a parameter was modified and displayed the pencil mark, after the Retrieve All from the device the pencil mark will disappear and the parameter value will be the same as the value in the device.

Load All...

The "Load All" button will open an open file dialog to select a StarPac configuration file (\*.VCT). Once the file is loaded into the DTM, differences between and the file will be displayed by the Pencil Mark (  ).

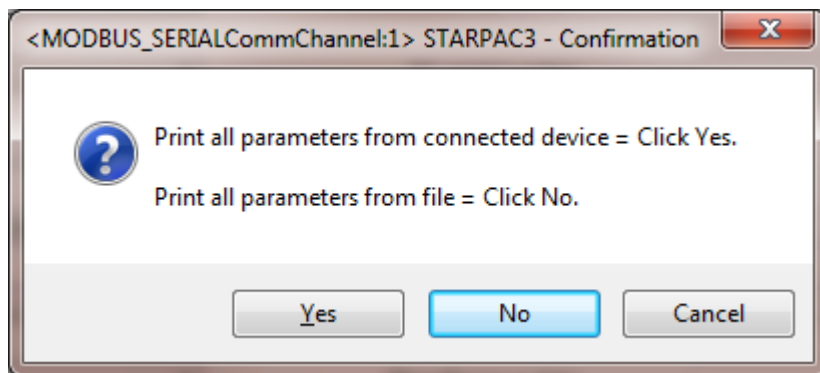
Note: The entire configuration is load into the DTM memory and displayed with the pencil mark. To apply the parameter changed, click the Apply All button.

Save All...

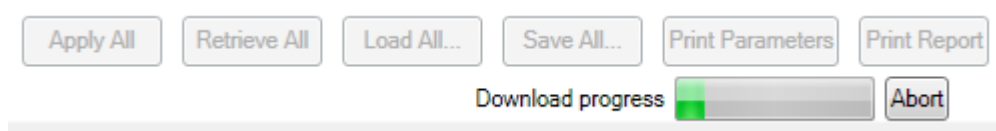
The "Save All" button will open a save file dialog to save the entire configuration to a selected StarPac configuration File (\*.VCT)

Print Parameters

The "Print Parameters" button will display a dialog to select to print a download from device or the loaded configuration from file.



Clicking "Yes" will start the download from the device and disable all buttons on the page.



Clicking "No" will open an open file dialog to select the configuration file to print the parameter / values list.





## StarTalk™ DTM Help for StarPac 3 System

The "Print Report" button will load the configuration into an organized print report where all parameters are listed into groups as it appears in the tabs of the configuration file page.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

StarPac3 Configuration Report			
Tag Name: NOT CONFIGURED			
Device type: StarPac 3			
Valve serial number: 62713.001			
<b>System Information</b>			
Trim number:	0.25 - 0.30 in.	Air action:	Air-to-open (ATO)
Trim type:	CavControl	Electronics SN:	245496.000.000
Trim Characteristic:	Linear	EPROM version:	OL 3.0b IL 3.0a
Pressure class:	CL 150	Embedded software version:	00.22
Body model:	Mark One	Sensor rating:	
Flow direction:	Flow Over	Sensor drawing number:	
Body size:	.25 INCH / DN 6	P1 serial number:	
Body material:	Alloy 20	P2 serial number:	
Packing:	AFPI	P1 last calibrated:	10/04/13



## Alerts / Alarms

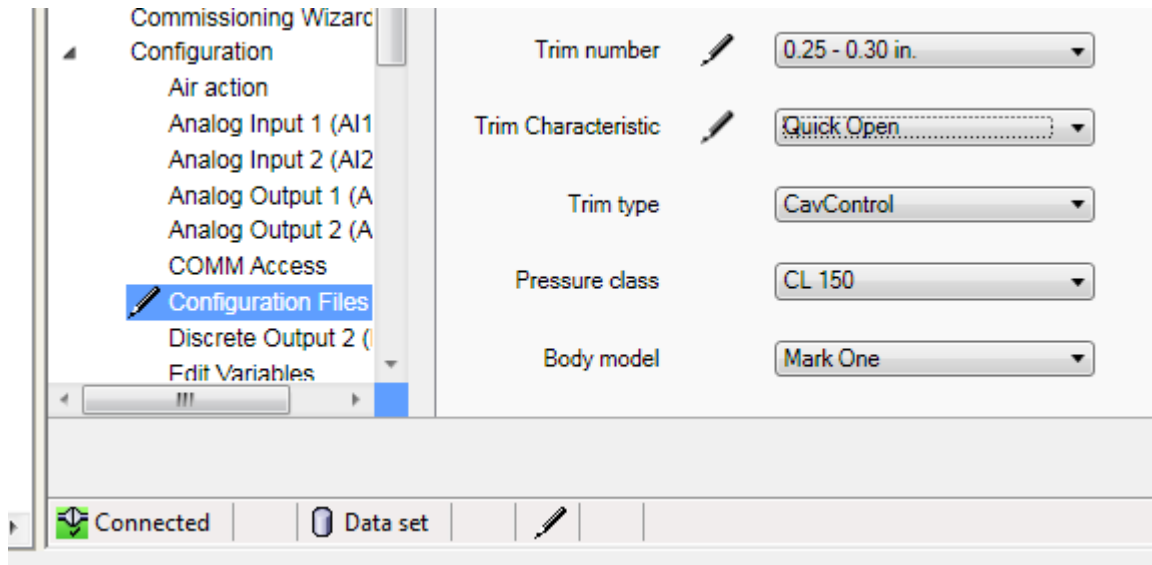
The Alerts/Alarms tab allows the user to perform the following functionality about the alert/alarm settings:

- Download from device
- Load to device
- Save to file (VCT)
- Load from file (VCT)

Valve Geometry	Diagnostics	Scalars	Environmental	Characterization	Holding Register	Floating Point
System Information	Operating Mode	Fluid Parameters	Calibration	Controller	Alerts / Alarms	
<b>Air Loss Parameters</b> Trip pressure <input type="text" value="36.28318"/> Amount of time to hold last position <input type="text" value="0"/> sec. Ramp rate <input type="text" value="10000"/> %/min.				<b>Command Loss Parameters</b> Ramp rate <input type="text" value="-100"/> %/min. Amount of time to hold last position <input type="text" value="0"/> sec. * Negative ramp rate indicates to close the valve. Positive ramp rate indicates to open the valve.		
<b>Positioner Alarm Data</b> Maximum steady state error before alarm <input type="text" value="11"/> % Maximum change over one second <input type="text" value="2"/> %				<b>Setpoint Alarm Data</b> Maximum steady state error before alarm <input type="text" value="10"/> % Maximum change over one second <input type="text" value="2"/> %		
<b>Stroke Soft Limits</b> Maximum percent open <input type="text" value="110"/> % Minimum percent open <input type="text" value="-10"/> %				<b>Travel Limits</b> Upper travel limit <input type="text" value="110"/> % Lower travel limit <input type="text" value="-10"/> %		
<b>Position Cutoff</b> Upper position cutoff <input type="text" value="110"/> % Lower position cutoff <input type="text" value="1"/> %				<b>Travel Accumulator Alert Data</b> Accumulated travel <input type="text" value="77.88338"/> % Travel deadband <input type="text" value="5"/> % Accumulator alert limit <input type="text" value="2.949852E+09"/>		
<b>Cycle Counter Alert Data</b> Stroke cycles <input type="text" value="194"/> Cycle count deadband <input type="text" value="20"/> Cycle alert limit <input type="text" value="3.203381E+09"/>						
<input type="button" value="Load Alerts/Alarms..."/> <input type="button" value="Save Alerts/Alarms..."/>						
				<input type="button" value="Apply All"/> <input type="button" value="Retrieve All"/> <input type="button" value="Load All..."/> <input type="button" value="Save All..."/>		

Modifications:

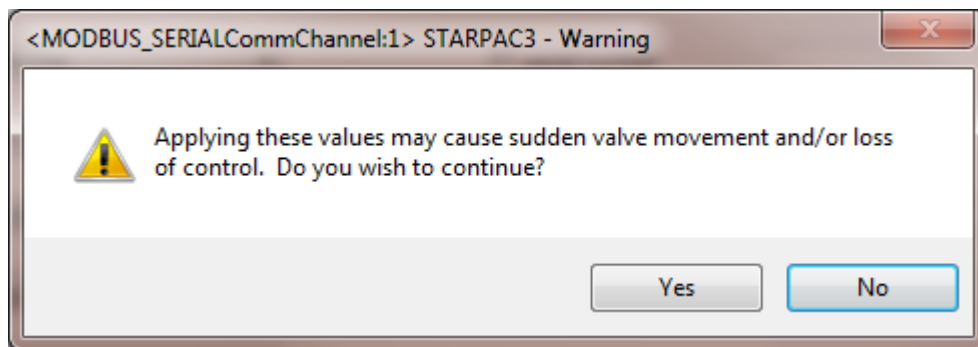
New modifications to the configuration file will be displayed by the pencil mark (✎). The pencil mark will appear next to the parameter modified, On the menu tree page where the parameter was modified, and on the bottom of the Frame.



Apply All

The "Apply All" button will apply and the modified parameters from all tabs. The Apply All will only apply the changes to the parameters with a pencil or modified parameters.

**WARNING: Applying the configuration changed to the parameter values may cause sudden valve movement and/or loss of control.**




Retrieve All

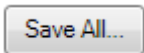
The "Retrieve All" button will retrieve the entire configuration from the device.

Note: If a parameter was modified and displayed the pencil mark, after the Retrieve All from the device the pencil mark will disappear and the parameter value will be the same as the value in the device.

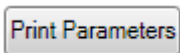
Load All...

The "Load All" button will open an open file dialog to select a StarPac configuration file (\*.VCT). Once the file is loaded into the DTM, differences between and the file will be displayed by the Pencil Mark (  ).

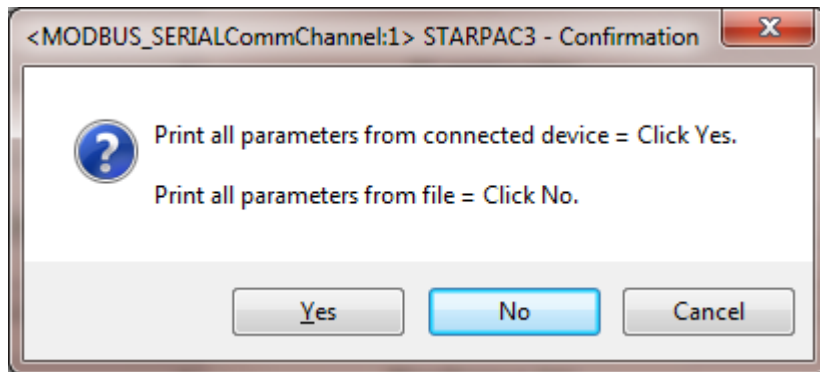
Note: The entire configuration is load into the DTM memory and displayed with the pencil mark. To apply the parameter changed, click the Apply All button.



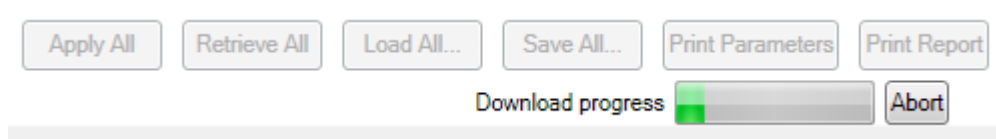
The "Save All" button will open a save file dialog to save the entire configuration to a selected StarPac configuration File (\*.VCT)



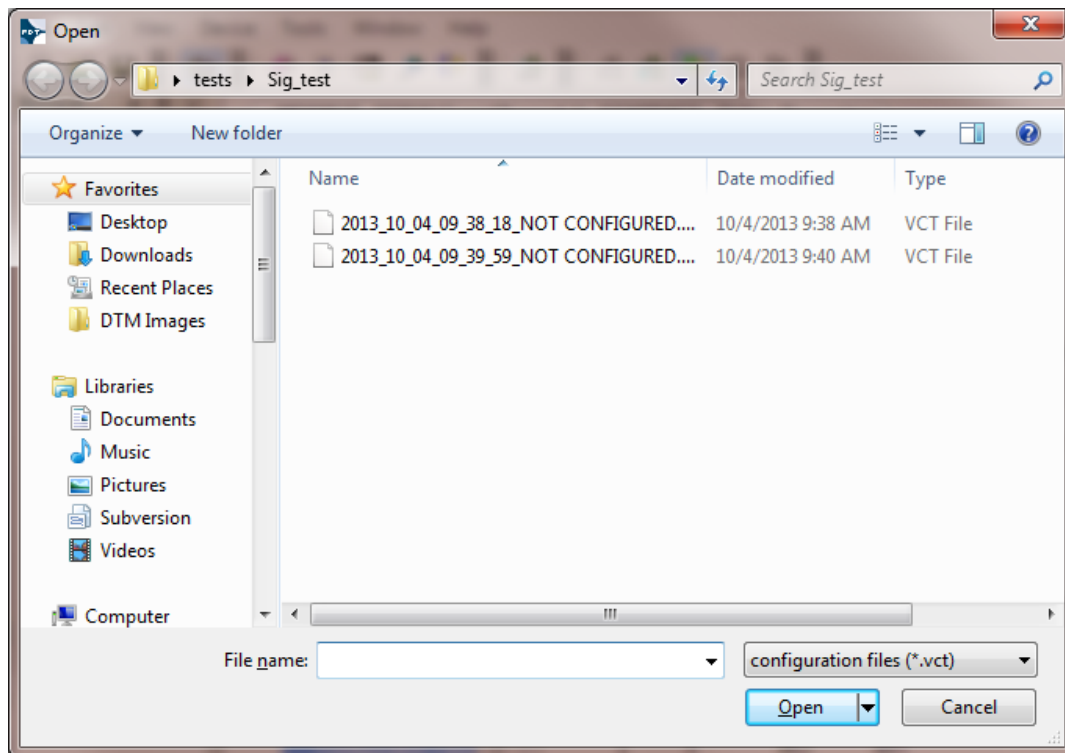
The "Print Parameters" button will display a dialog to select to print a download from device or the loaded configuration from file.



Clicking "Yes" will start the download from the device and disable all buttons on the page.



Clicking "No" will open an open file dialog to select the configuration file to print the parameter / values list.




A "Print Preview" tab will display the pdf version of the print parameters report.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

System Information	Operating Mode	Fluid Parameters	Calibration	Controller	Alerts / Alarms	Valve Geometry
Diagnostics	Scalars	Environmental	Characterization	Holding Register	Floating Point	Print Preview



## StarPac3 Parameter Report

Address	Access	Value	Description
0	RO	673	ADC value for cylinder Port 2 pressure
1	RO	184	ADC value for cylinder port 1 pressure
2	RO	0	ADC value for 4-20mA command
3	RO	481	ADC value for ambient temperature
4	RO	0	ADC value for 4-20mA auxiliary
5	RO	3675	Upstream pressure sensor ADC value
6	RO	3092	Downstream pressure sensor ADC value
7	RO	19804	ADC value for position channel
8	RO	1709	ADC value for process temperature channel
9	RO	2	Current flow state (liquid/gas)
10	RO	1000	Fixed scale normalized process variable
11	RO	0	Variable scale normalized liquid flow
12	RO	0	Variable scale normalized gas flow
13	RO	1308	Variable scale normalized P1 isa

Print Report



## StarTalk™ DTM Help for StarPac 3 System

The "Print Report" button will load the configuration into an organized print report where all parameters are listed into groups as it appears in the tabs of the configuration file page.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

**StarPac3 Configuration Report**

Tag Name: NOT CONFIGURED  
Device type: StarPac 3  
Valve serial number: 62713.001

**System Information**

Trim number:	0.25 - 0.30 in.	Air action:	Air-to-open (ATO)
Trim type:	CavControl	Electronics SN:	245496.000.000
Trim Characteristic:	Linear	EPROM version:	OL 3.0b IL 3.0a
Pressure class:	CL 150	Embedded software version:	00.22
Body model:	Mark One	Sensor rating:	
Flow direction:	Flow Over	Sensor drawing number:	
Body size:	.25 INCH / DN 6	P1 serial number:	
Body material:	Alloy 20	P2 serial number:	
Packing:	AFPI	P1 last calibrated:	10/04/13
		P2 last calibrated:	10/04/13

Apply All   Retrieve All   Load All...   Save All...   Print Parameters   **Print Report**



## **Valve Geometry**

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The Valve Geometry tab allows the user to perform the following functionality about the Valve Geometry:

- Download from device
- Load to device
- Save to file (VCT)
- Load from file (VCT)

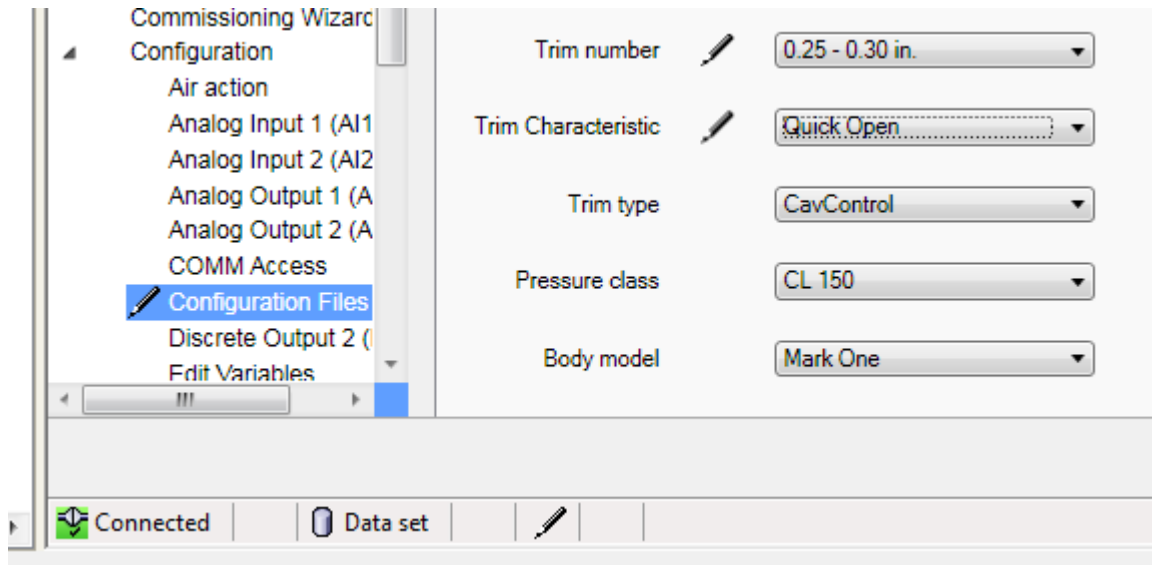


## StarTalk™ DTM Help for StarPac 3 System

System Information		Operating Mode		Fluid Parameters		Calibration		Controller		Alerts / Alarms	
Valve Geometry		Diagnostics		Scalers		Environmental		Characterization		Holding Register	
										Floating Point	
<b>Cv Coefficients</b>											
Cv - A1		-2.175456E-05		Cv - A2		-0.007108102					
Cv - B1		0.002065832		Cv - B2		0.002449813					
Cv - C1		-4.379507E-05		Cv - C2		-3.702677E-05					
Cv - D1		9.162532E-07		Cv - D2		4.361909E-07					
Cv - E1		-6.844302E-09		Cv - E2		-1.905507E-09					
Cv - Break point		48.5	%								
<b>Liquid dP Coefficients</b>											
Dp - A1		1		Dp - A2		1					
Dp - B1		0		Dp - B2		0					
Dp - C1		0		Dp - C2		0					
Dp - D1		0		Dp - D2		0					
Dp - E1		0		Dp - E2		0					
Dp - Break point:		50	%								
<b>FI Coefficients</b>											
FI - A1		0.87		FI - A2		0.87					
FI - B1		0		FI - B2		0					
FI - C1		0		FI - C2		0					
FI - D1		0		FI - D2		0					
FI - E1		0		FI - E2		0					
FI Curve Breakpoint:		50	%								
<b>Xt Coefficients</b>											
Xt - A1		0.809868		Xt - A2		0.809868					
Xt - B1		-0.0191157		Xt - B2		-0.0191157					
Xt - C1		0.000432946		Xt - C2		0.000432946					
Xt - D1		-4.10736E-06		Xt - D2		-4.10736E-06					
Xt - E1		1.3834E-08		Xt - E2		1.3834E-08					
Xt - Break point:		50	%								
<b>Gas dP Coefficients</b>											
Gas dP - A1		0		Gas dP - A2		0.0009523651					
<div>Load Valve Geometry... Save Valve Geometry...</div> <div>Apply All Retrieve All Load All... Save All...</div>											

## Modifications:

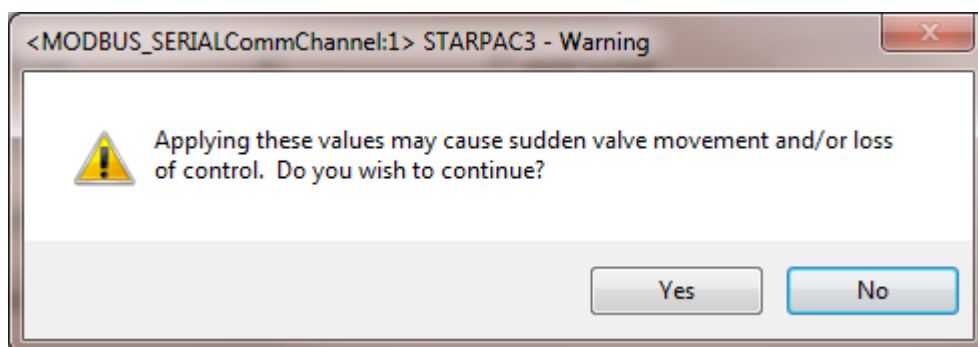
New modifications to the configuration file will be displayed by the pencil mark (✎). The pencil mark will appear next to the parameter modified, On the menu tree page where the parameter was modified, and on the bottom of the Frame.



Apply All

The "Apply All" button will apply and the modified parameters from all tabs. The Apply All will only apply the changes to the parameters with a pencil or modified parameters.

**WARNING: Applying the configuration changed to the parameter values may cause sudden valve movement and/or loss of control.**

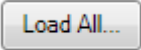


Retrieve All

The "Retrieve All" button will retrieve the entire configuration from the device.

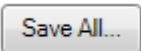
Note: If a parameter was modified and displayed the pencil mark, after the Retrieve All from the device the pencil mark will disappear and the parameter value will be the same as the value in the device.



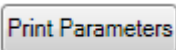


The "Load All" button will open an open file dialog to select a StarPac configuration file (\*.VCT). Once the file is loaded into the DTM, differences between and the file will be displayed by the Pencil Mark (✎).

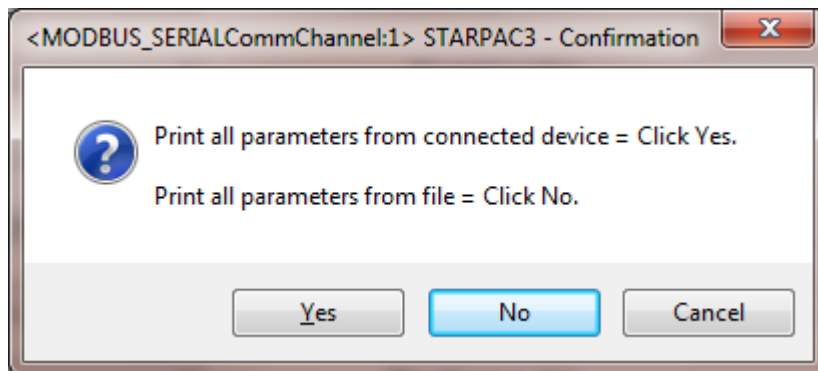
Note: The entire configuration is load into the DTM memory and displayed with the pencil mark. To apply the parameter changed, click the Apply All button.



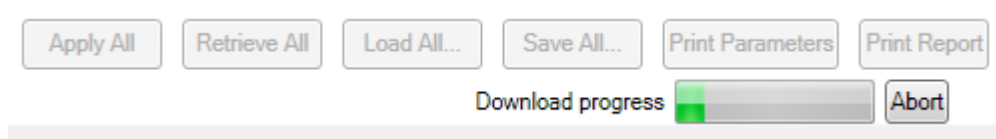
The "Save All" button will open a save file dialog to save the entire configuration to a selected StarPac configuration File (\*.VCT)



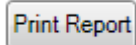
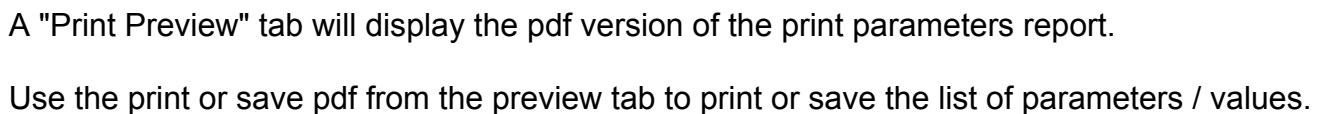
The "Print Parameters" button will display a dialog to select to print a download from device or the loaded configuration from file.



Clicking "Yes" will start the download from the device and disable all buttons on the page.



Clicking "No" will open an open file dialog to select the configuration file to print the parameter / values list.





## StarTalk™ DTM Help for StarPac 3 System

The "Print Report" button will load the configuration into an organized print report where all parameters are listed into groups as it appears in the tabs of the configuration file page.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

**StarPac3 Configuration Report**

Tag Name: NOT CONFIGURED  
Device type: StarPac 3  
Valve serial number: 62713.001

**System Information**

Trim number:	0.25 - 0.30 in.	Air action:	Air-to-open (ATO)
Trim type:	CavControl	Electronics SN:	245496.000.000
Trim Characteristic:	Linear	EPROM version:	OL 3.0b IL 3.0a
Pressure class:	CL 150	Embedded software version:	00.22
Body model:	Mark One	Sensor rating:	
Flow direction:	Flow Over	Sensor drawing number:	
Body size:	.25 INCH / DN 6	P1 serial number:	
Body material:	Alloy 20	P2 serial number:	
Packing:	AFPI	P1 last calibrated:	10/04/13
		P2 last calibrated:	10/04/13

Apply All   Retrieve All   Load All...   Save All...   Print Parameters   **Print Report**

## Diagnostics

The Diagnostics tab allows the user to perform the following functionality about the diagnostics settings:

- Download from device
- Load to device
- Save to file (VCT)
- Load from file (VCT)

System Information	Operating Mode	Fluid Parameters	Calibration	Controller	Alerts / Alarms
Valve Geometry	Diagnostics	Scalers	Environmental	Characterization	Holding Register
					Floating Point

Signature Acquisition Settings

Ramp rate  %/min.

Step time  sec.

Start position  %

Stop position  %

Data Logger Settings

Time and date

Interval  sec.

Load Diagnostics...

Save Diagnostics...

Apply All

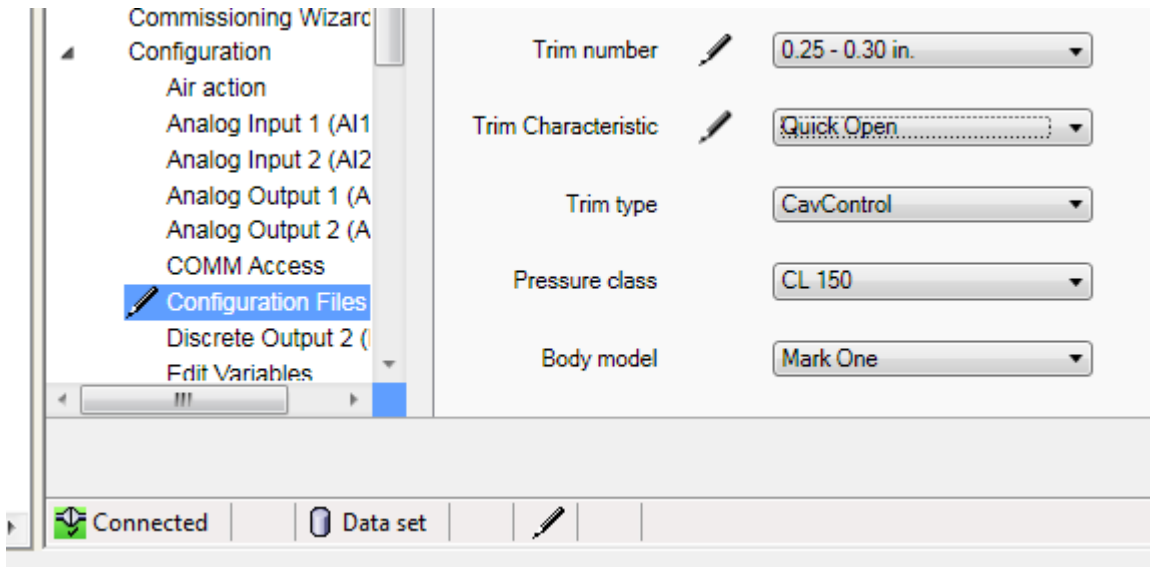
Retrieve All

Load All...

Save All...

### Modifications:

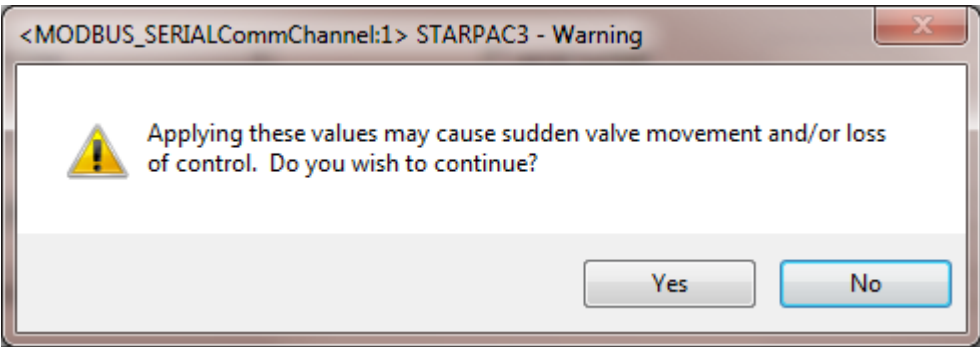
New modifications to the configuration file will be displayed by the pencil mark (✎). The pencil mark will appear next to the parameter modified, On the menu tree page where the parameter was modified, and on the bottom of the Frame.



Apply All

The "Apply All" button will apply and the modified parameters from all tabs. The Apply All will only apply the changes to the parameters with a pencil or modified parameters.

**WARNING: Applying the configuration changed to the parameter values may cause sudden valve movement and/or loss of control.**




Retrieve All

The "Retrieve All" button will retrieve the entire configuration from the device.

Note: If a parameter was modified and displayed the pencil mark, after the Retrieve All from the device the pencil mark will disappear and the parameter value will be the same as the value in the device.

Load All...

The "Load All" button will open an open file dialog to select a StarPac configuration file (\*.VCT). Once the file is loaded into the DTM, differences between and the file will be displayed by the Pencil Mark (  ).

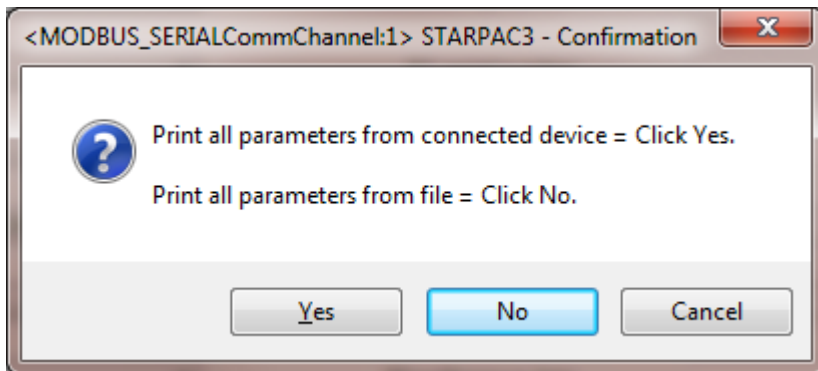
Note: The entire configuration is load into the DTM memory and displayed with the pencil mark. To apply the parameter changed, click the Apply All button.

Save All...

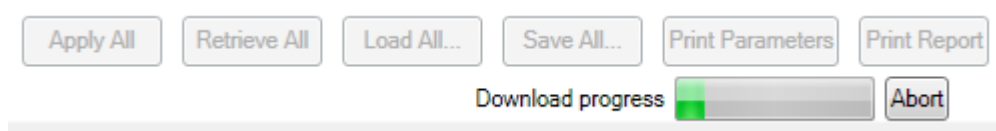
The "Save All" button will open a save file dialog to save the entire configuration to a selected StarPac configuration File (\*.VCT)

Print Parameters

The "Print Parameters" button will display a dialog to select to print a download from device or the loaded configuration from file.



Clicking "Yes" will start the download from the device and disable all buttons on the page.



Clicking "No" will open an open file dialog to select the configuration file to print the parameter / values list.





## StarTalk™ DTM Help for StarPac 3 System

The "Print Report" button will load the configuration into an organized print report where all parameters are listed into groups as it appears in the tabs of the configuration file page.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

**StarPac3 Configuration Report**

Tag Name: NOT CONFIGURED  
Device type: StarPac 3  
Valve serial number: 62713.001

**System Information**

Trim number:	0.25 - 0.30 in.	Air action:	Air-to-open (ATO)
Trim type:	CavControl	Electronics SN:	245496.000.000
Trim Characteristic:	Linear	EPROM version:	OL 3.0b IL 3.0a
Pressure class:	CL 150	Embedded software version:	00.22
Body model:	Mark One	Sensor rating:	
Flow direction:	Flow Over	Sensor drawing number:	
Body size:	.25 INCH / DN 6	P1 serial number:	
Body material:	Alloy 20	P2 serial number:	
Packing:	AFPI	P1 last calibrated:	10/04/13
		P2 last calibrated:	10/04/13

Apply All Retrieve All Load All... Save All... Print Parameters **Print Report**



## Scalers

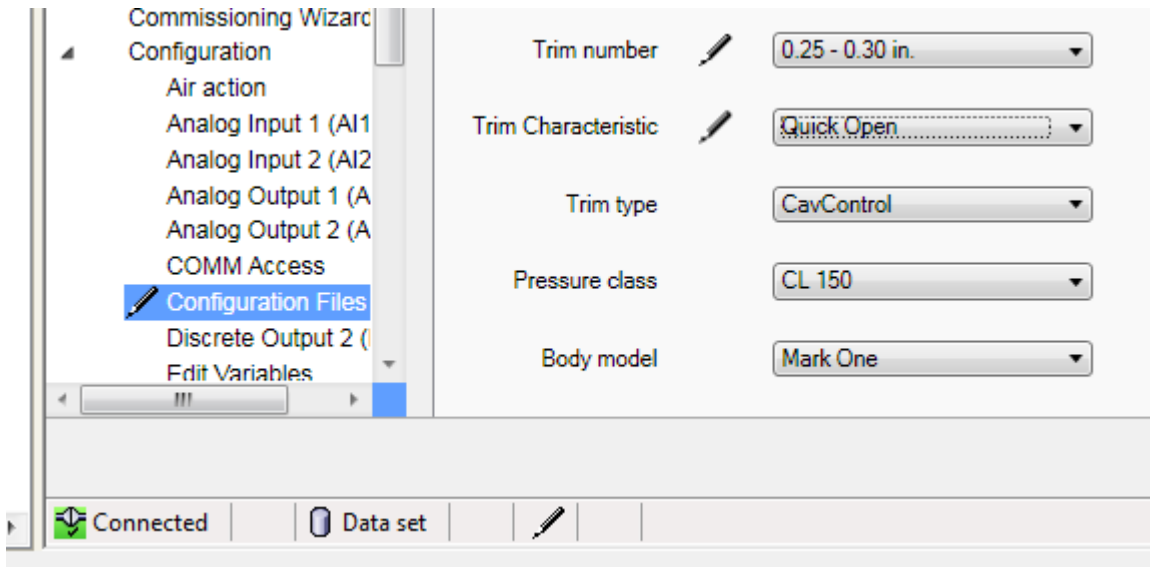
The Scalers tab allows the user to perform the following functionality about the scalers settings:

- Download from device
- Load to device
- Save to file (VCT)
- Load from file (VCT)

System Information		Operating Mode		Fluid Parameters		Calibration		Controller		Alerts / Alarms	
Valve Geometry		Diagnostics		Scalers		Environmental		Characterization		Holding Register	
Integer Scalers											
Min Liquid flow	<input type="text" value="0"/>	Max Liquid flow	<input type="text" value="100"/>								
Min Gas flow	<input type="text" value="0"/>	Max Gas flow	<input type="text" value="100"/>								
Min Upstream pressure	<input type="text" value="0"/>	Max Upstream pressure	<input type="text" value="100"/>								
Min Downstream pressure	<input type="text" value="0"/>	Max Downstream pressure	<input type="text" value="100"/>								
Min Delta P	<input type="text" value="0"/>	Max Delta P	<input type="text" value="100"/>								
Min Temperature	<input type="text" value="0"/>	Max Temperature	<input type="text" value="200"/>								
Min Auxiliary input	<input type="text" value="-12.5"/>		<input type="text"/>								
<input type="button" value="Load Scalers..."/> <input type="button" value="Save Scalers..."/>											
				<input type="button" value="Apply All"/> <input type="button" value="Retrieve All"/> <input type="button" value="Load All..."/> <input type="button" value="Save All..."/>							

Modifications:

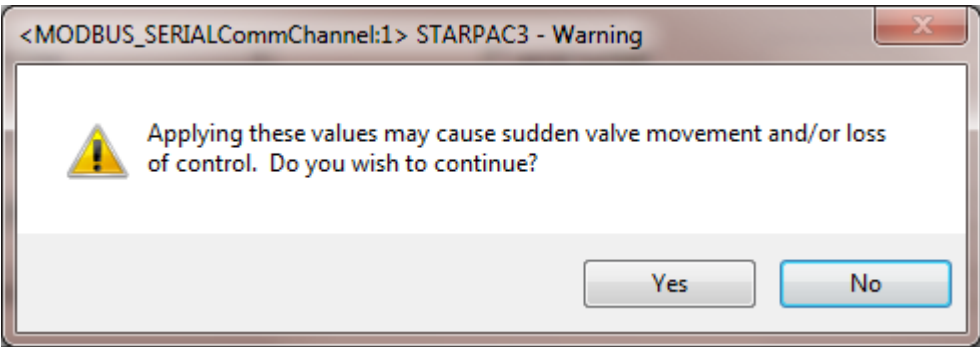
New modifications to the configuration file will be displayed by the pencil mark (✎). The pencil mark will appear next to the parameter modified, On the menu tree page where the parameter was modified, and on the bottom of the Frame.



Apply All

The "Apply All" button will apply and the modified parameters from all tabs. The Apply All will only apply the changes to the parameters with a pencil or modified parameters.

**WARNING: Applying the configuration changed to the parameter values may cause sudden valve movement and/or loss of control.**




Retrieve All

The "Retrieve All" button will retrieve the entire configuration from the device.

Note: If a parameter was modified and displayed the pencil mark, after the Retrieve All from the device the pencil mark will disappear and the parameter value will be the same as the value in the device.

Load All...

The "Load All" button will open an open file dialog to select a StarPac configuration file (\*.VCT). Once the file is loaded into the DTM, differences between and the file will be displayed by the Pencil Mark (  ).

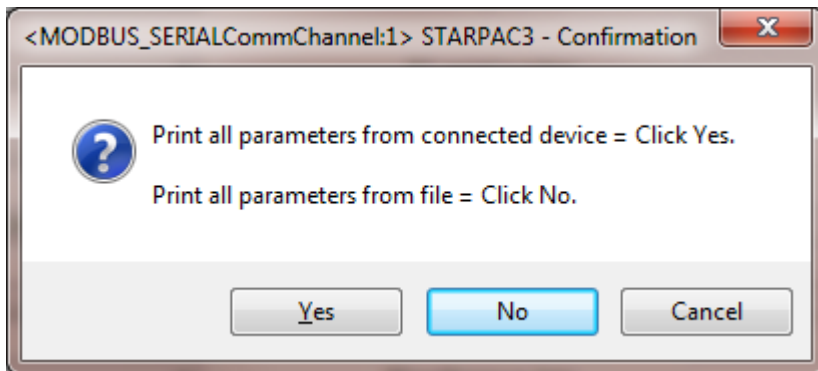
Note: The entire configuration is load into the DTM memory and displayed with the pencil mark. To apply the parameter changed, click the Apply All button.

Save All...

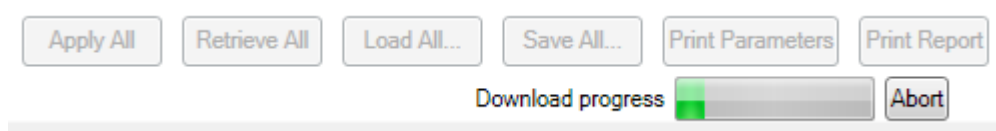
The "Save All" button will open a save file dialog to save the entire configuration to a selected StarPac configuration File (\*.VCT)

Print Parameters

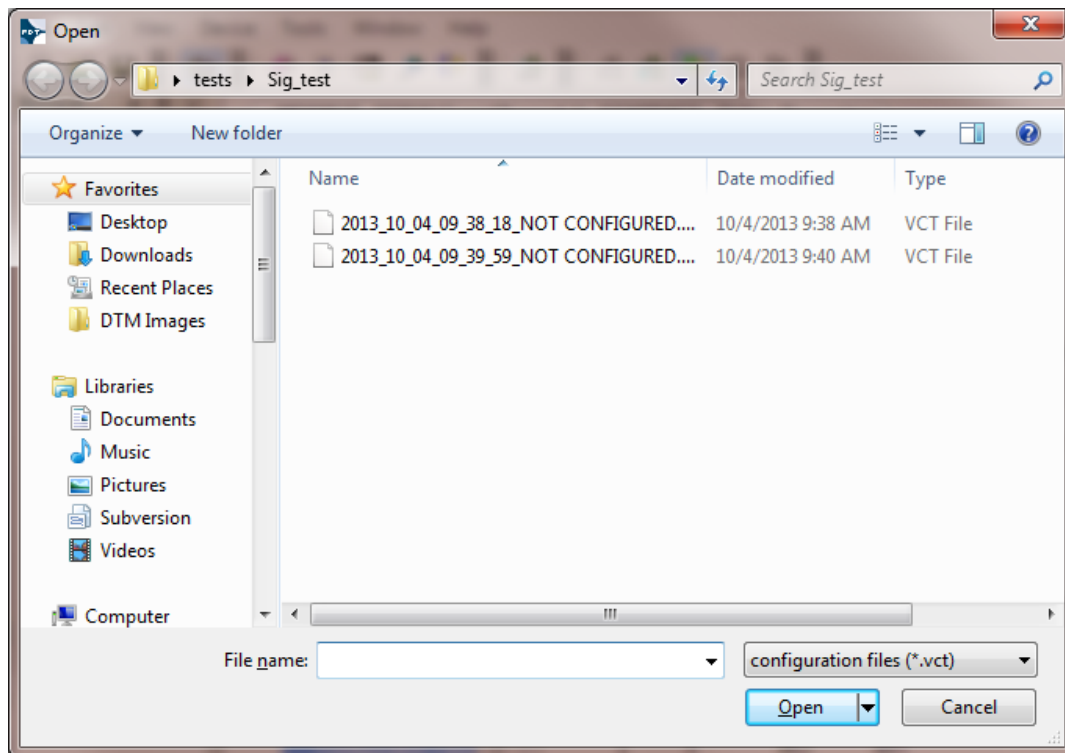
The "Print Parameters" button will display a dialog to select to print a download from device or the loaded configuration from file.



Clicking "Yes" will start the download from the device and disable all buttons on the page.



Clicking "No" will open an open file dialog to select the configuration file to print the parameter / values list.




A "Print Preview" tab will display the pdf version of the print parameters report.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

System InformationOperating ModeFluid ParametersCalibrationControllerAlerts / AlarmsValve GeometryDiagnosticsScalersEnvironmentalCharacterizationHolding RegisterFloating PointPrint Preview

Page 1 / 36100%Find



StarPac3 Parameter Report

Address	Access	Value	Description
0	RO	673	ADC value for cylinder Port 2 pressure
1	RO	184	ADC value for cylinder port 1 pressure
2	RO	0	ADC value for 4-20mA command
3	RO	481	ADC value for ambient temperature
4	RO	0	ADC value for 4-20mA auxiliary
5	RO	3675	Upstream pressure sensor ADC value
6	RO	3092	Downstream pressure sensor ADC value
7	RO	19804	ADC value for position channel
8	RO	1709	ADC value for process temperature channel
9	RO	2	Current flow state (liquid/gas)
10	RO	1000	Fixed scale normalized process variable
11	RO	0	Variable scale normalized liquid flow
12	RO	0	Variable scale normalized gas flow
13	RO	1308	Variable scale normalized P1 isa

Print Report



## StarTalk™ DTM Help for StarPac 3 System

The "Print Report" button will load the configuration into an organized print report where all parameters are listed into groups as it appears in the tabs of the configuration file page.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

StarPac3 Configuration Report			
Tag Name: NOT CONFIGURED			
Device type: StarPac 3			
Valve serial number: 62713.001			
<b>System Information</b>			
Trim number:	0.25 - 0.30 in.	Air action:	Air-to-open (ATO)
Trim type:	CavControl	Electronics SN:	245496.000.000
Trim Characteristic:	Linear	EPROM version:	OL 3.0b IL 3.0a
Pressure class:	CL 150	Embedded software version:	00.22
Body model:	Mark One	Sensor rating:	
Flow direction:	Flow Over	Sensor drawing number:	
Body size:	.25 INCH / DN 6	P1 serial number:	
Body material:	Alloy 20	P2 serial number:	
Packing:	AFPI	P1 last calibrated:	10/04/13

## Environmental

The Environmental tab allows the user to perform the following functionality about the environmental settings:

- Download from device
- Load to device
- Save to file (VCT)
- Load from file (VCT)

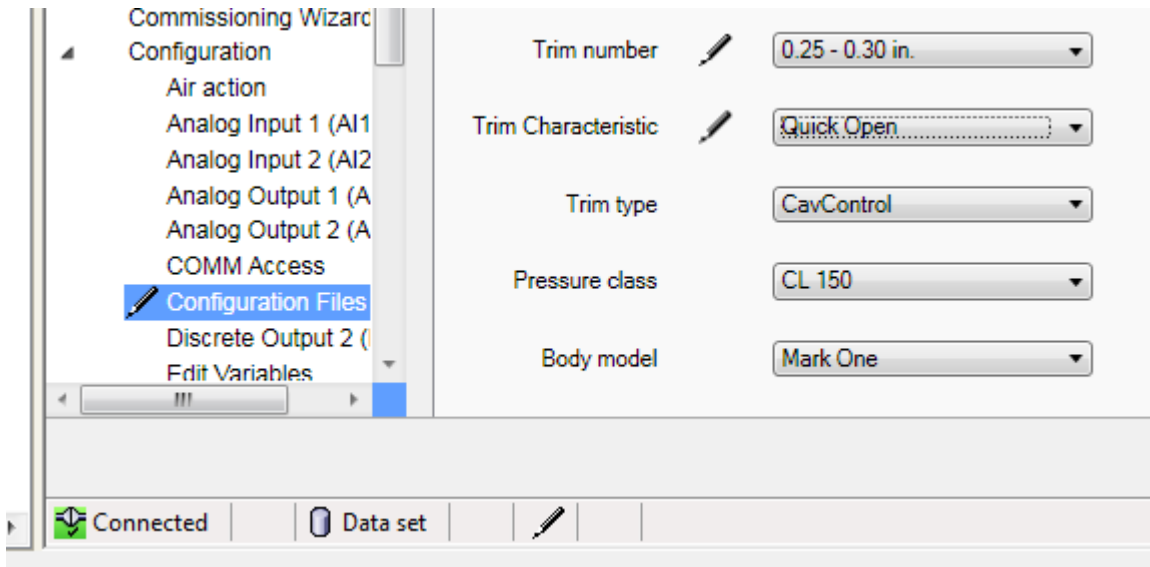
System Information	Operating Mode	Fluid Parameters	Calibration	Controller	Alerts / Alarms
Valve Geometry	Diagnostics	Scalers	Environmental	Characterization	Holding Register
					Floating Point
Time of operation	4698.428	hrs.			
Lowest ambient temperature	32	°F.			
Highest ambient temperature	89.7125	°F.			
Lowest process temperature	-290.6045	°F.			
Highest process temperature	1585.908	°F.			

Load Environmental...
Save Environmental...

Apply All
Retrieve All
Load All...
Save All...

### Modifications:

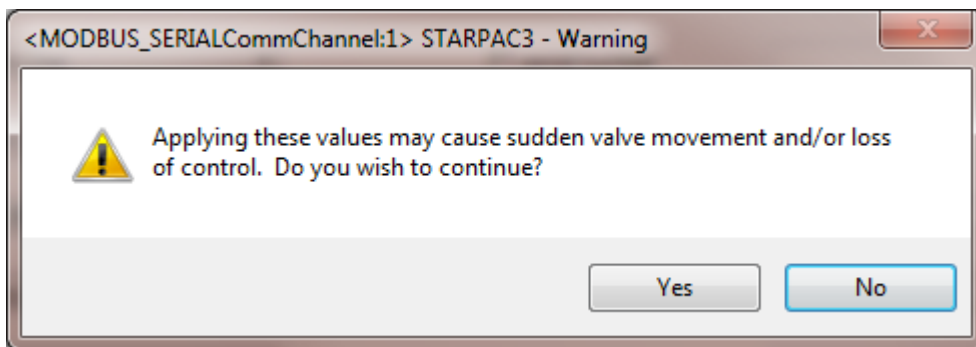
New modifications to the configuration file will be displayed by the pencil mark (✎). The pencil mark will appear next to the parameter modified, On the menu tree page where the parameter was modified, and on the bottom of the Frame.



Apply All

The "Apply All" button will apply and the modified parameters from all tabs. The Apply All will only apply the changes to the parameters with a pencil or modified parameters.

**WARNING: Applying the configuration changed to the parameter values may cause sudden valve movement and/or loss of control.**



Retrieve All

The "Retrieve All" button will retrieve the entire configuration from the device.

Note: If a parameter was modified and displayed the pencil mark, after the Retrieve All from the device the pencil mark will disappear and the parameter value will be the same as the value in the device.

Load All...

The "Load All" button will open an open file dialog to select a StarPac configuration file (\*.VCT). Once the file is loaded into the DTM, differences between and the file will be displayed by the Pencil Mark (✎).

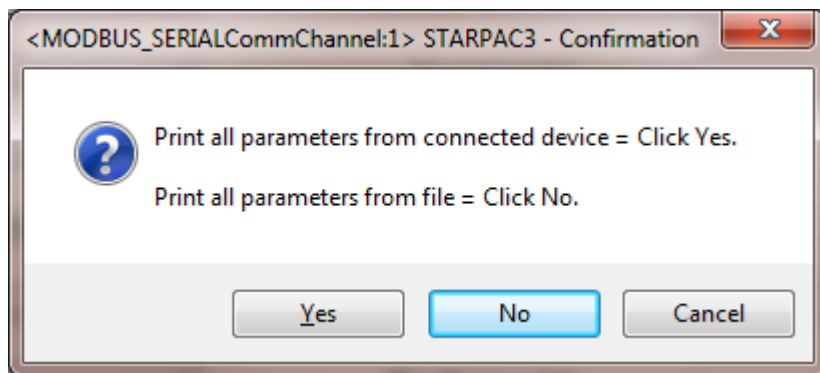
Note: The entire configuration is load into the DTM memory and displayed with the pencil mark. To apply the parameter changed, click the Apply All button.

Save All...

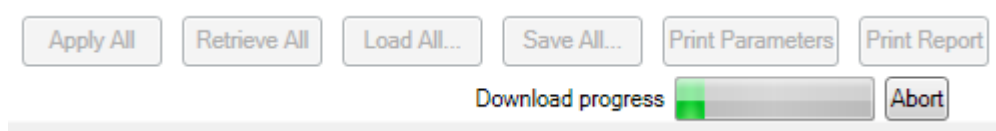
The "Save All" button will open a save file dialog to save the entire configuration to a selected StarPac configuration File (\*.VCT)

Print Parameters

The "Print Parameters" button will display a dialog to select to print a download from device or the loaded configuration from file.



Clicking "Yes" will start the download from the device and disable all buttons on the page.



Clicking "No" will open an open file dialog to select the configuration file to print the parameter / values list.







## StarTalk™ DTM Help for StarPac 3 System

The "Print Report" button will load the configuration into an organized print report where all parameters are listed into groups as it appears in the tabs of the configuration file page.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

**StarPac3 Configuration Report**

Tag Name: NOT CONFIGURED  
Device type: StarPac 3  
Valve serial number: 62713.001

**System Information**

Trim number:	0.25 - 0.30 in.	Air action:	Air-to-open (ATO)
Trim type:	CavControl	Electronics SN:	245496.000.000
Trim Characteristic:	Linear	EPROM version:	OL 3.0b IL 3.0a
Pressure class:	CL 150	Embedded software version:	00.22
Body model:	Mark One	Sensor rating:	
Flow direction:	Flow Over	Sensor drawing number:	
Body size:	.25 INCH / DN 6	P1 serial number:	
Body material:	Alloy 20	P2 serial number:	
Packing:	AFPI	P1 last calibrated:	10/04/13

Apply All   Retrieve All   Load All...   Save All...   Print Parameters   **Print Report**



## Characterization

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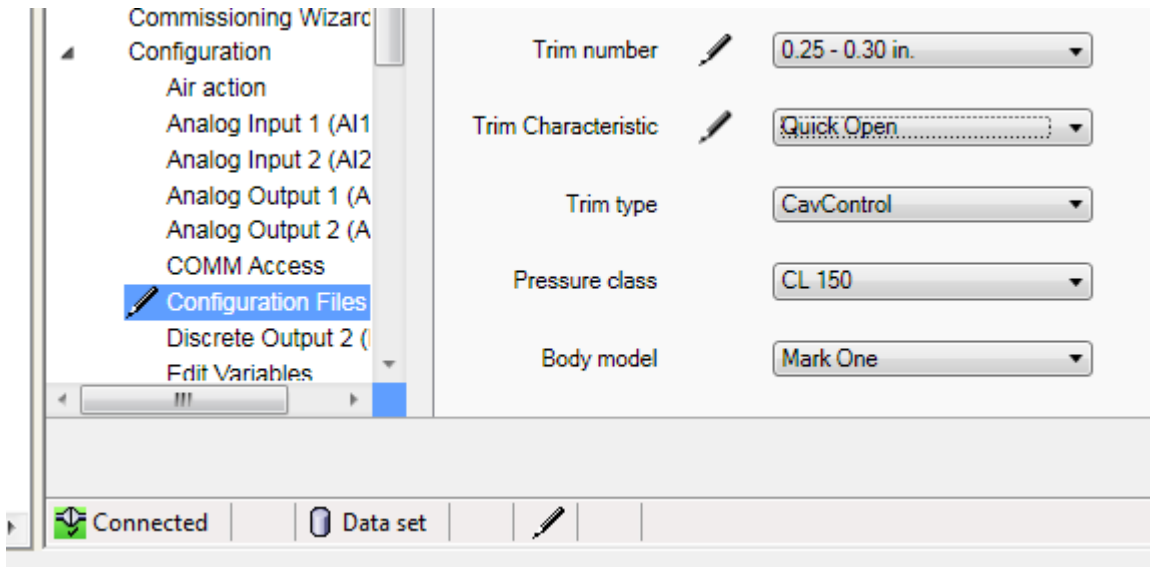
The Characterization tab allows the user to perform the following functionality about the characterization settings:

- Download from device
- Load to device
- Save to file (VCT)
- Load from file (VCT)

System Information		Operating Mode		Fluid Parameters		Calibration		Controller		Alerts / Alarms	
Valve Geometry		Diagnostics		Scalers		Environmental		Characterization		Holding Register	
										Floating Point	
Input (X)						Output (Y)					
Characterization point #1	<input type="text" value="0"/>	%	Characterization point #1	<input type="text" value="0"/>	%						
Characterization point #2	<input type="text" value="5"/>	%	Characterization point #2	<input type="text" value="5"/>	%						
Characterization point #3	<input type="text" value="10"/>	%	Characterization point #3	<input type="text" value="10"/>	%						
Characterization point #4	<input type="text" value="15"/>	%	Characterization point #4	<input type="text" value="15"/>	%						
Characterization point #5	<input type="text" value="20"/>	%	Characterization point #5	<input type="text" value="20"/>	%						
Characterization point #6	<input type="text" value="25"/>	%	Characterization point #6	<input type="text" value="25"/>	%						
Characterization point #7	<input type="text" value="30"/>	%	Characterization point #7	<input type="text" value="30"/>	%						
Characterization point #8	<input type="text" value="35"/>	%	Characterization point #8	<input type="text" value="35"/>	%						
Characterization point #9	<input type="text" value="40"/>	%	Characterization point #9	<input type="text" value="40"/>	%						
Characterization point #10	<input type="text" value="45"/>	%	Characterization point #10	<input type="text" value="45"/>	%						
Characterization point #11	<input type="text" value="50"/>	%	Characterization point #11	<input type="text" value="50"/>	%						
Characterization point #12	<input type="text" value="55"/>	%	Characterization point #12	<input type="text" value="55"/>	%						
Characterization point #13	<input type="text" value="60"/>	%	Characterization point #13	<input type="text" value="60"/>	%						
Characterization point #14	<input type="text" value="65"/>	%	Characterization point #14	<input type="text" value="65"/>	%						
Characterization point #15	<input type="text" value="70"/>	%	Characterization point #15	<input type="text" value="70"/>	%						
Characterization point #16	<input type="text" value="75"/>	%	Characterization point #16	<input type="text" value="75"/>	%						
Characterization point #17	<input type="text" value="80"/>	%	Characterization point #17	<input type="text" value="80"/>	%						
Characterization point #18	<input type="text" value="85"/>	%	Characterization point #18	<input type="text" value="85"/>	%						
Characterization point #19	<input type="text" value="90"/>	%	Characterization point #19	<input type="text" value="90"/>	%						
Characterization point #20	<input type="text" value="95"/>	%	Characterization point #20	<input type="text" value="95"/>	%						
Characterization point #21	<input type="text" value="100"/>	%	Characterization point #21	<input type="text" value="100"/>	%						

## Modifications:

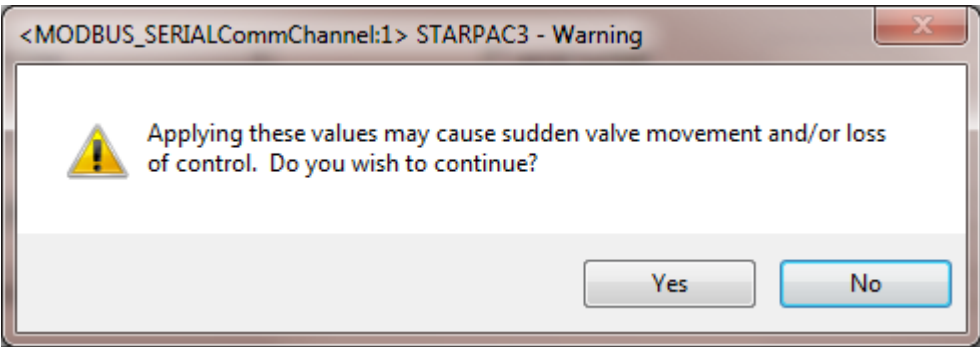
New modifications to the configuration file will be displayed by the pencil mark (✎). The pencil mark will appear next to the parameter modified, On the menu tree page where the parameter was modified, and on the bottom of the Frame.



Apply All

The "Apply All" button will apply and the modified parameters from all tabs. The Apply All will only apply the changes to the parameters with a pencil or modified parameters.

**WARNING: Applying the configuration changed to the parameter values may cause sudden valve movement and/or loss of control.**




Retrieve All

The "Retrieve All" button will retrieve the entire configuration from the device.

Note: If a parameter was modified and displayed the pencil mark, after the Retrieve All from the device the pencil mark will disappear and the parameter value will be the same as the value in the device.

Load All...

The "Load All" button will open an open file dialog to select a StarPac configuration file (\*.VCT). Once the file is loaded into the DTM, differences between and the file will be displayed by the Pencil Mark (  ).

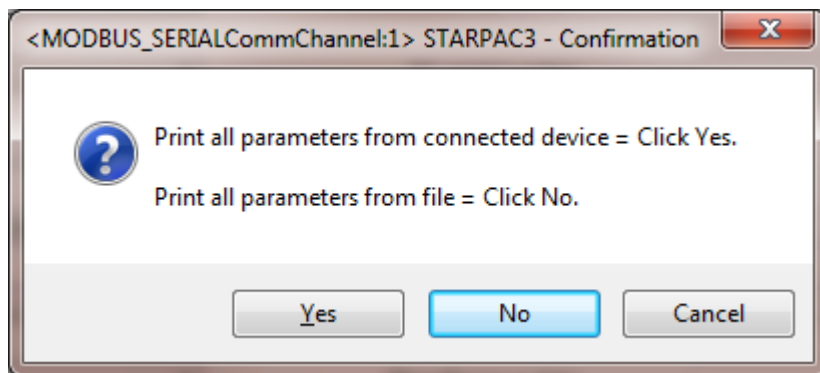
Note: The entire configuration is load into the DTM memory and displayed with the pencil mark. To apply the parameter changed, click the Apply All button.

Save All...

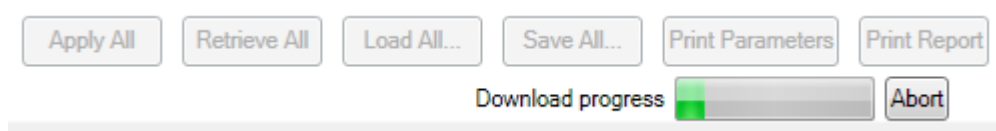
The "Save All" button will open a save file dialog to save the entire configuration to a selected StarPac configuration File (\*.VCT)

Print Parameters

The "Print Parameters" button will display a dialog to select to print a download from device or the loaded configuration from file.



Clicking "Yes" will start the download from the device and disable all buttons on the page.



Clicking "No" will open an open file dialog to select the configuration file to print the parameter / values list.





## StarTalk™ DTM Help for StarPac 3 System

The "Print Report" button will load the configuration into an organized print report where all parameters are listed into groups as it appears in the tabs of the configuration file page.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

**StarPac3 Configuration Report**

Tag Name: NOT CONFIGURED  
Device type: StarPac 3  
Valve serial number: 62713.001

**System Information**

Trim number:	0.25 - 0.30 in.	Air action:	Air-to-open (ATO)
Trim type:	CavControl	Electronics SN:	245496.000.000
Trim Characteristic:	Linear	EPROM version:	OL 3.0b IL 3.0a
Pressure class:	CL 150	Embedded software version:	00.22
Body model:	Mark One	Sensor rating:	
Flow direction:	Flow Over	Sensor drawing number:	
Body size:	.25 INCH / DN 6	P1 serial number:	
Body material:	Alloy 20	P2 serial number:	
Packing:	AFPI	P1 last calibrated:	10/04/13
		P2 last calibrated:	10/04/13

Apply All   Retrieve All   Load All...   Save All...   Print Parameters   **Print Report**





## **Holding Register**

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The Holding Registers tab allows the user to perform the following functionality about the holding registers settings:

- Download from device
- Load to device
- Save to file (VCT)
- Load from file (VCT)

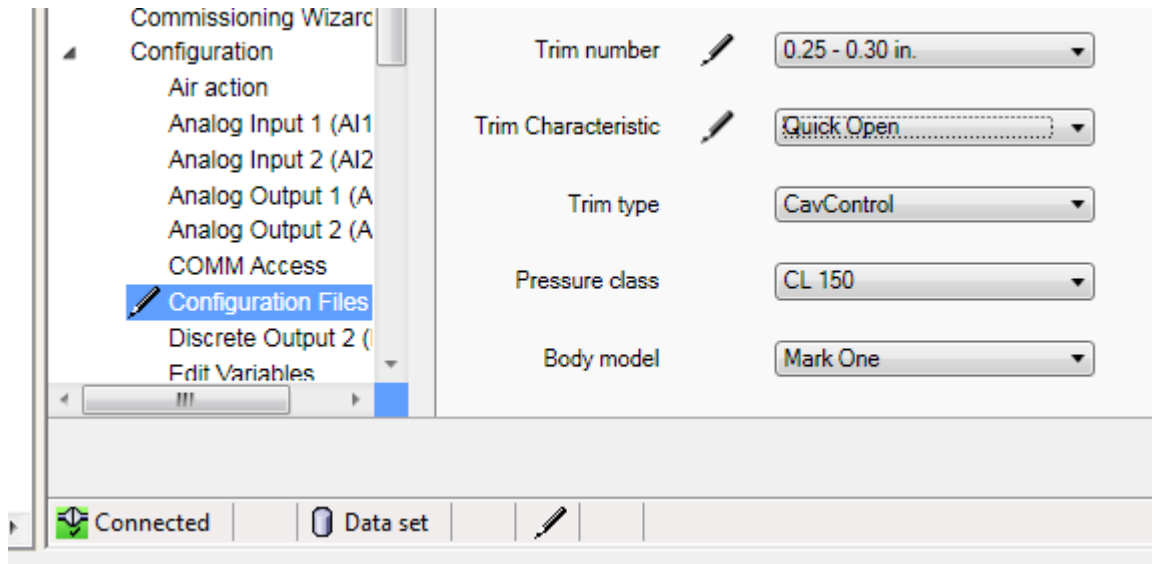


## StarTalk™ DTM Help for StarPac 3 System

System Information		Operating Mode		Fluid Parameters		Calibration		Controller		Alerts / Alarms	
Valve Geometry		Diagnostics		Scalers		Environmental		Characterization		Holding Register	
										Floating Point	
Integer pointers											
42051 (Pts to ->)	<input type="text" value="0"/>			42083 (Pts to ->)	<input type="text" value="0"/>						
42052 (Pts to ->)	<input type="text" value="0"/>			42084 (Pts to ->)	<input type="text" value="0"/>						
42053 (Pts to ->)	<input type="text" value="0"/>			42085 (Pts to ->)	<input type="text" value="0"/>						
42054 (Pts to ->)	<input type="text" value="0"/>			42086 (Pts to ->)	<input type="text" value="0"/>						
42055 (Pts to ->)	<input type="text" value="0"/>			42087 (Pts to ->)	<input type="text" value="0"/>						
42056 (Pts to ->)	<input type="text" value="0"/>			42088 (Pts to ->)	<input type="text" value="0"/>						
42057 (Pts to ->)	<input type="text" value="0"/>			42089 (Pts to ->)	<input type="text" value="0"/>						
42058 (Pts to ->)	<input type="text" value="0"/>			42090 (Pts to ->)	<input type="text" value="0"/>						
42059 (Pts to ->)	<input type="text" value="0"/>			42091 (Pts to ->)	<input type="text" value="0"/>						
42060 (Pts to ->)	<input type="text" value="0"/>			42092 (Pts to ->)	<input type="text" value="0"/>						
42061 (Pts to ->)	<input type="text" value="0"/>			42093 (Pts to ->)	<input type="text" value="0"/>						
42062 (Pts to ->)	<input type="text" value="0"/>			42094 (Pts to ->)	<input type="text" value="0"/>						
42063 (Pts to ->)	<input type="text" value="0"/>			42095 (Pts to ->)	<input type="text" value="0"/>						
42064 (Pts to ->)	<input type="text" value="0"/>			42096 (Pts to ->)	<input type="text" value="0"/>						
42065 (Pts to ->)	<input type="text" value="0"/>			42097 (Pts to ->)	<input type="text" value="0"/>						
42066 (Pts to ->)	<input type="text" value="0"/>			42098 (Pts to ->)	<input type="text" value="0"/>						
42067 (Pts to ->)	<input type="text" value="0"/>			42099 (Pts to ->)	<input type="text" value="0"/>						
42068 (Pts to ->)	<input type="text" value="0"/>			42100 (Pts to ->)	<input type="text" value="0"/>						
42069 (Pts to ->)	<input type="text" value="0"/>			42101 (Pts to ->)	<input type="text" value="0"/>						
42070 (Pts to ->)	<input type="text" value="0"/>			42102 (Pts to ->)	<input type="text" value="0"/>						
42071 (Pts to ->)	<input type="text" value="0"/>			42103 (Pts to ->)	<input type="text" value="0"/>						
42072 (Pts to ->)	<input type="text" value="0"/>			42104 (Pts to ->)	<input type="text" value="0"/>						
42073 (Pts to ->)	<input type="text" value="0"/>			42105 (Pts to ->)	<input type="text" value="0"/>						
42074 (Pts to ->)	<input type="text" value="0"/>			42106 (Pts to ->)	<input type="text" value="0"/>						
42075 (Pts to ->)	<input type="text" value="0"/>			42107 (Pts to ->)	<input type="text" value="0"/>						
42076 (Pts to ->)	<input type="text" value="0"/>			42108 (Pts to ->)	<input type="text" value="0"/>						
42078 (Pts to ->)	<input type="text" value="0"/>			42109 (Pts to ->)	<input type="text" value="0"/>						
42078 (Pts to ->)	<input type="text" value="0"/>			42110 (Pts to ->)	<input type="text" value="0"/>						
42079 (Pts to ->)	<input type="text" value="0"/>			42111 (Pts to ->)	<input type="text" value="0"/>						
42080 (Pts to ->)	<input type="text" value="0"/>			42112 (Pts to ->)	<input type="text" value="0"/>						
42081 (Pts to ->)	<input type="text" value="0"/>			42113 (Pts to ->)	<input type="text" value="0"/>						
42082 (Pts to ->)	<input type="text" value="0"/>			42114 (Pts to ->)	<input type="text" value="0"/>						

## Modifications:

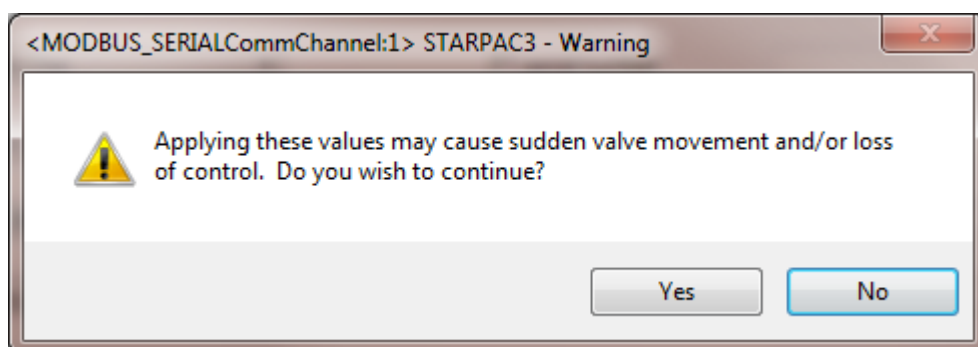
New modifications to the configuration file will be displayed by the pencil mark (✎). The pencil mark will appear next to the parameter modified, On the menu tree page where the parameter was modified, and on the bottom of the Frame.



Apply All

The "Apply All" button will apply and the modified parameters from all tabs. The Apply All will only apply the changes to the parameters with a pencil or modified parameters.

**WARNING: Applying the configuration changed to the parameter values may cause sudden valve movement and/or loss of control.**



Retrieve All

The "Retrieve All" button will retrieve the entire configuration from the device.

Note: If a parameter was modified and displayed the pencil mark, after the Retrieve All from the device the pencil mark will disappear and the parameter value will be the same as the value in the device.

Load All...

The "Load All" button will open an open file dialog to select a StarPac configuration file (\*.VCT). Once the file is loaded into the DTM, differences between and the file will be displayed by the Pencil Mark (✎).

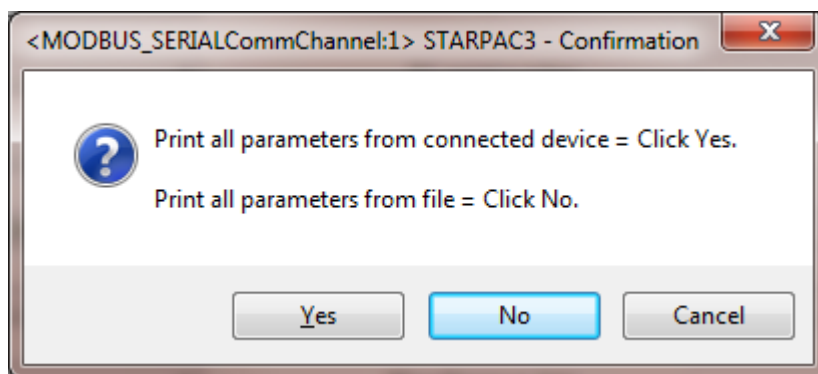
Note: The entire configuration is load into the DTM memory and displayed with the pencil mark. To apply the parameter changed, click the Apply All button.

Save All...

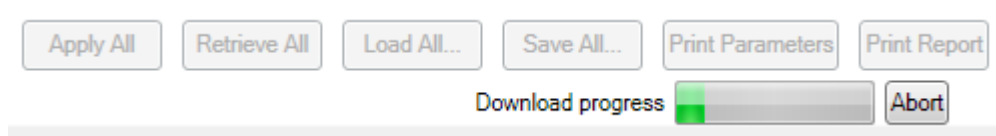
The "Save All" button will open a save file dialog to save the entire configuration to a selected StarPac configuration File (\*.VCT)

Print Parameters

The "Print Parameters" button will display a dialog to select to print a download from device or the loaded configuration from file.



Clicking "Yes" will start the download from the device and disable all buttons on the page.



Clicking "No" will open an open file dialog to select the configuration file to print the parameter / values list.





## StarTalk™ DTM Help for StarPac 3 System

The "Print Report" button will load the configuration into an organized print report where all parameters are listed into groups as it appears in the tabs of the configuration file page.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

**StarPac3 Configuration Report**

Tag Name: NOT CONFIGURED  
Device type: StarPac 3  
Valve serial number: 62713.001

**System Information**

Trim number:	0.25 - 0.30 in.	Air action:	Air-to-open (ATO)
Trim type:	CavControl	Electronics SN:	245496.000.000
Trim Characteristic:	Linear	EPROM version:	OL 3.0b IL 3.0a
Pressure class:	CL 150	Embedded software version:	00.22
Body model:	Mark One	Sensor rating:	
Flow direction:	Flow Over	Sensor drawing number:	
Body size:	.25 INCH / DN 6	P1 serial number:	
Body material:	Alloy 20	P2 serial number:	
Packing:	AFPI	P1 last calibrated:	10/04/13
		P2 last calibrated:	10/04/13

Apply All   Retrieve All   Load All...   Save All...   Print Parameters   **Print Report**



## **Floating Point**

---

The Floating Point tab allows the user to perform the following functionality about the floating point settings:

- Download from device
- Load to device
- Save to file (VCT)
- Load from file (VCT)



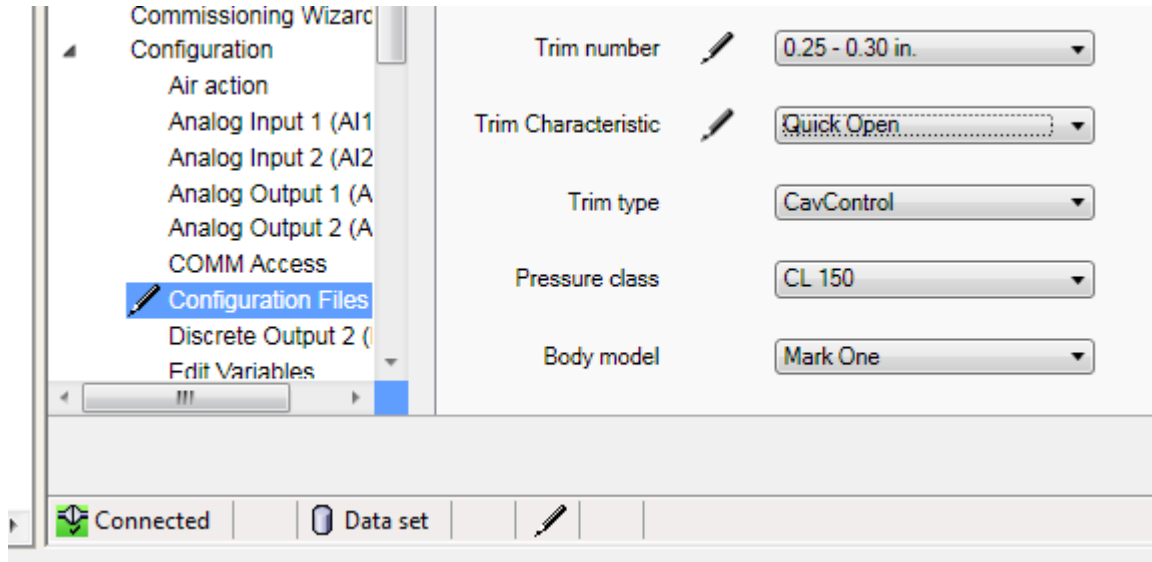
## StarTalk™ DTM Help for StarPac 3 System

System Information		Operating Mode		Fluid Parameters		Calibration		Controller		Alerts / Alarms	
Valve Geometry		Diagnostics		Scalers		Environmental		Characterization		Holding Register	
Floating point pointers						42147 (Pts to ->)		350			
42115 (Pts to ->)		<input type="text" value="350"/>				42148 (Pts to ->)		350			
42116 (Pts to ->)		<input type="text" value="350"/>				42149 (Pts to ->)		350			
42117 (Pts to ->)		<input type="text" value="350"/>				42150 (Pts to ->)		350			
42118 (Pts to ->)		<input type="text" value="350"/>				42151 (Pts to ->)		350			
42119 (Pts to ->)		<input type="text" value="350"/>				42152 (Pts to ->)		350			
42120 (Pts to ->)		<input type="text" value="350"/>				42153 (Pts to ->)		350			
42121 (Pts to ->)		<input type="text" value="350"/>				42154 (Pts to ->)		350			
42122 (Pts to ->)		<input type="text" value="350"/>				42155 (Pts to ->)		350			
42123 (Pts to ->)		<input type="text" value="350"/>				42156 (Pts to ->)		350			
42124 (Pts to ->)		<input type="text" value="350"/>				42157 (Pts to ->)		350			
42125 (Pts to ->)		<input type="text" value="350"/>				42158 (Pts to ->)		350			
42126 (Pts to ->)		<input type="text" value="350"/>				42159 (Pts to ->)		350			
42127 (Pts to ->)		<input type="text" value="350"/>				42160 (Pts to ->)		350			
42128 (Pts to ->)		<input type="text" value="350"/>				42161 (Pts to ->)		350			
42129 (Pts to ->)		<input type="text" value="350"/>				42162 (Pts to ->)		350			
42130 (Pts to ->)		<input type="text" value="350"/>				42163 (Pts to ->)		350			
42131 (Pts to ->)		<input type="text" value="350"/>				42164 (Pts to ->)		350			
42132 (Pts to ->)		<input type="text" value="350"/>				42165 (Pts to ->)		350			
42133 (Pts to ->)		<input type="text" value="350"/>				42166 (Pts to ->)		350			
42134 (Pts to ->)		<input type="text" value="350"/>				42167 (Pts to ->)		350			
42135 (Pts to ->)		<input type="text" value="350"/>				42168 (Pts to ->)		350			
42136 (Pts to ->)		<input type="text" value="350"/>				42169 (Pts to ->)		350			
42137 (Pts to ->)		<input type="text" value="350"/>				42170 (Pts to ->)		350			
42138 (Pts to ->)		<input type="text" value="350"/>				42171 (Pts to ->)		350			
42139 (Pts to ->)		<input type="text" value="350"/>				42172 (Pts to ->)		350			
42140 (Pts to ->)		<input type="text" value="350"/>				42173 (Pts to ->)		350			
42141 (Pts to ->)		<input type="text" value="350"/>				42174 (Pts to ->)		352			
42142 (Pts to ->)		<input type="text" value="350"/>				42175 (Pts to ->)		350			
42143 (Pts to ->)		<input type="text" value="350"/>				42176 (Pts to ->)		350			
42144 (Pts to ->)		<input type="text" value="350"/>				42177 (Pts to ->)		350			
42145 (Pts to ->)		<input type="text" value="350"/>				42178 (Pts to ->)		350			
42146 (Pts to ->)		<input type="text" value="350"/>									



## Modifications:

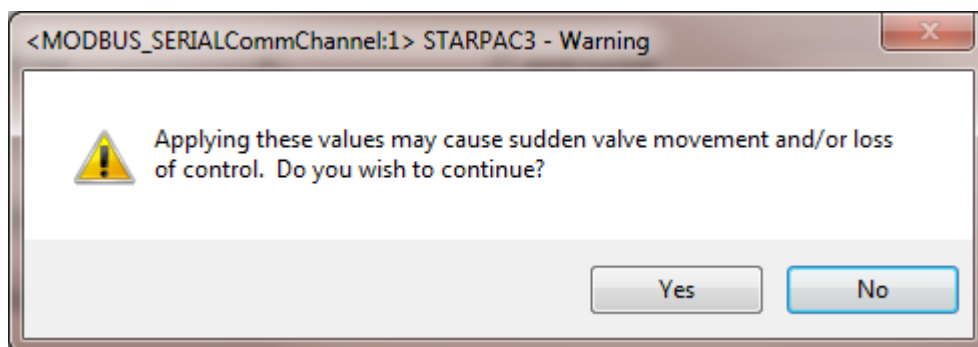
New modifications to the configuration file will be displayed by the pencil mark (✎). The pencil mark will appear next to the parameter modified, On the menu tree page where the parameter was modified, and on the bottom of the Frame.



Apply All

The "Apply All" button will apply and the modified parameters from all tabs. The Apply All will only apply the changes to the parameters with a pencil or modified parameters.

**WARNING: Applying the configuration changed to the parameter values may cause sudden valve movement and/or loss of control.**



Retrieve All

The "Retrieve All" button will retrieve the entire configuration from the device.

Note: If a parameter was modified and displayed the pencil mark, after the Retrieve All from the device the pencil mark will disappear and the parameter value will be the same as the value in the device.

Load All...

The "Load All" button will open an open file dialog to select a StarPac configuration file (\*.VCT). Once the file is loaded into the DTM, differences between and the file will be displayed by the Pencil Mark (✎).

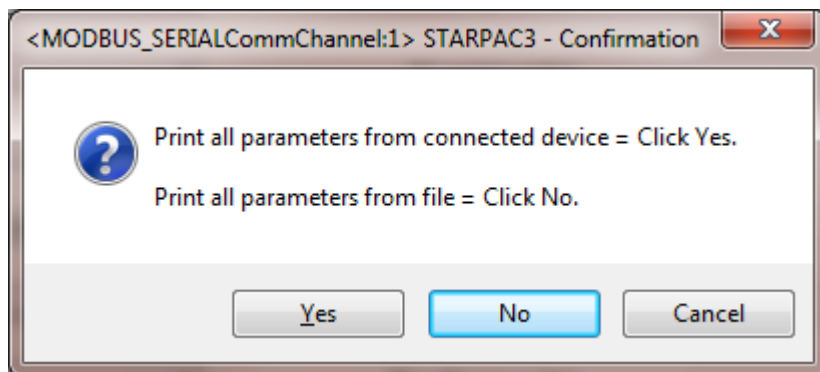
Note: The entire configuration is load into the DTM memory and displayed with the pencil mark. To apply the parameter changed, click the Apply All button.

Save All...

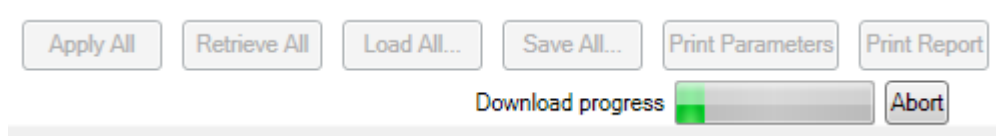
The "Save All" button will open a save file dialog to save the entire configuration to a selected StarPac configuration File (\*.VCT)

Print Parameters

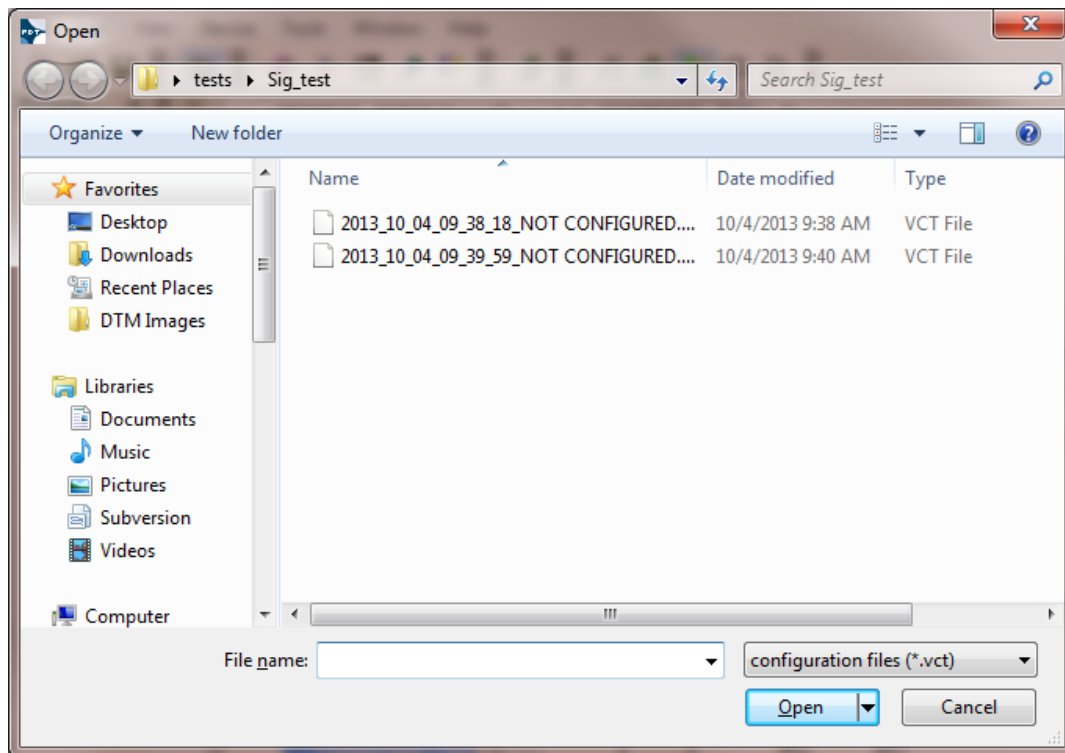
The "Print Parameters" button will display a dialog to select to print a download from device or the loaded configuration from file.



Clicking "Yes" will start the download from the device and disable all buttons on the page.



Clicking "No" will open an open file dialog to select the configuration file to print the parameter / values list.




A "Print Preview" tab will display the pdf version of the print parameters report.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

System InformationOperating ModeFluid ParametersCalibrationControllerAlerts / AlarmsValve GeometryDiagnosticsScalersEnvironmentalCharacterizationHolding RegisterFloating PointPrint Preview

Page 1 / 36100%Find



StarPac3 Parameter Report

Address	Access	Value	Description
0	RO	673	ADC value for cylinder Port 2 pressure
1	RO	184	ADC value for cylinder port 1 pressure
2	RO	0	ADC value for 4-20mA command
3	RO	481	ADC value for ambient temperature
4	RO	0	ADC value for 4-20mA auxiliary
5	RO	3675	Upstream pressure sensor ADC value
6	RO	3092	Downstream pressure sensor ADC value
7	RO	19804	ADC value for position channel
8	RO	1709	ADC value for process temperature channel
9	RO	2	Current flow state (liquid/gas)
10	RO	1000	Fixed scale normalized process variable
11	RO	0	Variable scale normalized liquid flow
12	RO	0	Variable scale normalized gas flow
13	RO	1308	Variable scale normalized P1 isa

Print Report



## StarTalk™ DTM Help for StarPac 3 System

The "Print Report" button will load the configuration into an organized print report where all parameters are listed into groups as it appears in the tabs of the configuration file page.

Use the print or save pdf from the preview tab to print or save the list of parameters / values.

**StarPac3 Configuration Report**

Tag Name: NOT CONFIGURED  
Device type: StarPac 3  
Valve serial number: 62713.001

**System Information**

Trim number:	0.25 - 0.30 in.	Air action:	Air-to-open (ATO)
Trim type:	CavControl	Electronics SN:	245496.000.000
Trim Characteristic:	Linear	EPROM version:	OL 3.0b IL 3.0a
Pressure class:	CL 150	Embedded software version:	00.22
Body model:	Mark One	Sensor rating:	
Flow direction:	Flow Over	Sensor drawing number:	
Body size:	.25 INCH / DN 6	P1 serial number:	
Body material:	Alloy 20	P2 serial number:	
Packing:	AFPI	P1 last calibrated:	10/04/13
		P2 last calibrated:	10/04/13

Apply All   Retrieve All   Load All...   Save All...   Print Parameters   **Print Report**



## StarTalk™ DTM Help for StarPac 3 System

### Discrete Output 2 (DO2)

---

**Discrete Output 2 Register**  
Register to Output: 0 - ADC value for cylinder Port 2 pressure  
Register Name: ADC value for cylinder Port 2 pressure

**Pulse Configuration**  
Value Output at Minimum Pulse Rate: 0.00  
Value Output at Maximum Pulse Rate: 100.00  
Maximum Pulse Rate: 5.00

Configures the Pulse Out channel on the StarPac 3 system for the process variable and scaling. First you must select a variable from the list using the Next and Previous function keys on the menu. Next you are asked for a full scale output value in your selected user units. (This is the process value that corresponds to the maximum frequency.) The last step is to enter the offset or zero output value in your selected user units (this is the process value that corresponds to 0 Hz). Available output variables are the following:

- Valve Position
- Liquid Flow
- ISA Up Stream Press
- ISA Dn Stream Press
- ISA Delta Pressure
- Process Temperature
- Gas Flow
- Auxiliary 4-20 Input
- Register Number

#### Valve Position

Current valve position.

#### Liquid Flow

Current liquid flow rate.

#### ISA Up Stream Press

Current compensated upstream line pressure (defined as two pipe diameters upstream of the valve).

#### ISA Dn Stream Press

Current compensated downstream line pressure (defined as six pipe diameters downstream of the valve).

#### ISA Delta Pressure



## StarTalk™ DTM Help for StarPac 3 System

Current differential pressure using the pressure definitions above.

### Process Temperature

Current process temperature.

### Gas Flow

Current gaseous flow rate.

### Auxiliary 4-20 Input

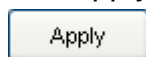
Re-transmits the 4-20 mA signal from analog in No. 2.

### Register Number

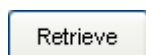
Allows the selection of any internal register value as an output. If a string register is selected, zero will be displayed in the data field.

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page.



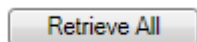
Manage Configuration (VCT) Dataset

Retrieve Configuration from Device Status

Register Count:

Register Record:

Data Acquisition Progress:



Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.



## ***StarTalk™ DTM Help for StarPac 3 System***

Load VCT

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

Save VCT

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Abort

The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## Edit Variables

The Edit Variables page will allow to user to read and write to a selected variable from the grid. Input values will be checked with the corresponding variable range before applying to the device.

**NOTE:** Select a variable from the list, click the RETRIEVE button for current value, edit the value, then press APPLY.

Variable list

Register	Description	Access	High_Limit	Low_Limit
0	ADC value for cylinder Port 2 pressure	RO	32767	-32768
1	ADC value for cylinder port 1 pressure	RO	32767	-32768
2	ADC value for 4-20mA command	RO	16383	0
3	ADC value for ambient temperature	RO	32767	-32768
4	ADC value for 4-20mA auxiliary	RO	16383	0
5	Upstream pressure sensor ADC value	RO	32767	-32768
6	Downstream pressure sensor ADC value	RO	32767	-32768

Edit Variables

Variable value:

Range validation:

Variable range

Low limit:

High limit:

### WARNING

Editing certain variables may cause a sudden stroke movement. Follow company procedured to assure the safety of personnel and processes. Editing variables may also cause detuning of PID control loop and unwanted changes to calibration constants.



### Detailed StarPac Register Map

This reference will aid you in understanding the configuration of the StarPac II register table. Registers are described and notes are provided that give the range and more detailed information.

The StarPac II register table consists of three different types of information: integers, IEEE floating point numbers and strings. These types can have a read only (RO) access attribute or a read/write (RW) access attribute. You can only read RO registers. Writing to a RO register will generate an exception error. You can both read and write to RW registers.

The register numbering is as follows: a 30000 base indicates RO integers, a 40000 base indicates RW integers, a 70000 base indicates floating point numbers, and a 50000 base indicates strings. For example, a register number of 30003 indicates a RO integer.

Two contiguous integer registers make up a floating point register. You will get an exception response if you try to access into the middle of a floating point register.

Registers making up bit fields follow the MSB/LSB (Most Significant Byte/Least Significant Byte) format.



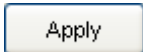


## StarTalk™ DTM Help for StarPac 3 System

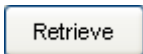
Internally, Flowserve calculates the StarPac II variable numbers by taking the modulo of the register number and 10,000 and subtracting 1. For example, register number 30001 would become variable number 0.

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page.



Manage Configuration (VCT) Dataset

Retrieve Configuration from Device Status

Register Count:

Register Record:

Data Acquisition Progress:

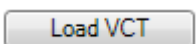


Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

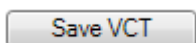
The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.



The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

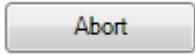


The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.



## ***StarTalk™ DTM Help for StarPac 3 System***

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.



The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.



## Flow Characterization

**WARNING:** Changing these values will adversely affect the flow calculation. Change these values only when instructed by the factory to do so.

Cv Curve

dP Curve

FI Curve

Xt Curve

Gas dP Curve

Curves Plot on Graph

Cv Curve 1 Settings

Cv Curve 2 Settings

A: -2.175456E-05

B: 0.002065832

C: -4.379507E-05

D: 9.162532E-07

E: -6.844302E-09

A: -0.007108102

B: 0.002449813

C: -3.702677E-05

D: 4.361909E-07

E: -1.905507E-09

Cv - Break point 48.5 %

Apply Cv Curve

Retrieve Cv Curve

Load Cv Curve

Save Cv Curve

Apply

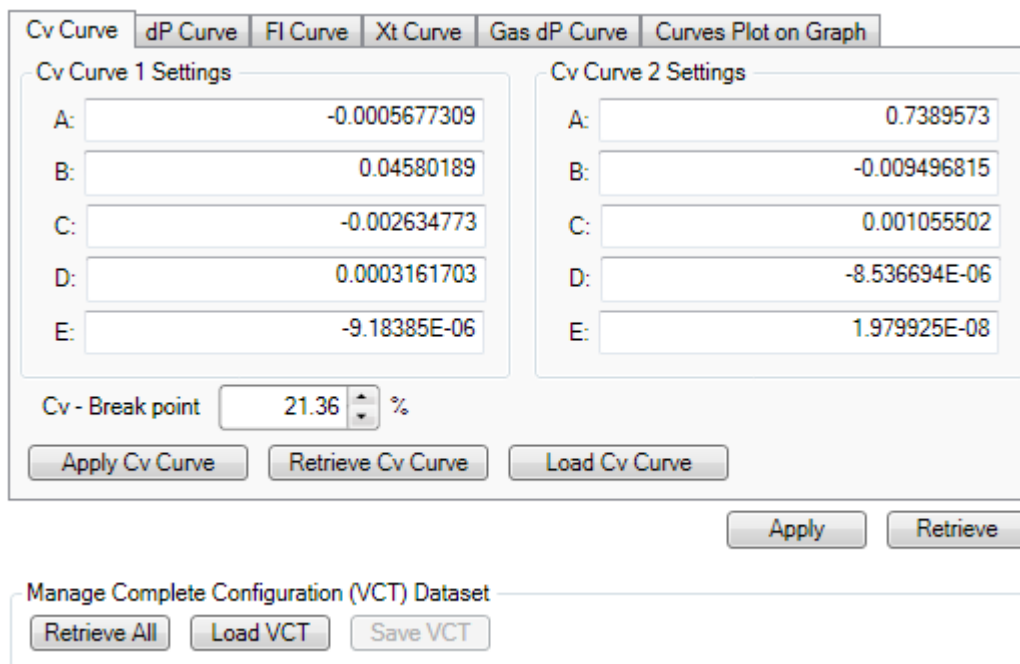
Retrieve

## Cv Curve

The Cv liquid Curve uses a 4<sup>th</sup> order polynomial equation to calculate the value based on 11 calibration constants.

- Five constants defines the first curve (A1, B1, C1, D1, E1),
- Five constants defines the second curve (A2, B2, C2, D2, E2),
- Breakpoint where the curve meet.

**WARNING: Changing these values will adversely affect the flow calculation. Change these values only when instructed by the factory to do so.**



The "Apply Cv Curve" button will apply the changed Cv data points and breakpoint to the connected StarPac3.

The "Retrieve Cv Curve" button will retrieve the Cv data points and breakpoint from the connected StarPac3.

The "Load Cv Curve" button will load the Cv data points and breakpoint from a \*.vct file on disc.

The "Apply" button will apply the entire flow characterization (Cv, dP, FI, Xt, and Gas dP) data points and breakpoint to the connected StarPac3.

The "Retrieve" button will retrieve the entire flow characterization (Cv, dP, FI, Xt, and Gas dP) data points and breakpoint from the connected StarPac3.

### Action Buttons

The *Apply* button will save changes to the connected device.

Apply

The *Retrieve* button will retrieve the latest information from the device related to this page and tab.

Retrieve

### Manage Configuration (VCT) Dataset

Retrieve All

Load VCT

Save VCT

### Retrieve Configuration from Device Status

Register Count: 0

Register Record: 358

Data Acquisition Progress:



Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

Load VCT

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

Save VCT

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Abort

The *Abort* button will abort the current retrieval of the StarPac Configuration.



## ***StarTalk™ DTM Help for StarPac 3 System***

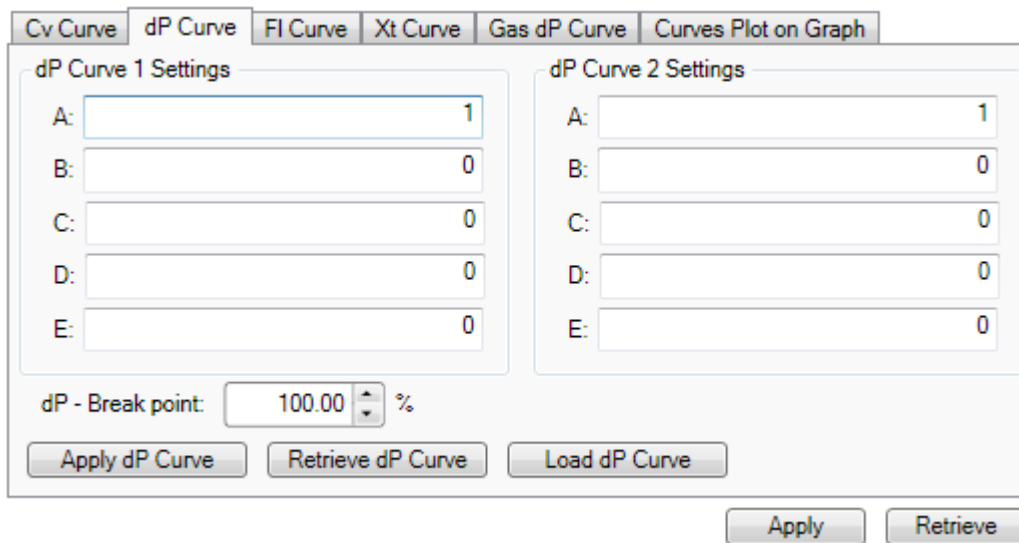
Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## dP Curve

The dP liquid Curve uses a 4<sup>th</sup> order polynomial equation to calculate the value based on 11 calibration constants.

- Five constants defines the first curve (A1, B1, C1, D1, E1),
- Five constants defines the second curve (A2, B2, C2, D2, E2),
- Breakpoint where the curve meet.

**WARNING: Changing these values will adversely affect the flow calculation. Change these values only when instructed by the factory to do so.**



The "Apply dP Curve" button will apply the changed dP data points and breakpoint to the connected StarPac3.

The "Retrieve dP Curve" button will retrieve the dP data points and breakpoint from the connected StarPac3.

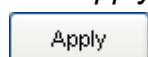
The "Load dP Curve" button will load the dP data points and breakpoint from a \*.vct file on disc.

The "Apply" button will apply the entire flow characterization (Cv, dP, FI, Xt, and Gas dP) data points and breakpoint to the connected StarPac3.

The "Retrieve" button will retrieve the entire flow characterization (Cv, dP, FI, Xt, and Gas dP) data points and breakpoint from the connected StarPac3.

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.

Retrieve

Manage Configuration (VCT) Dataset

Retrieve AllLoad VCTSave VCT

Retrieve Configuration from Device Status

Register Count: 0

Register Record: 358

Data Acquisition Progress:

Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

Load VCT

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

Save VCT

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Abort

The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

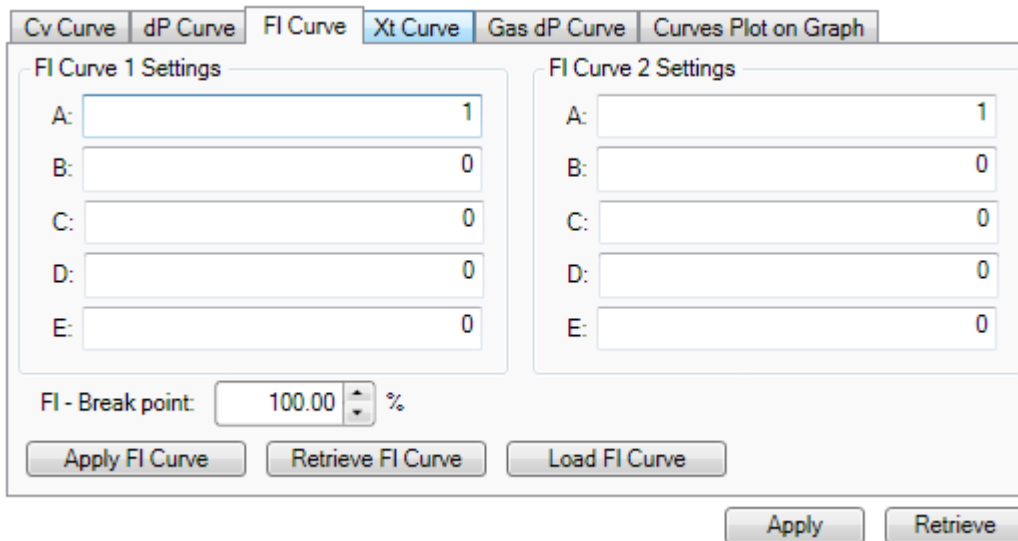


## FI Curve

The FI liquid Curve uses a 4<sup>th</sup> order polynomial equation to calculate the value based on 11 calibration constants.

- Five constants defines the first curve (A1, B1, C1, D1, E1),
- Five constants defines the second curve (A2, B2, C2, D2, E2),
- Breakpoint where the curve meet.

**WARNING: Changing these values will adversely affect the flow calculation. Change these values only when instructed by the factory to do so.**



The interface shows two tabs: "FI Curve" and "Xt Curve". The "FI Curve" tab is active, displaying "FI Curve 1 Settings" and "FI Curve 2 Settings". Each setting has a label (A, B, C, D, E) and a numeric input field. The "FI - Break point" is set to 100.00 %.

Setting	Value
A:	1
B:	0
C:	0
D:	0
E:	0

Buttons: Apply FI Curve, Retrieve FI Curve, Load FI Curve, Apply, Retrieve.

The "Apply FI Curve" button will apply the changed FI data points and breakpoint to the connected StarPac3.

The "Retrieve FI Curve" button will retrieve the FI data points and breakpoint from the connected StarPac3.

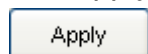
The "Load FI Curve" button will load the FI data points and breakpoint from a \*.vct file on disc.

The "Apply" button will apply the entire flow characterization (Cv, dP, FI, Xt, and Gas dP) data points and breakpoint to the connected StarPac3.

The "Retrieve" button will retrieve the entire flow characterization (Cv, dP, FI, Xt, and Gas dP) data points and breakpoint from the connected StarPac3.

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.

Retrieve

Manage Configuration (VCT) Dataset

Retrieve All

Load VCT

Save VCT

Retrieve Configuration from Device Status

Register Count: 0

Register Record: 358

Data Acquisition Progress:

Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

Load VCT

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

Save VCT

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Abort

The *Abort* button will abort the current retrieval of the StarPac Configuration.

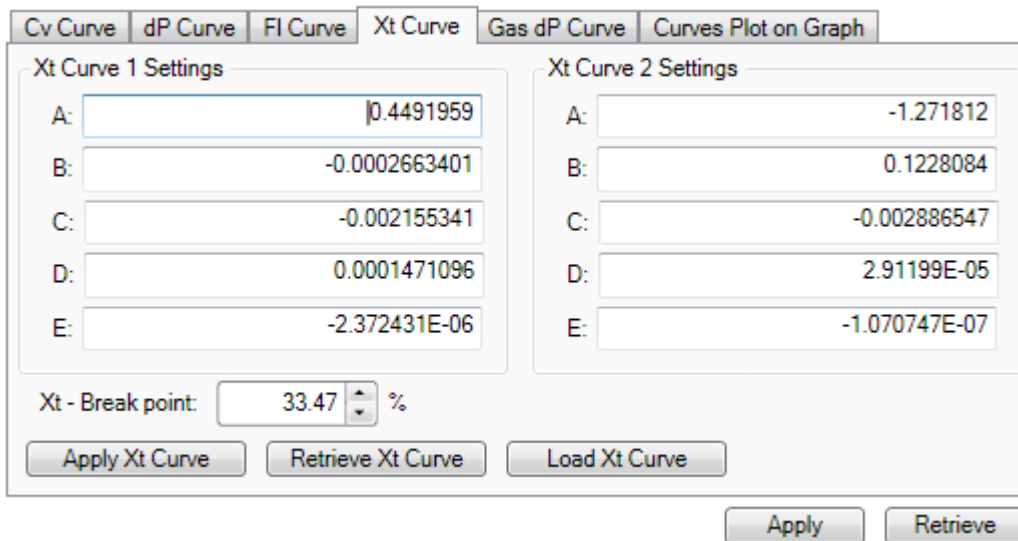
Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## Xt Curve

The Xt liquid Curve uses a 4<sup>th</sup> order polynomial equation to calculate the value based on 11 calibration constants.

- Five constants defines the first curve (A1, B1, C1, D1, E1),
- Five constants defines the second curve (A2, B2, C2, D2, E2),
- Breakpoint where the curve meet.

**WARNING: Changing these values will adversely affect the flow calculation. Change these values only when instructed by the factory to do so.**



Setting	Xt Curve 1 Value	Xt Curve 2 Value
A:	0.4491959	-1.271812
B:	-0.0002663401	0.1228084
C:	-0.002155341	-0.002886547
D:	0.0001471096	2.91199E-05
E:	-2.372431E-06	-1.070747E-07

Xt - Break point: 33.47 %

Buttons: Apply Xt Curve, Retrieve Xt Curve, Load Xt Curve, Apply, Retrieve

The "Apply Xt Curve" button will apply the changed Xt data points and breakpoint to the connected StarPac3.

The "Retrieve Xt Curve" button will retrieve the Xt data points and breakpoint from the connected StarPac3.

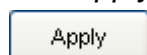
The "Load Xt Curve" button will load the Xt data points and breakpoint from a \*.vct file on disc.

The "Apply" button will apply the entire flow characterization (Cv, dP, FI, Xt, and Gas dP) data points and breakpoint to the connected StarPac3.

The "Retrieve" button will retrieve the entire flow characterization (Cv, dP, FI, Xt, and Gas dP) data points and breakpoint from the connected StarPac3.

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.

Retrieve

Manage Configuration (VCT) Dataset

Retrieve All

Load VCT

Save VCT

Retrieve Configuration from Device Status

Register Count: 0

Register Record: 358

Data Acquisition Progress:

Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

Load VCT

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

Save VCT

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Abort

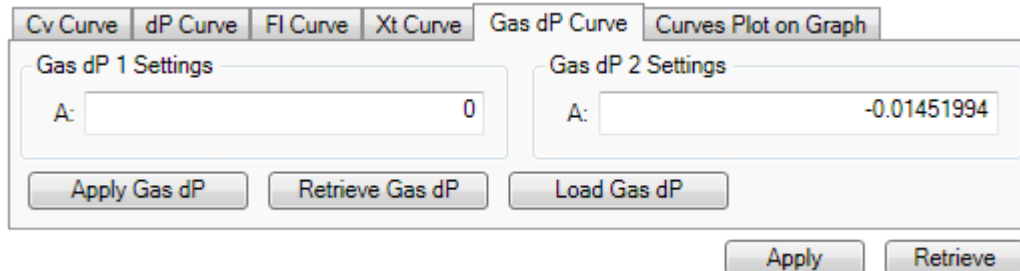
The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## Gas dP Curve

The Gas dP Curve tab allows the user to change the Gas dP constants.

**WARNING: Changing these values will adversely affect the flow calculation. Change these values only when instructed by the factory to do so.**



The "Apply Gas dP" button will apply the changed Gas dP data points and breakpoint to the connected StarPac3.

The "Retrieve Gas dP" button will retrieve the Gas dP data points and breakpoint from the connected StarPac3.

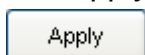
The "Load Gas dP" button will load the Gas dP data points and breakpoint from a \*.vct file on disc.

The "Apply" button will apply the entire flow characterization (Cv, dP, FI, Xt, and Gas dP) data points and breakpoint to the connected StarPac3.

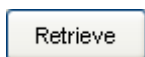
The "Retrieve" button will retrieve the entire flow characterization (Cv, dP, FI, Xt, and Gas dP) data points and breakpoint from the connected StarPac3.

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.





## StarTalk™ DTM Help for StarPac 3 System

Manage Configuration (VCT) Dataset

Retrieve All Load VCT Save VCT

Retrieve Configuration from Device Status

Register Count: 0

Register Record: 358

Data Acquisition Progress:

Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

Load VCT

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

Save VCT

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Abort

The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## Curves Plot on Graph

The 'Curves Plot on Graph' tab allows the user to visualize each curve (Cv, dP, FI, Xt, and Gas dP) in the graph.

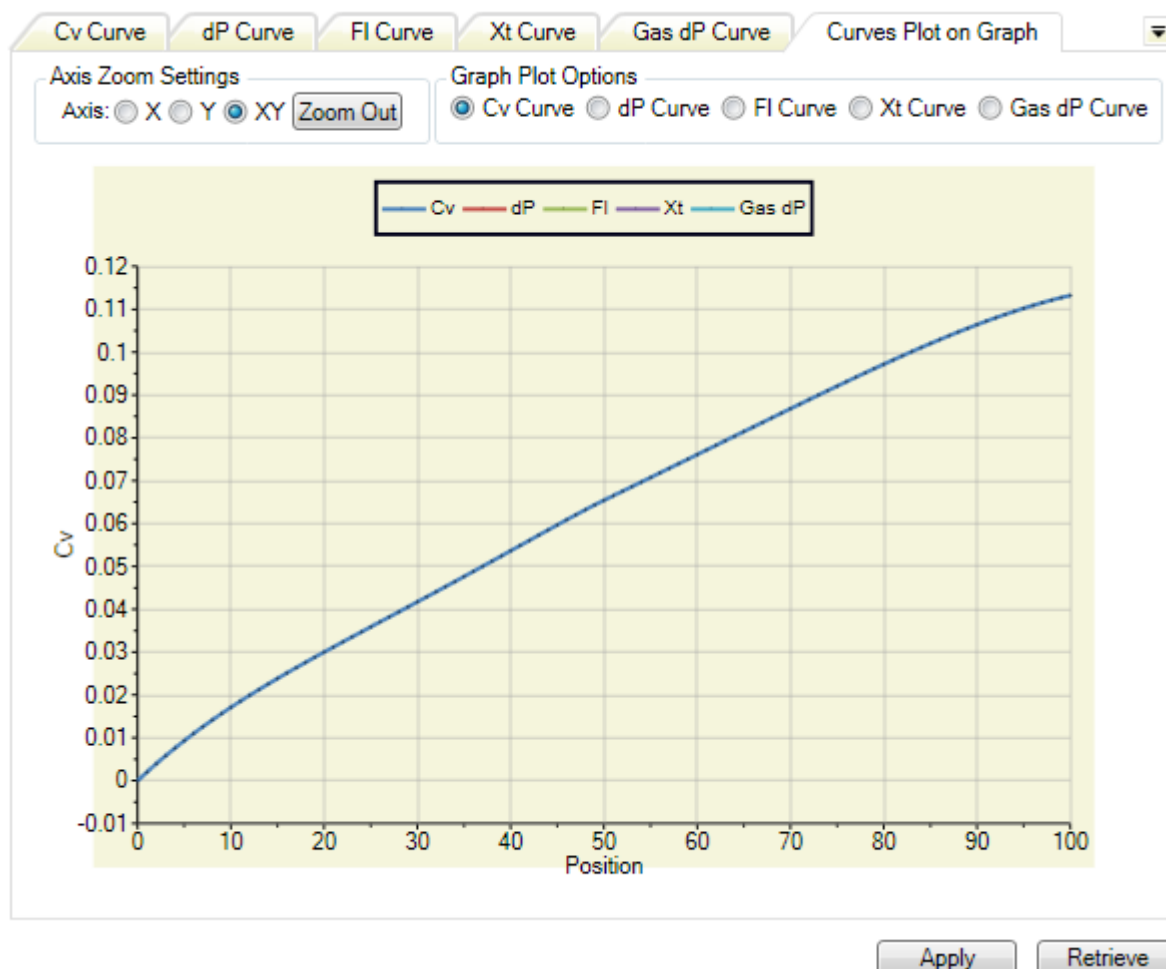
Graph Options:

Select on the desired curve to be displayed in the graph from the Following:

- Cv Curve
- dP Curve
- FI Curve
- Xt Curve
- Gas dP Curve

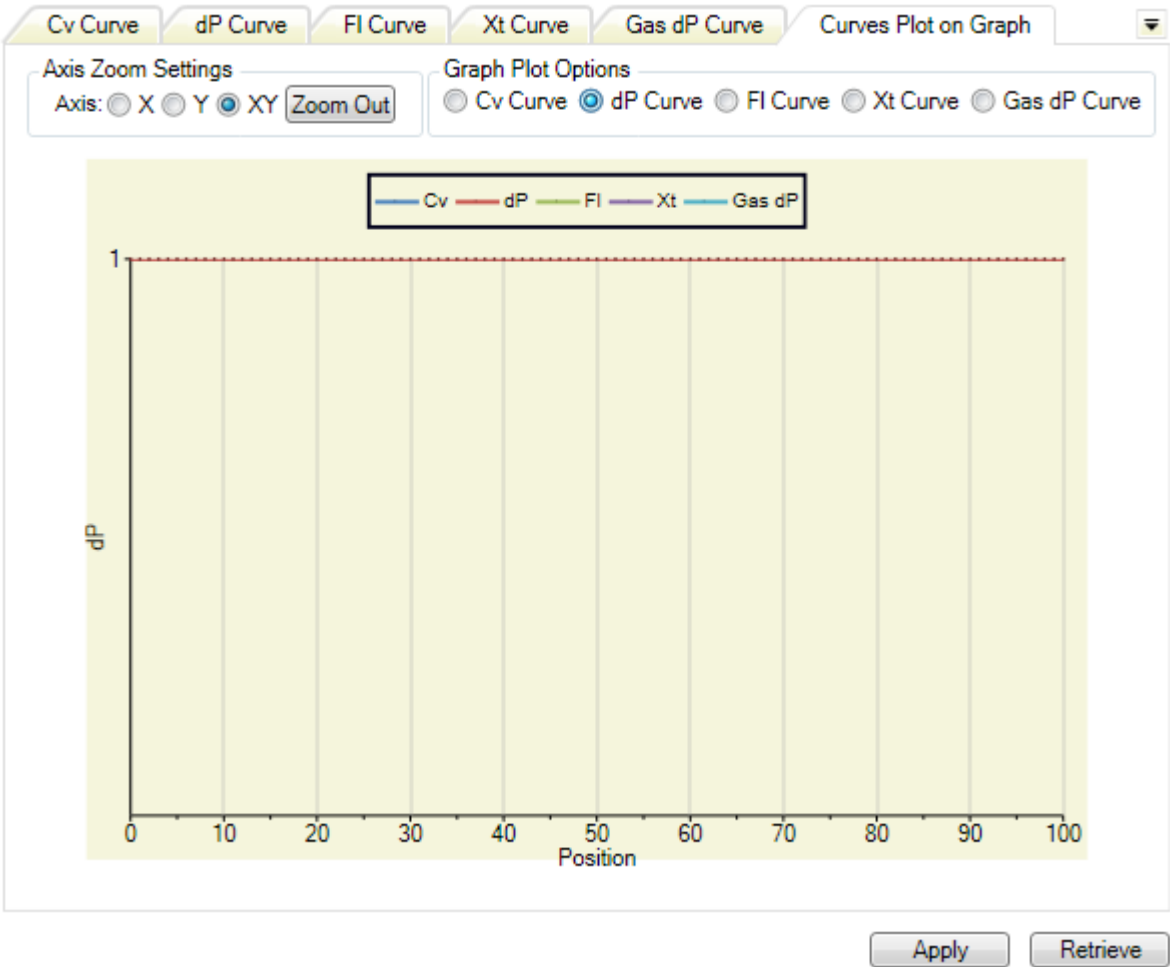
The "Apply" button will apply the entire flow characterization (Cv, dP, FI, Xt, and Gas dP) data points and breakpoint to the connected StarPac3.

The "Retrieve" button will retrieve the entire flow characterization (Cv, dP, FI, Xt, and Gas dP) data points and breakpoint from the connected StarPac3.





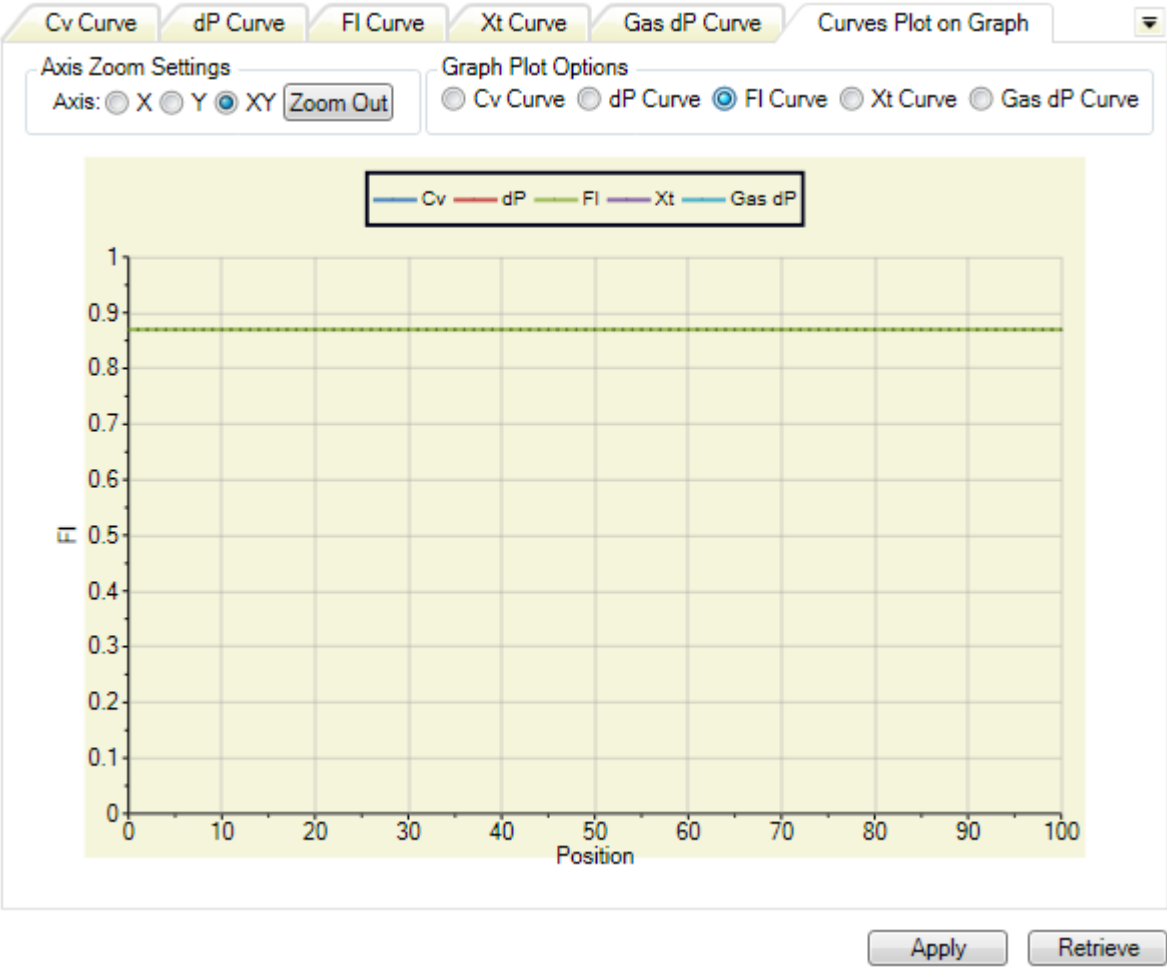
StarTalk™ DTM Help for StarPac 3 System

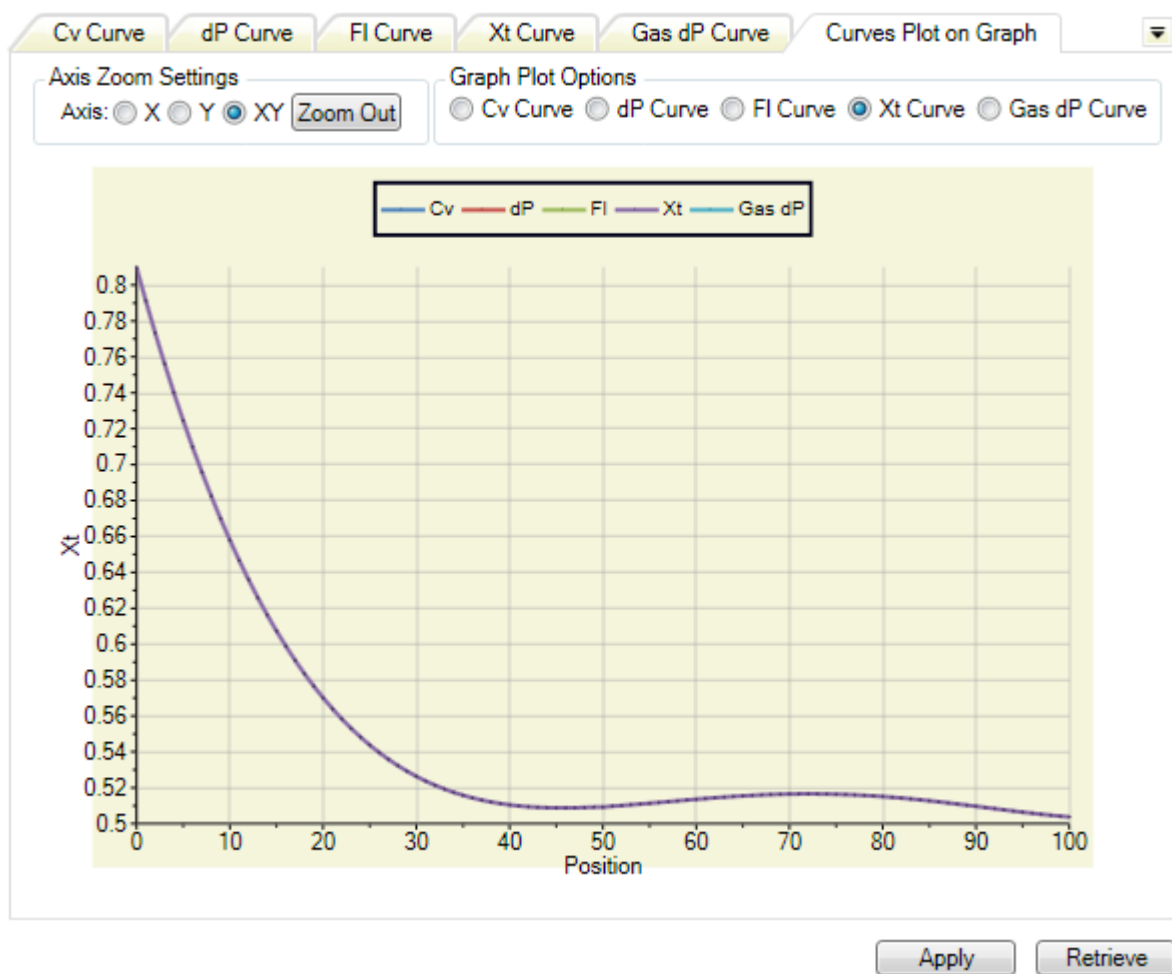






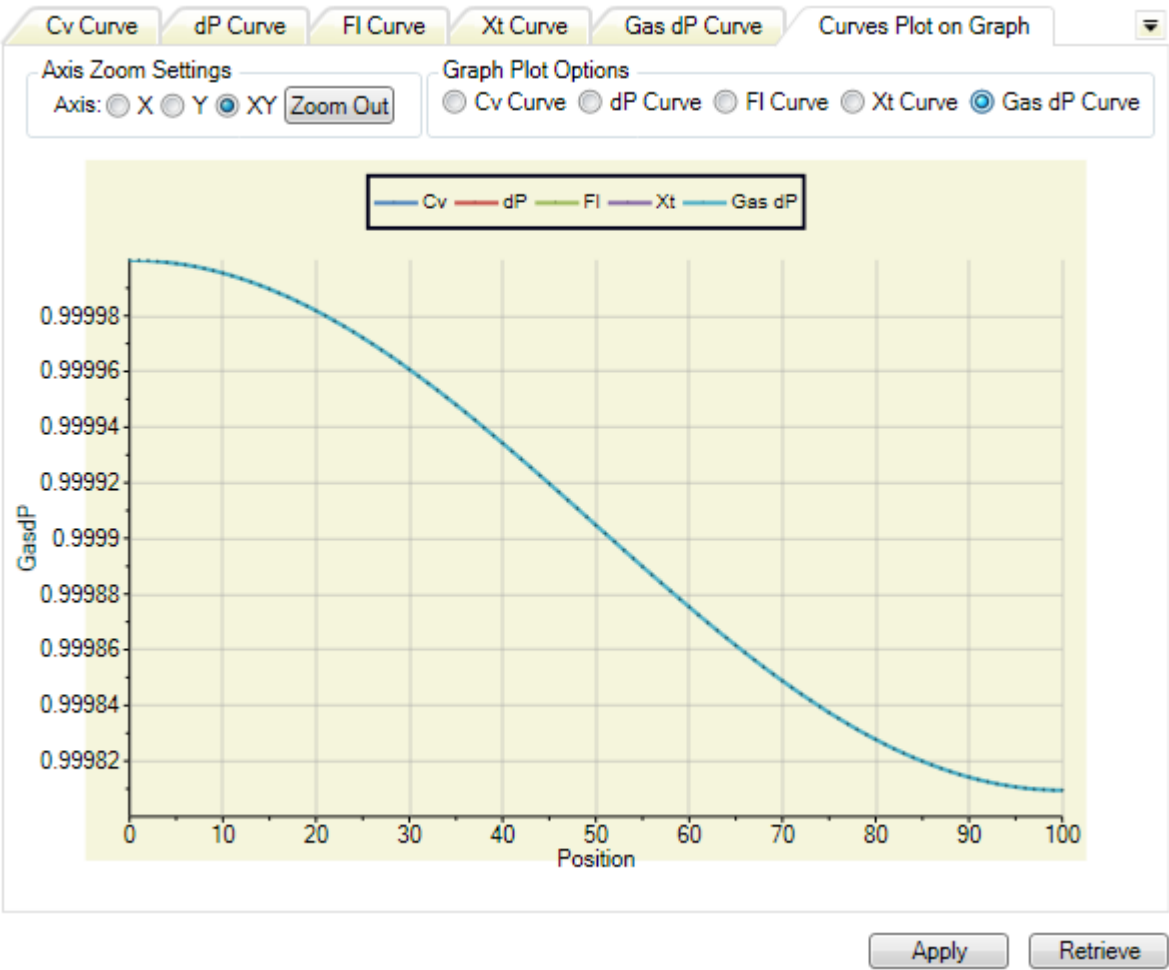
StarTalk™ DTM Help for StarPac 3 System







StarTalk™ DTM Help for StarPac 3 System





## StarTalk™ DTM Help for StarPac 3 System

### Flow Scalers

**Flow Scalers**  

Liquid flow

Gas flow

**Flow Calculation External inputs**  

Temperature

Upstream Pressure

Downstream Pressure

Specific Gravity

Molecular Weight

Liquid Scaler

Gas Scaler

Pressure Drop

Retrieve

Apply

**Manage Configuration (VCT) Dataset**  

Retrieve All

Load VCT

Save VCT

#### "Liquid flow" multiplier

Enter the scaling factor for the liquid flow totalizer.

Function: Used to scale the liquid flow value.

StarPac 3 Register: 70507

Access: RW

Range: 0.1 to 100

#### "Gas flow" multiplier

Enter the scaling factor for the gas flow totalizer

Function: Used to scale the gas flow value.

StarPac 3 Register: 705079

Access: RW

Range: 0.1 to 100

#### Flow Calculation External Inputs

Configure the second analog input in the StarPac system. The input can be used as an external input that is used with the internal PID controller, or as an external sensor input for the StarPac to use in its internal operation. If you wish to use the input as a controller input, you must select the NOT



## **StarTalk™ DTM Help for StarPac 3 System**

CONNECTED option since the scaling for the PID input is done in the Tune menu with the Process variable selection. If you want to feed an external variable into the StarPac, select the variable from the list using the NEXT and PREVIOUS function keys on the menu. Next, you will be asked for a full scale input value in your user-defined units. (This is the process value that corresponds to the 100 percent signal.) The last step is to enter the offset or Zero input value in your user-defined units. (This is the process value that corresponds to the 0 percent signal). The available input variables are:

- Not Connected
- Process Temperature
- Upstream Pressure
- Down Stream Pressure
- Valve Delta Pressure
- Molecular Weight
- Specific Gravity
- Liquid Fudge Factor
- Gas Fudge Factor

### **Not Connected**

Configures the StarPac unit to ignore the input as an internal variable, but the input may still be used as an input to the controller that is configured with the process variable selection.

### **Process Temperature**

Uses the value from the Auxiliary input channel as the process temperature for all internal calculations in place of the StarPac sensor. The electronics assumes that the Auxiliary input channel gets its signal from a temperature transmitter.

### **Upstream Pressure**

Uses the signal from an external pressure transmitter connected to the Auxiliary input channel as the upstream process pressure for all internal calculations in place of the StarPac sensor.

### **Down Stream Pressure**

Uses an external pressure input as the downstream process pressure for all internal calculations in place of the StarPac sensor.

### **Valve Delta Pressure**

Uses an external pressure input as the process differential pressure for all internal calculations (in place of the StarPac differential pressure calculated by the difference from the StarPac internal pressure sensors). The most common example is when a separate differential pressure transmitter is used for cases when the application cannot withstand pressure drops of at least ten percent of inlet pressure.

### **Molecular Weight**

Uses an external molecular weight input for all internal calculations in place of the static value stored in the StarPac configuration.

### **Specific Gravity**

Uses an external Specific Gravity input for all internal calculations in place of the static value stored in the StarPac configuration.

### **Liquid Fudge Factor**

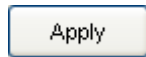
Input that allows you to make dynamic adjustments to the liquid flow calculation based on the value of the input.

### **Gas Fudge Factor**

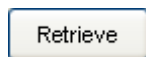
Input that allows you to make dynamic adjustments to the gaseous flow calculation based on the value of the input.

## Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page.



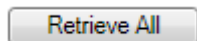
Manage Configuration (VCT) Dataset

Retrieve All
Load VCT
Save VCT

Retrieve Configuration from Device Status

Register Count: 0
Register Record: 358
Data Acquisition Progress:

Abort

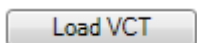


Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

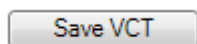
The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.



The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

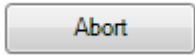


The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.



## ***StarTalk™ DTM Help for StarPac 3 System***



The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## Flow Totalizer

---

Source selector

☐ Liquid flow
☒ Gas flow

Apply
Retrieve

Function: Set StarPac for desired flow type.

### Liquid flow selection

Selecting liquid flow will configure the StarPac to use the Liquid flow as input to the Flow totalizer

### Gas flow selection

Selecting liquid flow will configure the StarPac to use the Gas flow as input to the Flow totalizer

StarPac 3 Register: 40044

Access: RW

### Action Buttons

The *Apply* button will save changes to the connected device.

Apply

The *Retrieve* button will retrieve the latest information from the device related to this page.

Retrieve

Manage Configuration (VCT) Dataset

Retrieve All
Load VCT
Save VCT

Retrieve Configuration from Device Status

Register Count: 0
Register Record: 358
Data Acquisition Progress:

Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

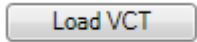




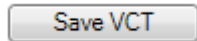
## **StarTalk™ DTM Help for StarPac 3 System**

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

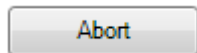


The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.



The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.



The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## Fluid Settings

Purpose: Allow user to set up custom fluids for their process needs.

The StarPac system must be configured for the exact fluid that you have in your process. The factory configures the system with fluid data for your system using the information supplied with the order. Verify that the fluid data is correct for your process.

Fluid Selection
Fluids Table
AGA8

Selected Fluid Settings

Fluid name: AIR

Critical pressure: 492.445

Critical temperature: 227.16

$f(K) = K/1.4$ : 1

Molecular weight: 28.98

Reference Temperature: 140.6

Specific Gravity: 0.804

Viscosity A: 1

Viscosity B: 0

Antoinex A: 11.009

Antoinex B: 1059.7

Antoinex C: 11.88

Apply
Retrieve



## StarTalk™ DTM Help for StarPac 3 System

### Fluid Selection

The StarPac system must be configured for the exact fluid that you have in your process. The factory configures the system with fluid data for your system using the information supplied with the order. Verify that the fluid data is correct for your process. The StarPac system requires the following fluid data for accurate flow calculation:

Antoine's A coefficient	register 70499
Antoine's B coefficient	register 70501
Antoine's C coefficient	register 70503
Critical Pressure in psia	register 70511
Critical Temperature in °R	register 70513
FK coefficient (=K/1.4)	register 70515
Molecular Weight	register 70517
Specific Gravity Reference temp in °R	register 70519
Specific Gravity at reference temp	register 70521
Viscosity A	register 70523
Viscosity B	register 70525

Fluid Selection

Fluids Table

AGA8

Selected Fluid Settings

Fluid name:

AIR

Critical pressure:

492.445

Critical temperature:

227.16

f(K) = K/1.4:

1

Molecular weight:

28.98

Reference Temperature:

140.6

Specific Gravity:

0.804

Viscosity A:

1

Viscosity B:

0

Antoinies A:

11.009

Antoinies B:

1059.7

Antoinies C:

11.88

Apply

Retrieve

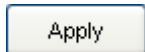
The Antoine coefficients are used to calculate the vapor pressure of the fluid at the temperature measured by the K thermocouple in the StarPac according to the following equation:

- where VP is the vapor pressure in psia, T is the temperature in °R, and A, B, and C are the Antoine coefficients.
- Viscosity is calculated according to the following equation:

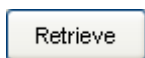
Where Visc is the fluid viscosity in centipoise, T is the process temperature measured by the thermocouple in °F, and A and B are the viscosity coefficients.

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.



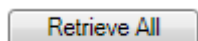
Manage Configuration (VCT) Dataset

Retrieve All
Load VCT
Save VCT

Retrieve Configuration from Device Status

Register Count: 0
Register Record: 358
Data Acquisition Progress:

Abort

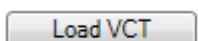


Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

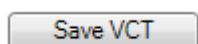
The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.



The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

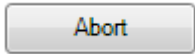




## ***StarTalk™ DTM Help for StarPac 3 System***

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.



The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## Fluid Table

The Fluid Table tab displays the default fluid table with its respective coefficients.

Enter a customized fluid by clicking the "Add new fluid" button and editing the coefficients for the new fluid.

Once the new fluid is added to the table it will be available for selection in the "Fluid Selection" tab.

Fluid Selection Fluids Table AGA8						
Add new fluid						
	Fluid_Name	Critical_Pressure	Critical_Temperature	f(K) = K/1.4	Molecular_Weight	Reference_Temper
<input type="checkbox"/>	NEW	7.00	0.00	0.00	0.00	
<input type="checkbox"/>	AIR	492.45	227.16	1.00	28.98	14
<input type="checkbox"/>	AMMONIA	1,636.09	730.08	0.94	17.03	45
<input type="checkbox"/>	ARGON	707.06	271.40	1.19	39.95	16
<input type="checkbox"/>	BENZENE	710.00	1,011.78	0.79	78.11	52
<input type="checkbox"/>	BUTANE	551.25	765.36	0.78	58.12	52
<input type="checkbox"/>	CARBON DIOXIDE	1,070.19	547.56	0.92	44.01	52
<input type="checkbox"/>	CO	507.15	239.22	1.00	28.01	14
<input type="checkbox"/>	CHLORINE	1,117.19	750.60	0.95	70.91	43
<input type="checkbox"/>	DOWTHERM-A	454.70	1,386.80	0.75	166.00	96
<input type="checkbox"/>	ETHANE	708.53	549.72	0.85	30.07	32
<input type="checkbox"/>	ETHYLENE	730.58	508.32	0.89	28.05	28
<input type="checkbox"/>	FLUORINE	757.05	259.74	0.97	38.00	15
<input type="checkbox"/>	FUEL OIL	330.00	10,000.00	0.00	0.00	1,33

### Load Fluid Table

The "Load Fluid Table" button will allow the user to load from file a fluid table. This functionality will help to move old fluid tables from existing StarTalk XP installed based software to the new StarTalk DTM, keeping the same fluid table from the old software.

### Save Fluid Table

The "Save Fluid Table" button allows the user to save the fluid table to a file. The save fluid table saved to a file can be opened in a different machine using either the old StarTalk XP software or the new StarTalk DTM software.

### Default Fluid Table



## StarTalk™ DTM Help for StarPac 3 System

Name	Critical Press	Critical Temp	Temp Ref	Spec Gr	Mol Wt	Spec Heat Ratio	Ant A	Ant B	Ant C	ViscA	Visc B
AIR	492.445007	227.160004	140.600006	0.804000	28.980000	1.400000	11.009000	1059.699951	11.860000	1.0	0.0
AMMONIA	1636.089966	730.080017	491.799988	0.639000	17.031000	1.310000	13.002000	3838.500000	-59.360001	1.0	0.0
ARGON	707.062012	271.399994	162.000000	1.373000	39.948002	1.670000	11.287000	1260.900024	-10.510000	1.0	0.0
BENZENE	710.000000	1011.780029	520.200012	0.885000	78.113998	1.110000	11.955000	5019.299805	-94.250000	1.0	0.0
BUTANE	551.250000	765.359985	527.400024	0.579000	58.124001	1.090000	11.733000	3878.800049	-61.959999	1.0	0.0
CARBON DIOXIDE	1070.189941	547.559998	527.400024	0.777000	44.009998	1.290000	13.734500	3803.010010	14.539000	1.0	0.0
CARBON MONOXIDE	507.148010	239.220001	145.800003	0.803000	28.010000	1.400000	10.423000	954.359985	-23.670000	1.0	0.0
CHLORINE	1117.189941	750.599976	430.399994	1.563000	70.905998	1.330000	12.015000	3560.899902	-48.619999	1.0	0.0
DOWTHERM-A	454.695007	1386.800049	960.000000	0.870000	166.000000	1.050000	12.500000	7897.640137	-149.100006	1.0	0.0
ETHANE	708.531006	549.719971	329.399994	0.548000	30.070000	1.190000	11.718000	2720.500000	-30.889999	1.0	0.0
ETHYLENE	730.578003	508.320007	293.399994	0.577000	28.054001	1.240000	11.591000	2424.600098	-32.669998	1.0	0.0
FLUORINE	757.046997	259.739990	153.000000	1.510000	37.997002	1.360000	11.724000	1285.400024	-10.800000	1.0	0.0
FUEL OIL	330.000000	10000.000000	1335.000000	0.880000	0.000000	0.000000	-6.910000	0.000000	100.000000	1.0	0.0
GASOLINE	367.500000	529.640015	67.400002	0.695000	114.232002	1.050000	11.797400	5278.500000	-104.540001	1.0	0.0
GLYCOL	1117.189941	1161.000000	527.400024	1.114000	62.069000	1.090000	16.304001	10840.000000	-50.849998	1.0	0.0
HELIUM	32.929699	9.340000	7.700000	0.123000	4.003000	1.660000	8.306000	60.720001	3.220000	1.0	0.0
HYDROGEN	188.156006	59.759998	36.000000	0.071000	2.016000	1.400000	9.688000	296.820007	5.740000	1.0	0.0
HYDROGEN CHLORIDE	1205.380005	584.280029	338.600006	1.193000	36.460999	1.400000	12.158000	3085.600098	-26.010000	1.0	0.0
ISOBUTANE	529.187988	734.580017	527.400024	0.557000	58.124001	1.090000	11.592000	3658.899902	-59.669998	1.0	0.0
ISOBUTYLENE	580.640991	752.219971	527.400024	0.594000	56.108002	1.100000	11.807000	3826.300049	-59.669998	1.0	0.0
KEROSENE	350.000000	10000.000000	935.000000	0.820000	3.000000	0.000000	8.730000	4091.399902	159.199997	1.0	0.0
METHANE	667.375000	343.079987	201.100006	0.425000	16.042999	1.310000	13.470000	2880.510010	69.860001	1.0	0.0
NATURAL GAS	667.375000	343.079987	201.100006	0.425000	16.042999	1.310000	13.470000	2880.510010	69.860001	1.0	0.0
NITROGEN	492.445007	227.160004	140.600006	0.804000	28.013000	1.400000	11.009000	1059.699951	-11.880000	1.0	0.0
NITROUS OXIDE	1051.089966	557.280029	330.500000	1.226000	44.013000	1.280000	12.181000	2711.500000	-46.779999	1.0	0.0
OXYGEN	732.046997	278.279999	162.000000	1.149000	31.999001	1.400000	11.462000	1322.099976	-11.610000	1.0	0.0
PHOSGENE	823.187988	819.000000	527.400024	1.381000	98.816002	1.170000	11.811000	3901.100098	-77.669998	1.0	0.0
PROPANE	615.921997	665.640015	415.799988	0.582000	44.097000	1.130000	11.780000	3370.300049	-45.290001	1.0	0.0
PROPYLENE	670.312012	657.000000	401.399994	0.612000	42.018002	1.150000	11.757000	3253.500000	-47.070000	1.0	0.0
REFRIGERANT 11	639.437988	848.159973	0.000000	0.000000	137.369995	1.120000	11.906000	43323.000000	-65.339996	1.0	0.0
REFRIGERANT 12	598.281006	693.000000	284.399994	1.750000	120.910004	1.100000	-3.946000	0.000000	0.000000	1.0	0.0
REFRIGERANT 22	721.953003	664.500000	520.200012	1.230000	86.500000	1.180000	11.600000	3068.600098	-74.300003	1.0	0.0
SEA WATER	3200.000000	1165.140015	672.000000	0.940000	18.000000	1.330000	14.390000	6910.799805	-83.029999	1.0	0.0
STEAM	3208.250000	1165.140015	527.400024	0.998000	18.020000	1.330000	14.358000	6869.500000	-83.029999	1.0	0.0
WATER	3208.250000	1165.140015	527.400024	0.998000	18.020000	1.330000	14.358000	6869.500000	-83.029999	1.0	0.0

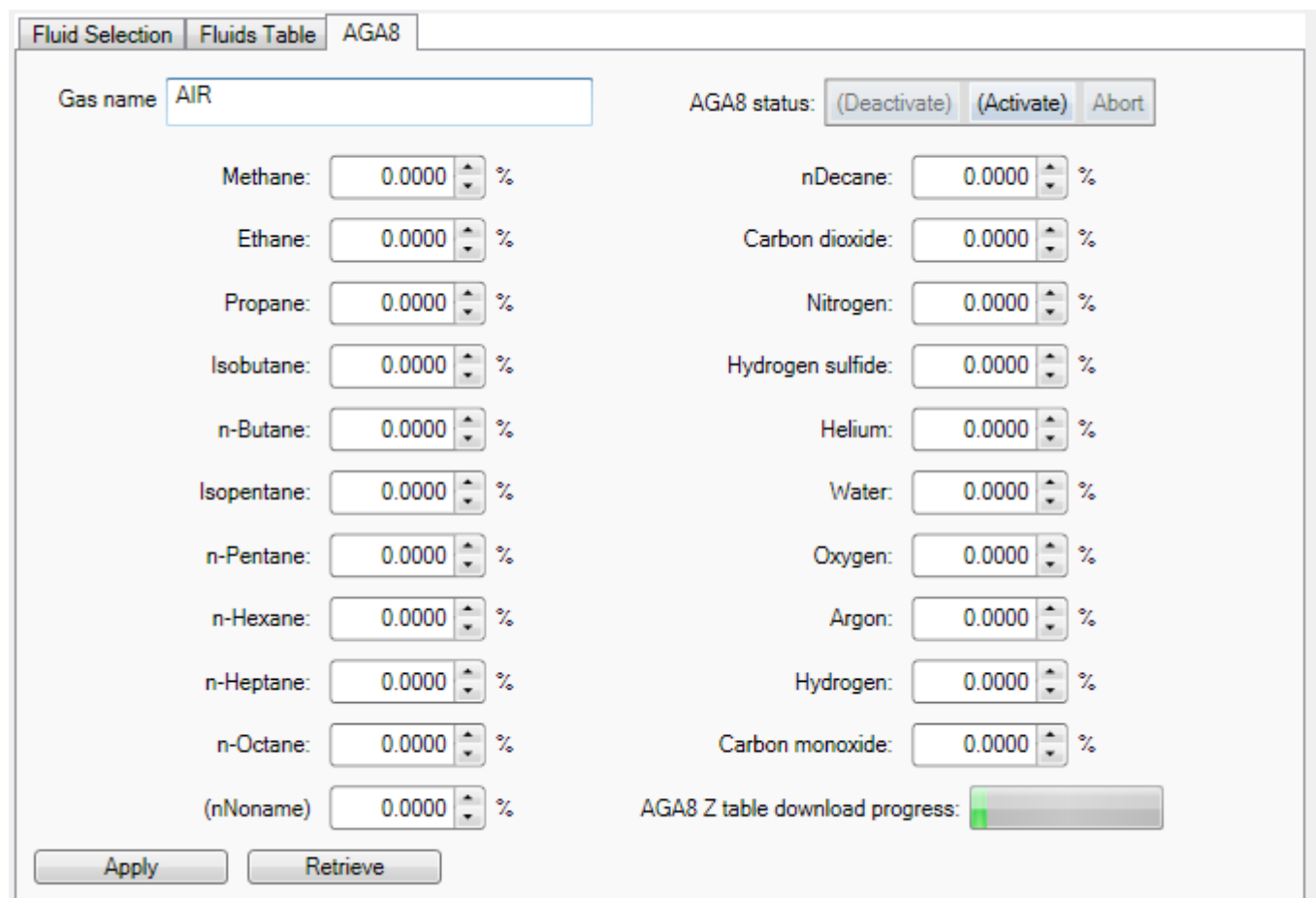
## AGA8

The Starpac will support the AGA report 8 gas computations in the calculation of the compressibility factor. This will be done through the use of a compressibility table. This table (see image below) will be a function of temperature and pressure. The desired Z value will be obtained through a series of interpolations on this table. The compressibility table will be generated with StarTalk DTM and will be downloadable to the Starpac 3. The Starpac will retain a copy of the 21 gas composition numbers used in calculating the compressibility table for future reference from the StarTalk DTM

Click the "Activate" button to enable AGA8 calculation.

Click the "Deactivate" button to disable the AGA8 calculation

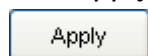
Click the "Abort" button to abort the AGA8 calculation



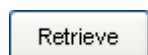
The interface shows the AGA8 configuration tab. At the top, there are three tabs: "Fluid Selection", "Fluids Table", and "AGA8". The "AGA8" tab is active. Below the tabs, there is a "Gas name" field containing "AIR". To the right of the "Gas name" field is the "AGA8 status:" section, which contains three buttons: "(Deactivate)", "(Activate)", and "Abort". Below the "AGA8 status:" section is a grid of 21 gas composition inputs, each consisting of a text box with "0.0000" and a percentage sign. The gases listed are: Methane, Ethane, Propane, Isobutane, n-Butane, Isopentane, n-Pentane, n-Hexane, n-Heptane, n-Octane, (nNonane), nDecane, Carbon dioxide, Nitrogen, Hydrogen sulfide, Helium, Water, Oxygen, Argon, Hydrogen, and Carbon monoxide. At the bottom of the grid is a progress bar labeled "AGA8 Z table download progress:". Below the grid are two buttons: "Apply" and "Retrieve".

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.







## StarTalk™ DTM Help for StarPac 3 System

The following table indicates the registers used for the interface between the Starpac and StarTalk DTM:

Variable name	Register Number	Data Type	Description
AGA8_ENABLE	147	Boolean	Enables or Disables the AGA calculations. 0 = Disabled 1 = Enabled
agaTableDnldIndex	148	Integer	Bits 0-5 Indicate the index into agaTableDnldTemp. Bit 8 indicates the direction of transfer. Bit8 = 1 SP->ST Bit8 = 0 ST->SP
GAS_COMPOSITION1	854	Float	Percentage value of gas 1
GAS_COMPOSITION2	856	Float	Percentage value of gas 2
GAS_COMPOSITION3	858	Float	Percentage value of gas 3
GAS_COMPOSITION4	860	Float	Percentage value of gas 4
GAS_COMPOSITION5	862	Float	Percentage value of gas 5
GAS_COMPOSITION6	864	Float	Percentage value of gas 6
GAS_COMPOSITION7	866	Float	Percentage value of gas 7
GAS_COMPOSITION8	868	Float	Percentage value of gas 8
GAS_COMPOSITION9	870	Float	Percentage value of gas 9
GAS_COMPOSITION10	872	Float	Percentage value of gas 10
GAS_COMPOSITION11	874	Float	Percentage value of gas 11
GAS_COMPOSITION12	876	Float	Percentage value of gas 12
GAS_COMPOSITION13	878	Float	Percentage value of gas 13
GAS_COMPOSITION14	880	Float	Percentage value of gas 14
GAS_COMPOSITION15	882	Float	Percentage value of gas 15
GAS_COMPOSITION16	884	Float	Percentage value of gas 16
GAS_COMPOSITION17	886	Float	Percentage value of gas 17
GAS_COMPOSITION18	888	Float	Percentage value of gas 18
GAS_COMPOSITION19	890	Float	Percentage value of gas 19
GAS_COMPOSITION20	892	Float	Percentage value of gas 20
GAS_COMPOSITION21	894	Float	Percentage value of gas 21
agaTempZparam1	896	Float	Parameter 1 of the z table



## **StarTalk™ DTM Help for StarPac 3 System**

agaTempZparam2	898	Float	Parameter 2 of the z table
agaTempZparam3	900	Float	Parameter 3 of the z table
agaTempZparam4	902	Float	Parameter 4 of the z table
agaTempZparam5	904	Float	Parameter 5 of the z table
agaTempZparam6	906	Float	Parameter 6 of the z table
agaTempZparam7	908	Float	Parameter 7 of the z table
agaTempZparam8	910	Float	Parameter 8 of the z table
agaTempZparam9	912	Float	Parameter 9 of the z table
agaTempZparam10	914	Float	Parameter 10 of the z table
agaTempZparam11	916	Float	Parameter 11 of the z table
agaTempZparam12	918	Float	Parameter 12 of the z table
agaTempZparam13	920	Float	Parameter 13 of the z table
agaTempZparam14	922	Float	Parameter 14 of the z table
agaTempZparam15	924	Float	Parameter 15 of the z table
agaTempZparam16	926	Float	Parameter 16 of the z table
agaTempZparam17	928	Float	Parameter 17 of the z table
agaTempZparam18	930	Float	Parameter 18 of the z table
agaTempZparam19	932	Float	Parameter 19 of the z table
agaTempZparam20	934	Float	Parameter 20 of the z table
agaTempZparam21	936	Float	Parameter 21 of the z table

## Integer Scalars

Scaled Variable Settings

Note: Scaling is performed over the range of 0 to 9999

Value corresponding to:	0	9999	
Analog Input #2 (AUX IN)	<input type="text" value="-12.50"/>	<input type="text" value="112.50"/>	%
Downstream Pressure (P2 ISA)	<input type="text" value="0.00"/>	<input type="text" value="100.00"/>	psig
Gas flow	<input type="text" value="0.00"/>	<input type="text" value="100.00"/>	lbs/hr
Liquid flow	<input type="text" value="0.00"/>	<input type="text" value="100.00"/>	US gpm
Pressure Drop	<input type="text" value="0.00"/>	<input type="text" value="100.00"/>	psig
Process Temperature	<input type="text" value="0.00"/>	<input type="text" value="200.00"/>	°F
Upstream Pressure (P1 ISA):	<input type="text" value="0.00"/>	<input type="text" value="100.00"/>	psig

Several scaled integer registers provide access to process information using integer registers for those devices that do not support floating point registers. These registers are listed in Table II. The scaling registers must be set for the variable scale registers before the scaled value can be interpreted. The minimum scale register sets the engineering value that will equal a register value of 0 and the maximum scale register sets the engineering value that will equal a register value of 9999.

SP3 Modbus Register	Type	Range	Minimum Scale Register	Maximum Scale Register	Description
30018	RO	0 to 9999	70625	70627	Variable scale normalized liquid flow in currently selected engineering units.
30019	RO	0 to 9999	70629	70631	Variable scale normalized gas flow in currently selected engineering units.
30020	RO	0 to 9999	70633	70635	Variable scale normalized P1 isa in currently selected engineering units.
30021	RO	0 to 9999	70637	70639	Variable scale normalized P2 isa in currently



## StarTalk™ DTM Help for StarPac 3 System

					selected engineering units.
30022	RO	0 to 9999	70641	70643	Variable scale normalized Delta P in currently selected engineering units.
30023	RO	0 to 9999	70645	70647	Variable scale normalized Process Temp. in currently selected engineering units.
30024	RO	0 to 9999	70649	70651	Variable scale normalized auxiliary input in percent.
30025	RO	0 to 9999	fixed at 12.5%	fixed at 12.5%	Variable scale normalized 4-20 mA command in percent.
30026	RO	0 to 9999	fixed at 12.5%	fixed at 12.5%	Variable scale normalized position in percent.
30027	RO	0 to 9999	fixed at 12.5%	fixed at 12.5%	Variable scale normalized set point command in percent of maximum

### Integer interpretation

Scaled integers can be interpreted using the following method.

EV = ENGINEERING\_VALUE

SI = SCALED\_INTEGER

Smax = SCALED\_MAX

Smin = SCALED\_MIN

$EV = ((SI/10000) \times (Smax - Smin)) + Smin$

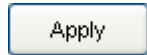
### Example:

To read the process temperature with a range of 15 to 100° Celsius, set register 70485 to 15 and register 70487 to 100. The StarPac will then calculate a scaled integer for register 30023 based on the current temperature. If the value in register 30023 is 4378 then the temperature in engineering units will be:

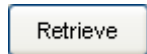
Temperature =  $((4378/10000) \times (100 - 15)) + 15 = 52.213$

## Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page.



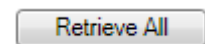
Manage Configuration (VCT) Dataset

Retrieve All
Load VCT
Save VCT

Retrieve Configuration from Device Status

Register Count: 0
Register Record: 358
Data Acquisition Progress:

Abort

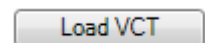


Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

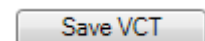
The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.



The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

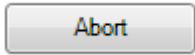


The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.



## ***StarTalk™ DTM Help for StarPac 3 System***



The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## LCD Display

Display Settings

☐ Use Default LCD display

Row 1: Closure Member Position (% open)

Row 2: Scanning...

100 150  
50 200  
0 250

LCD Contrast: 117

Row 2 - Scanning variables

Variable 1: Closure Member Position (% open)

Variable 2: Gas Flow

Variable 3: Process Upstream Pressure

Variable 4: Process Downstream Pressure

Variable 5: Process Pressure Drop

Variable 6: Select Variable 6

Variable 7: Closure Member Setpoint (% open)

Variable 8: Select Variable 8

Variable 9: Select Variable 9

\*\*Variable 10: Select Variable 10

Row 1

Row 2

Menu Area

F1

F2

F3

F4

The picture above illustrates the LCD on the StarPac system, showing the location of the rows one and two. The LCD is located on the faceplate above the keypad.

\*\* Slot for Variable 10 can be used to display any numeric register; however, the label may appear as VAR 10: on the LCD so please note the description of the register for reference at the system.

Apply

Retrieve

Selects the information that will be displayed on the first two rows of the display during normal operation. Each selection has the same list of options except where noted.

**Mode/Status** - (This option is only available on Row One.)

Lists the operating mode and any current alarm or trip conditions.

**Scanning Display** - (This option is only available on Row Two.)

Rotates automatically through a list that is configured through the user interface.

**Valve Position** - (Designated as "Posn" in the display.)

Current valve position.

**Valve Command** - (Designated as "Comnd" in the display.)

Current valve command in percent open.

**Liquid Flow** - (Designated as "FlowQ" in the display.)

Current liquid flow rate.

**Gas Flow** - (Designated as "FlowW" in the display.)

Current gaseous flow rate.



## **StarTalk™ DTM Help for StarPac 3 System**

**ISA Up Stream Press** - (Designated as "P1isa" in the display.)

Current compensated upstream line pressure (defined as two pipe diameters upstream of the valve).

**ISA Dn Stream Press** - (Designated as "P2isa" in the display.)

Current compensated downstream line pressure (defined as six pipe diameters downstream of the valve).

**ISA Delta Pressure** - (Designated as "dPisa" in the display.)

Current differential pressure using the pressure definitions above.

**Process Temperature** - (Designated as "Temp" in the display.)

Current process temperature.

**Liquid Flow Totalizer** - (Designated as "TotIQ" in the display, the totalizer is reset from the Tune menu.)

Totalized liquid flow in user-defined units.

**Gas Flow Totalizer** - (Designated as "TotIW" in the display, the totalizer is reset from the Tune menu.)

Totalized gas flow in user-defined units.

**Totalizer Time** - (Designated as "TotTm" in the display.)

Operating time since the totalizer was last reset.

**Valve Cv** - (Designated as "Cv" in the display.)

Current valve CV at present valve position.

**Setpoint (%)** - (Designated as "SP" in the display. The process maximum is set in the Tune menu with the process variable for the controller operation.)

Controller setpoint as a percent of the maximum.

**Process Variable (%)** - (Designated as "PV" in the display. The process maximum is set in the Tune menu with the process variable for the controller operation.)

Process variable in percent of maximum.

**Setpoint (units)** - (Designated as "SP" in the display.)

Current controller setpoint in user units.

**PV (units)** - (Designated as "PV" in the display.)

Current process variable in user-defined units.

**fl** - (Designated as "fl" in the display.)

Current FL at present valve position.

**xt** - (Designated as "xt" in the display.)

Current XT at present valve position.

**z** - (Designated as "z" in the display.)

Current compressibility factor at existing process conditions.

**Cylinder Top Press** - (Designated as "Ptop" in the display.)

Current pressure above the actuator piston in user-defined units.

**Cylinder Bot Press** - (Designated as "Pbot" in the display.)

Current pressure below the actuator piston in user-defined units.

**Time & Date**

Current time and date of the internal clock.

**Auxiliary 4-20 Input** - (Designated as "AuxIn" in the display.)

Re-transmits the 4-20 mA signal from analog in No. 2.

**Flow State**

Liquid non-choked, liquid choked, gas non-choked, gas choked.

**Action Buttons**

The *Apply* button will save changes to the connected device.



Apply

The *Retrieve* button will retrieve the latest information from the device related to this page.

Retrieve

### Manage Configuration (VCT) Dataset

Retrieve All

Load VCT

Save VCT

### Retrieve Configuration from Device Status

Register Count: 0

Register Record: 358

Data Acquisition Progress:



Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

Load VCT

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

Save VCT

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Abort

The *Abort* button will abort the current retrieval of the StarPac Configuration.



## ***StarTalk™ DTM Help for StarPac 3 System***

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## Mode Selector

Mode source

☒ Digital

☐ Discrete
☐ Remote
Manual < 80 < Auto

Operating Mode

☐ OOS (test)
☒ Manual
☐ Auto

Remote Settings

Refresh Rate
Setpoint

### Mode Source

The mode source controls where the StarPac unit receives the mode information. Integer register 40037 SPI & II and SP 3 sets the mode source for how the unit is changed between Automatic and Manual modes. Valid values are: 0 = Digital, 1 = Discrete, 2 = Remote.

**Digital Mode Source** - Configures the unit so that Integer register 40038 SPI & II and SP 3 sets the operating mode. Valid values are: 0 = Test, 1 = Manual, 2 = Auto.

**Note:** Every time that a 2 is written to register 40038, the StarPac system performs a bumpless transfer on the setpoint. It does this calculation even if the previous value was a 2 in register 40038. If the system needs to continuously update the mode register see remote mode source description below.

**Discrete Mode Source** - Configures the StarPac system so that an external signal applied to the discrete input terminals (33 and 34 for StarPac II, or terminals 12 and 13 for StarPac, or terminals 9 and 18 for StarPac 3) will be used to switch the unit between Automatic and Manual modes. The definition is fixed with an energized state indicating Automatic mode.

**Remote Mode Source** - Configures the unit so that floating point register 70549 SPI & II or 70703 SP 3 sets the operating mode. Valid values are: 0 = Manual, 100 = Auto. Remote Mode Source is used when a host system such as a PLC or DCS or a Valtek Analog Interface Box (AIB) is used to set the mode via digital communications. The difference between Remote and Digital modes is that in Remote mode the only time that the bumpless transfer calculation is done is after the mode in register 70549 or 70703 has changed from one value to another. With a Digital mode source selected, every time that any value is written (even if it is not changed) to register 40038, the StarPac system executes a transfer algorithm that may impede control.

### Remote Settings



## StarTalk™ DTM Help for StarPac 3 System

Sets up a time-out on the receipt of fresh setpoint data when set to operate with a remote setpoint.

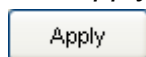
If the setpoint is not refreshed within the time frame entered in this field, the unit will go into a loss-of-command trip as set up in the Configure menu. A value of "0" disables this feature and makes the electronics think that the Mode source is digital. Note that if the digital source is selected, the unit will hold at the last setpoint indefinitely.

### Operating Mode

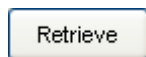
The StarPac system has three operating modes: Manual, Automatic and Test. The mode is set as described in the mode source section. In Manual mode the unit operates as a normal control valve, positioning the valve according to its current command signal that can be received digitally via Modbus or from a 4-20 mA signal. In Auto mode the unit operates as a controller, using the PID settings, process variable and control action currently configured. The setpoint can be received digitally via Modbus or from a 4-20 mA signal. Test mode takes the unit off-line and the system does not update the indicated pressures, temperatures, flow, or PID values; nor does it respond to any setpoint or command changes. Test mode is the beginning mode after an initialization and is used during calibration. If power is lost during a calibration setup, the unit remains in Test mode and the mode has to be reset to Auto or Manual for proper operation. Any time the unit is in Test mode, the letter 'T' flashes on the right side of the display for StarPac II or the letters 'CAL' appear in the first line of the display for a StarPac.

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page.



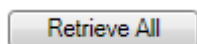
Manage Configuration (VCT) Dataset

Retrieve Configuration from Device Status

Register Count:

Register Record:

Data Acquisition Progress:



Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

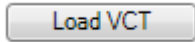
The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.



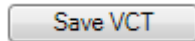
## **StarTalk™ DTM Help for StarPac 3 System**

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

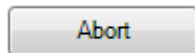


The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.



The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.



The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from be



## Position Cutoff

Sets the position at which StarPac will move the stem to tight shut off or full open.

**Lower position cutoff**  
☒ Enable Lower Position Cutoff  
Lower Cutoff Point  %

**Upper position cutoff**  
☒ Enable Upper Position Cutoff  
Upper Cutoff Point  %

Function: Stem position must reach this point in order for tight shut off to occur. Reaching this point will also cause an alarm.

Register	StarPac 3
Lower cutoff point	70829
Upper cutoff point	70849

Access: RW

Range: -20 to 120


### Action Buttons

The *Apply* button will save changes to the connected device.

The *Retrieve* button will retrieve the latest information from the device related to this page.

**Manage Configuration (VCT) Dataset**

**Retrieve Configuration from Device Status**  
Register Count:   
Register Record:   
Data Acquisition Progress:

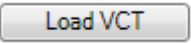
A rectangular button with a light gray background and a thin border. The text "Retrieve All" is centered in a blue, sans-serif font.

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

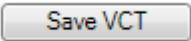
The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

A rectangular button with a light gray background and a thin border. The text "Load VCT" is centered in a blue, sans-serif font.

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

A rectangular button with a light gray background and a thin border. The text "Save VCT" is centered in a blue, sans-serif font.

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

A rectangular button with a light gray background and a thin border. The text "Abort" is centered in a blue, sans-serif font.

The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## Positioner Tuning

**Warning:** In order to perform positioner tuning, the device will be set to Manual mode with a digital input source.

Make sure the process is in a safe condition before proceeding.

Previous settings will be restored on exiting the Positioner tuning page.

Inner loop tuning
Pressure control
Stroke Rate Limits

Positioner Inner Loop Tuning Settings

Edit gains

AutoTuning Off ☐ On
  
Auto calculate tuning

7
8
1
2
3
4
5
6

Multiplier E

Proportional gain 890
  
Static gain 445
  
Error gain 0

Test Gains
  
Command 35.00 Step size 25

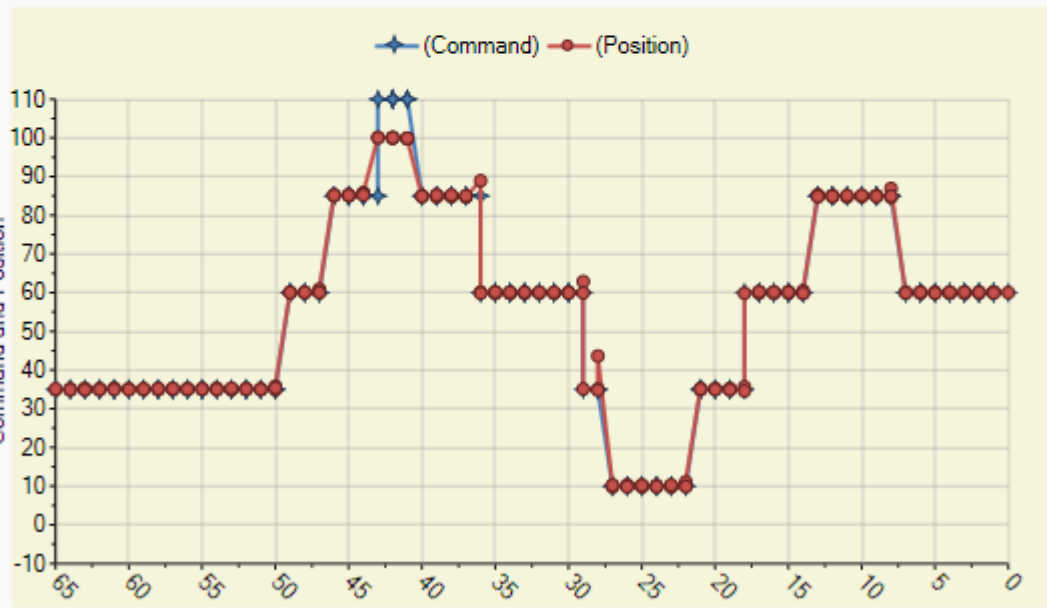
Command and position feedback
  
Command 35.00 Position feedback 35.15

Axis Zoom Settings
  
Axis: ☐ X ☐ Y ☒ XY Zoom Out

Data collection
  

▶
⏸
⏹
↺

(Command) (Position)



Apply
Retrieve

**Auto Tuning** - This switch controls whether the positioner will auto tune itself or use preset tuning parameters.



**ON** - "On" enables an auto tune feature that will automatic determine the positioner gain settings based on the current position of the selectable "Gain" Multiplier setting and response parameters measured during the last QUICK\_CAL or by clicking the "Auto calculate tuning" button. The gain "Multiplier" is live, meaning the settings can be adjusted at any time by changing the selectable gain switch position.

### Multiplier

- Is the selectable Gain "Multiplier" switch is set to "D", "C", or "B", with the auto tune switch on, progressively lower settings will be used based on response parameters measured during the last Quick-Cal or the last time the "Auto calculate tuning" button was pressed.
- If the adjustable Gain "Multiplier" selector switch is set to "F", "G", or "H" with the auto tune switch on, progressively higher gain settings will be calculated and used based on response parameters measured during the last Quick-Cal or the last time the "Auto calculate tuning" button was pressed.
- If selectable Gain "Multiplier" switch is set to "A" the tuning will not be modified with a Quick-Cal or by pressing the "Auto calculate tuning" button. Use this setting if custom tuning will be done using a handheld or other Flowserve software.

**OFF** - "Off" forces the positioner to use one of the factory preset tuning sets determined by the rotary Gain "Multiplier" selector switch. Settings "A" through "H" are progressive higher gain predefined tuning sets. The Gain Multiplier selector switch can be adjusted at any time to modify the tuning parameters.

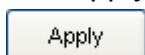
**Note:** With Auto tuning on, "E" is the default adjustable Gain Multiplier selector setting for all actuator sizes. Raising or lowering the gain multiplier setting is a function of the positioner/valve response to the control signal, and is not actuator size dependent.

Graphic Keyboard shortcuts:

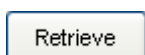
- Drag + Release = Zoom
- Ctrl + Drag + Release = Scale
- Shift + Drag + Release = Scroll

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.



Manage Configuration (VCT) Dataset

Retrieve All
Load VCT
Save VCT

Retrieve Configuration from Device Status

Register Count: 0
Register Record: 358
Data Acquisition Progress:

Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

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Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

Load VCT

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Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Abort

The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

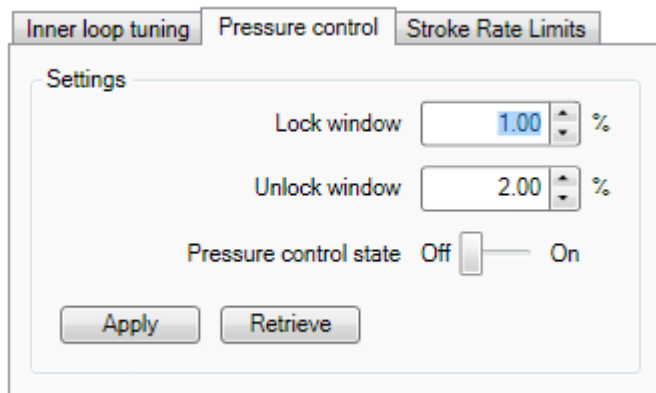
## Pressure Control

The Pressure Control settings will provide additional stability when the StarPac 3 system is used on a high-friction valve or with a single-acting actuator.

Turn the Pressure Control on by clicking the “Pressure Control State” switch to the “On” position.

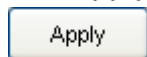
Set the “Lock Window” to the desired deviation in % within which the pressure window will be locked. (Note: it has to be less than the unlock window value)

Set the “Unlock Window” to the desired deviation in % within which the pressure window will be unlocked. (Note: it has to be greater than the lock window value)

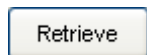


### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.



Description of how it works:

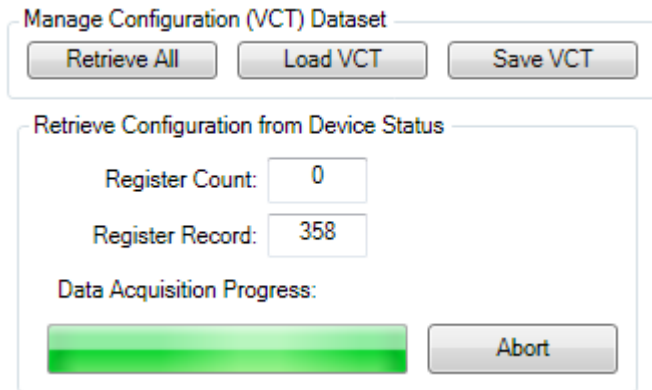
When the Valve Stem Friction is high compared to the Actuator Diaphragm pressure, it is physically very difficult to obtain exactly zero position deviation. Since the Logix positioner is continuously trying to obtain zero deviation, a small amount of 'hunting' can occur. This is normally seen only on valves with high friction packing and/or a single-acting (low pressure) diaphragm actuator.

Window Size determines the range of position deviation within which the pressure control algorithm will be active. When the Stem Position falls inside this position deviation window, the Logix will eliminate hunting by maintaining a constant diaphragm pressure in conjunction with normal position control. A typical value would be +/- 0.05%.

Window Hysteresis is the amount that the position deviation window size is increased after the position falls inside the window. This avoids jumping in and out of the window when the position

falls near the edge of the Window Size. If the Window Hysteresis is just larger than the 'noise' level, resolution will not be compromised. A typical value would be 0.5%.

Gain determines how aggressive the Logix will be in compensating for a change in pressure. Rapid hunting would require a larger value. In general, you should use the smallest value possible that will stop the hunting. A typical value would be 4.



**Retrieve All**

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**Abort**



## ***StarTalk™ DTM Help for StarPac 3 System***

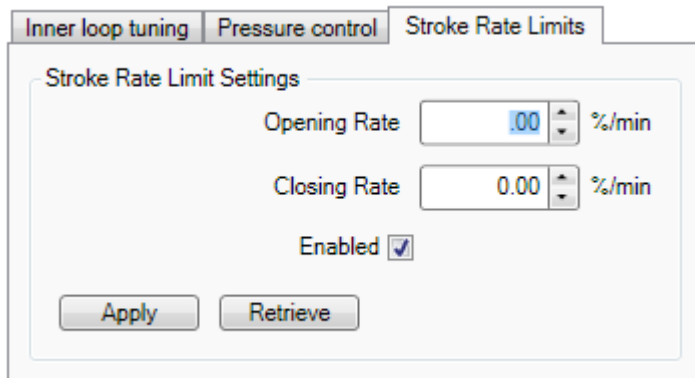
The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from being enabled.

## Stroke Rate Limits

Option allows you to set software limits on the travel of the valve. These limits are active in Auto and Manual modes, but they do not affect failure modes. Normally these limits are set to -10 and 110 percent of travel so they do not affect valve operation.

**Note:** Soft limits are stroke limits set and maintained by the system's electronics or software. These limits are only in effect when the unit has power and is not in Test mode. When power has failed or cut off to the StarPac system, the valve will fail to its mechanical stops or limits.



### Soft Limit Maximum

Function: Attempting to exceed this position value triggers a Soft limit alarm.

StarPac 3 Register = 70417

Access: RW

Range: -20 to 120

### Soft Limit Minimum

Function: Attempting to exceed this position value triggers a Soft limit alarm.

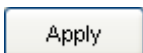
StarPac 3 Register = 704179

Access: RW

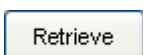
Range: -20 to 120

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.





## StarTalk™ DTM Help for StarPac 3 System

Manage Configuration (VCT) Dataset

Retrieve All Load VCT Save VCT

Retrieve Configuration from Device Status

Register Count: 0

Register Record: 358

Data Acquisition Progress:

Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

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Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Abort

The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.



## Process Variables

---

### Liquid Flow Selection

Sets the system to control liquid flow. (If the flow is gaseous, the system will read the liquid flow value as zero and respond accordingly.)

### ISA Up Stream Press selection

Sets the system to control using the current compensated upstream line pressure. (Defined as two pipe diameters upstream of the valve.)

### ISA Dn Stream Press selection

Sets the system to control using the current compensated downstream line pressure. (Defined as six pipe diameters downstream of the valve.)

### ISA Delta Pressure selection

Sets the system to control using current differential pressure calculated from upstream and downstream pressures.

### Process Temperature selection

Sets the system to control the process temperature.

### Gas Flow selection

Sets the system to control gaseous flow (if the flow is liquid, the system will read the gas flow value as zero and respond accordingly).

### Auxiliary 4-20 Input selection

Sets the system to use a 4-20 mA signal attached to Analog Input 2 as the process variable.

**Process Variable Settings**  
Process variable Liquid flow  
Full scale value 100.00 gpm  
Offset 0.00 gpm

**Action**  
☐ Reverse  
☒ Direct

Apply Retrieve

### Action Buttons

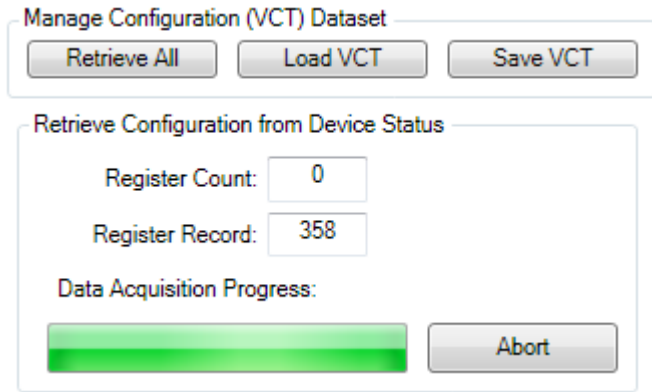
The *Apply* button will save changes to the connected device.

Apply

The *Retrieve* button will retrieve the latest information from the device related to this page.

Retrieve





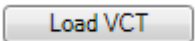


Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

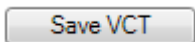
The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

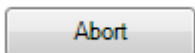


The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.



The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.



The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.



## **Special Configurations**

---

*The Special Configuration page provide customized wizards for special configurations.*

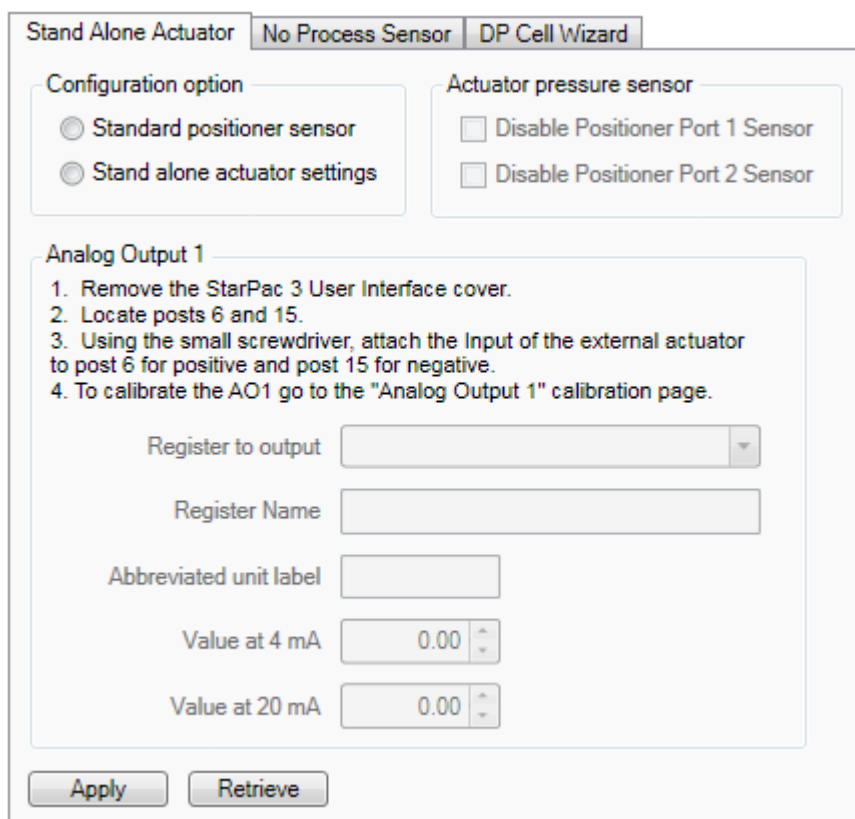
## Stand Alone Actuator

The "Stand Alone Actuator" tab allows the configuration of the StarPac 3 System for Stand Alone Actuator setting.

By selecting the configuration option, the DTM will enable or disable the Port 1 and Port 2 positioner sensors check boxes.

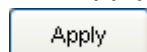
Click the "Apply" button to write the changes to the device.

Note: The "Analog Output 1" group box is there only for reference. The Analog Output 1 should be set and calibrated for the stand Alone actuator in the "Configuration -> Analog Output 1" page.

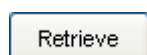


### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.





## StarTalk™ DTM Help for StarPac 3 System

Manage Configuration (VCT) Dataset

Retrieve All Load VCT Save VCT

Retrieve Configuration from Device Status

Register Count: 0

Register Record: 358

Data Acquisition Progress:

Abort

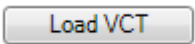


Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

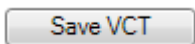
The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

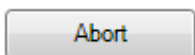


The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.



The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.



The *Abort* button will abort the current retrieval of the StarPac Configuration.

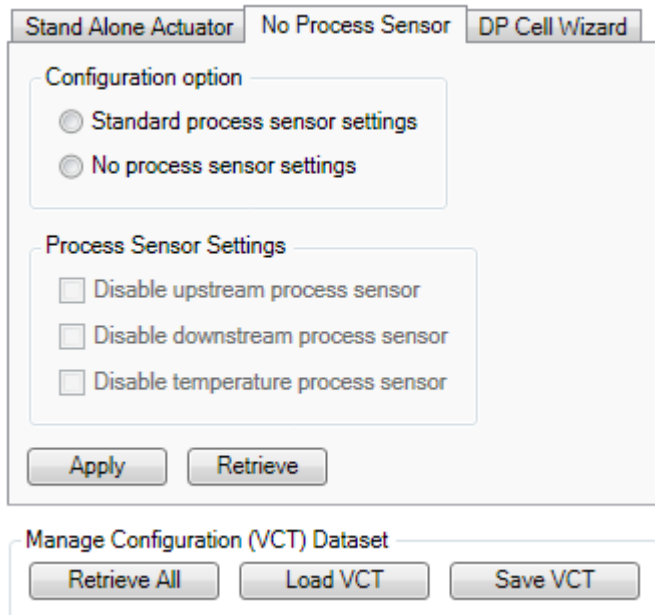
Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## No Process Sensor

The "No Pressure Sensor" tab allows the configuration of the StarPac 3 System to work without the process pressure sensors.

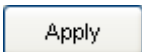
By selecting the configuration option, the DTM will enable or disable the following:

- Upstream process Pressure Sensor
- Downstream process Pressure Sensor
- Temperature Process Sensor

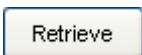


### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.



Manage Configuration (VCT) Dataset

Retrieve All
Load VCT
Save VCT

Retrieve Configuration from Device Status

Register Count: 0
Register Record: 358
Data Acquisition Progress:

Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

Load VCT

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

Save VCT

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Abort

The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

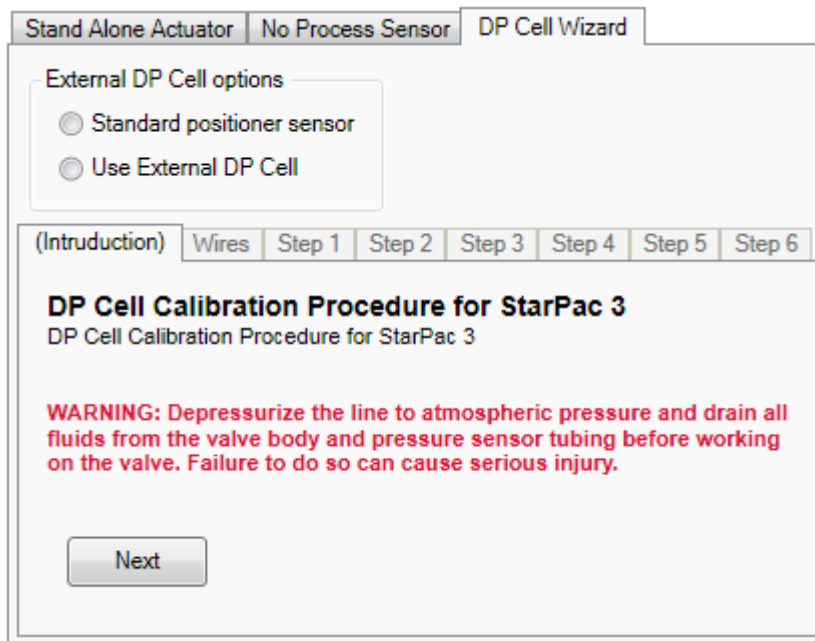
## DP Cell

The *DP Cell* page allows the configuration and calibration of an external DP Cell.

By selecting the "Use External DP Cell" radio button inside of the "External DP Cell option" group box, the DP Cell wizard will be enabled.

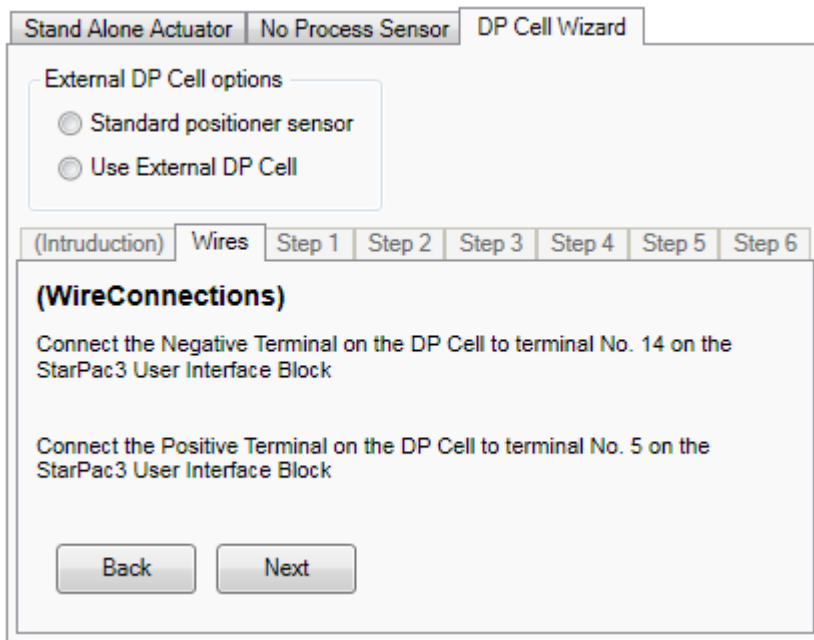
The "Standard positioner sensor" radio button will disable the DP Cell wizard.

**WARNING: Depressurize the line to atmospheric pressure and drain all fluids from the valve body and pressure sensor tubing before working on the valve. Failure to do so can cause serious injury.**



### Wires

The wizard provides instruction on how to connect the external DP Cell to the right terminals. Please follow the wizard instruction.



Stand Alone Actuator No Process Sensor DP Cell Wizard

External DP Cell options

☐ Standard positioner sensor

☐ Use External DP Cell

(Introduction) Wires Step 1 Step 2 Step 3 Step 4 Step 5 Step 6

**(WireConnections)**

Connect the Negative Terminal on the DP Cell to terminal No. 14 on the StarPac3 User Interface Block

Connect the Positive Terminal on the DP Cell to terminal No. 5 on the StarPac3 User Interface Block

Back Next

### Set the StarPac 3 electronic board jumpers

The wizard provides instructions on how to set the jumpers on the StarPac 3 electronic board. Please follow the wizard instruction.



Stand Alone Actuator
No Process Sensor
DP Cell Wizard

External DP Cell options

☐ Standard positioner sensor
☐ Use External DP Cell

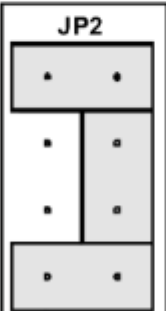
(Intruduction)
Wires
Step 1
Step 2
Step 3
Step 4
Step 5
Step 6

**Step 1) Set the StarPac Jumpers.**

Analog input power selection for DP Cell - On the lower right hand side of the electronic board assembly on the bottom board are two, 8 position jumper arrays labeled "JP1" and "JP2." Each of the 4-20 mA analog inputs can be configured for either an external power supply such as exists in a DCS, or powered internally so a transmitter or other 2 wire device can be directly connected to the terminals. The JP2 configures analog input 2. The jumpers should be configured as shown for the desired operation.

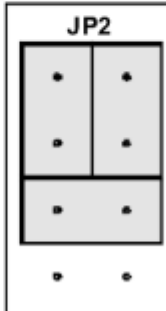
The JP2 jumpers should be configured as shown in the picture below for the desired operation depending on your choice of internal or external Loop Power.

JP2



External Loop Power Setting

JP2



Internal Loop Power Setting

Back
Next

## Step 2

The wizard provides instructions on how to proceed with this step. Please follow the wizard instruction

(Introduction)	Wires	Step 1	<b>Step 2</b>	Step 3	Step 4	Step 5	Step 6
----------------	-------	--------	---------------	--------	--------	--------	--------

**Step 2**

Close the upstream and downstream valves and open the bridge valve on the Pressure Manifold

Remove the Vent/Drain Plug from the upstream side of the DP Cell. Connect a calibrated pressure reference and a regulated pressure source to the Vent/Drain Plug port.

Remove the covers from both ends of the DP Cell. Verify that the DP Cell is wired according to the description from the "Wire" Tab and that the Span Switch on the DP Cell is set to the appropriate range.

### Step 3

The wizard provides instructions on how to proceed with this step. Please follow the wizard instruction

(Introduction)	Wires	Step 1	Step 2	<b>Step 3</b>	Step 4	Step 5	Step 6
----------------	-------	--------	--------	---------------	--------	--------	--------

**Step 3**

Connect a Current Meter in series in the current loop by disconnecting the wire from Terminal No. 5 on the StarPac 3 User Interface Block and connecting it to the positive terminal on the Current Meter. Connect the terminal of the Meter to Terminal No. 5 on the StarPac 3 User Interface Block.

Verify that power is reaching the StarPac 3 electronics.

Manage Configuration (VCT) Dataset

### Step 4

The wizard provides instructions on how to proceed with this step. Please follow the wizard instruction

(Intruduction) Wires Step 1 Step 2 Step 3 **Step 4** Step 5 Step 6

### Zero Calibration

Perform the "ZERO CALIBRATION" on the Analog Input #2 and the DP Cell by doing the following:

1. Verify that the Upstream and Downstream valves on the Pressure Manifold are closed and that the Bridge valve is open.
2. Adjust the Zero Adjustment Screw on the DP CELL until the Current Meter reads 4.00 mA.
3. Accept the Zero point calibration by clicking the "Accept" button below.

Accept

Back Next

Manage Configuration (VCT) Dataset

Retrieve All Load VCT Save VCT

## Step 5

The wizard provides instructions on how to proceed with this step. Please follow the wizard instruction

(Intruduction) Wires Step 1 Step 2 Step 3 Step 4 **Step 5** Step 6

### Span Calibration

Perform the "SPAN CALIBRATION" on the Analog Input #2 and the DP Cell by doing the following:

1. Close the bridge valve on the Pressure Manifold.
2. Expose the downstream pressure side of the DP Cell to atmospheric pressure by opening the downstream valve on the Pressure Manifold.
3. Using the regulator, adjust the pressure on the upstream side of the DP Cell to the desired MAX DP Pressure.
4. Enter the Max DP Pressure in the edit box below.
5. Adjust the Span Adjustment Screw on the DP Cell until the Current Meter reads 20 mA.
6. Accept the Spen point calibration by clicking the "Accept" button below.

Max DP Pressure value

Accept

Back Next

## Step 6

The wizard provides instructions on how to proceed with this step. Please follow the wizard instruction

(Introduction)	Wires	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
----------------	-------	--------	--------	--------	--------	--------	--------

**Final Instructions**  

1. Close the bridge valve on the Pressure Manifold and open the upstream and downstream valves.
2. Remove the Pressure Reference and regulated pressure source from the DP Cell and replace the Vent/Drain Plug.
3. Remove the Current Meter from the current loop and reconnect the wire to Terminal No. 6 on the StarPac User Interface Block.
4. Replace the covers on both ends of the DP cell.

Back

### Action Buttons

The *Apply* button will save changes to the connected device.

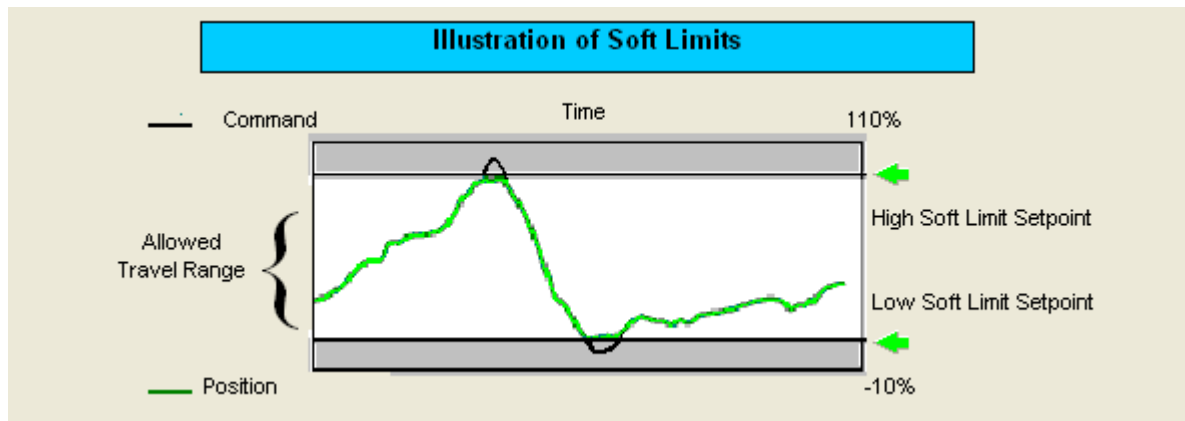
Apply

The *Retrieve* button will retrieve the latest information from the device related to this page and tab.

Retrieve

## Soft Limits

The *Soft Limits* are software controlled travel stops for the valve assembly. This feature is used to simulate physical blocks on the valve that restrict movement past a set point. Once the *Soft Limit* is set, the positioner will not attempt to move the valve position (final command) beyond the set point, regardless of the analog or digital command input signal. Since they are software controlled, soft limits are not held in the memory on loss of signal or air because the software is not able to control the valve in these situations. If soft limits are active, they show as grey areas at either end of travel on the main dashboard view.



Option allows you to set software limits on the travel of the valve. These limits are active in Auto and Manual modes, but they do not affect failure modes. Normally these limits are set to -10 and 110 percent of travel so they do not affect valve operation.

**Note:** Soft limits are stroke limits set and maintained by the system's electronics or software. These limits are only in effect when the unit has power and is not in Test mode. When power has failed or cut off to the StarPac system, the valve will fail to its mechanical stops or limits.

### Soft Limit Settings

The *Low Setpoint* field is the value of the input command signal below which the positioner will drive the valve to a fully closed position using the available supply pressure. The default setting for this feature is 1%, meaning that any signal below 1% will drive the valve to a fully saturated condition to achieve the best shutoff possible.

The *High Setpoint* is the value of the input command signal above which the positioner will stop following the command signal. Normally this limit is set to 110% so it is not activated. The only reason that a valve is normally saturated open is for a 3-way valve that must seat at both ends of travel. The illustration at the bottom of the page is a graphical representation showing how the soft limits work.

Stroke limits settings

☐ Enable

Maximum limit  %

Minimum limit  %



## StarTalk™ DTM Help for StarPac 3 System

### Soft limit maximum

**Function:** Attempting to exceed the maximum position value triggers a Soft limit alarm.

StarPac 3 Register: 70417

Access: RW

Range: -20 to 120

### Soft limit minimum

**Function:** Attempting to exceed the minimum position value triggers a Soft limit alarm.

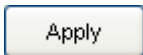
StarPac 3 Register: 70419

Access: RW

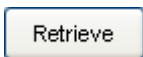
Range: -20 to 120

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page.



**Manage Configuration (VCT) Dataset**  

Retrieve All

Load VCT

Save VCT

**Retrieve Configuration from Device Status**  

Register Count:

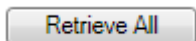
0

Register Record:

358

Data Acquisition Progress:

Abort



Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

**Note 1:** The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

**Note 2:** VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.



## ***StarTalk™ DTM Help for StarPac 3 System***

Load VCT

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

Save VCT

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Abort

The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.



### **Stroke Characterization**

---

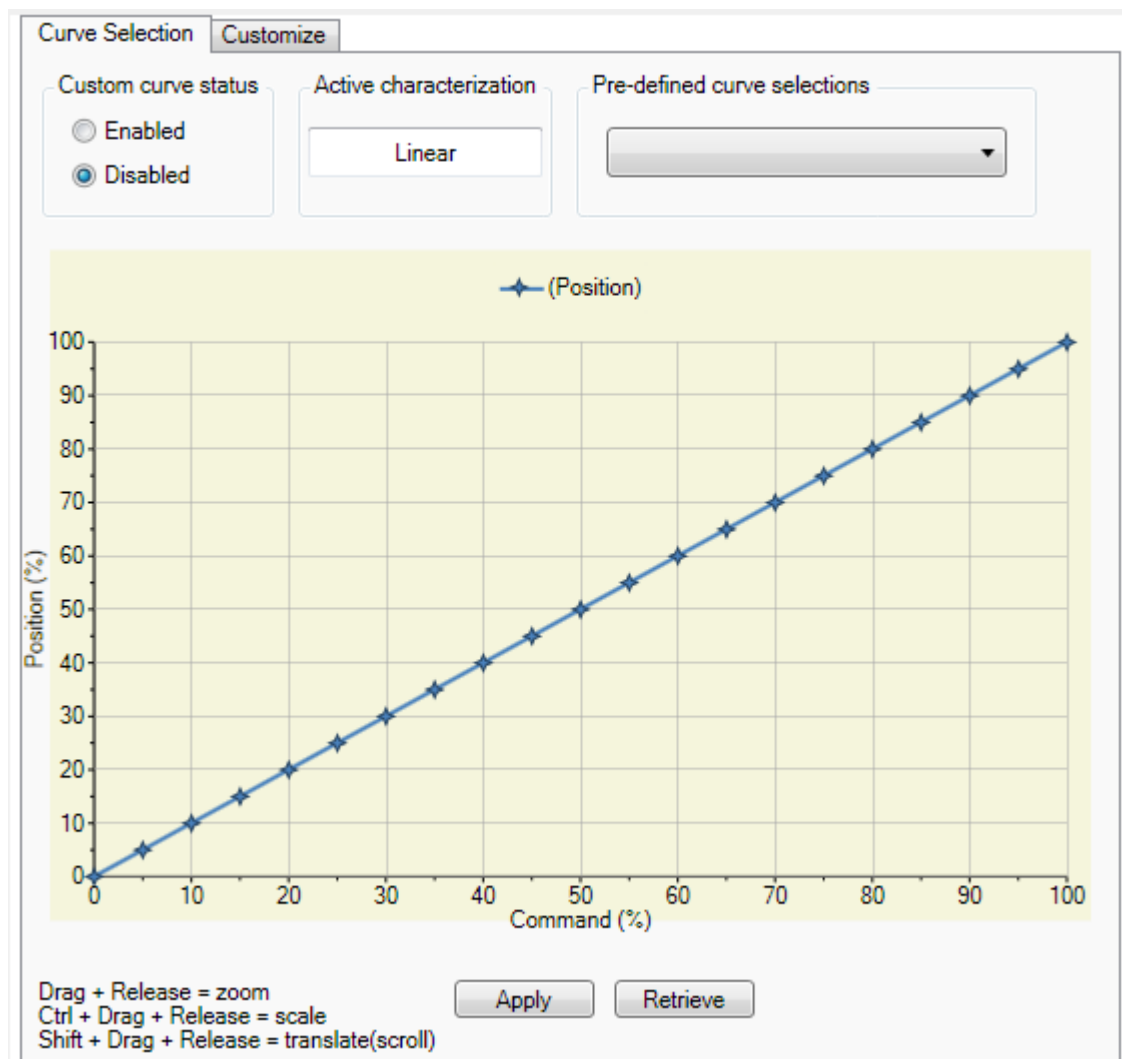
The *Stroke Characterization* page enables you to change the relationship between the command input and the valve position. This relationship is shown by the characterization curve. The characterization curve changes the Input Command into a corresponding Final Command. The actual valve position corresponds to the Final Command as shown on the Dashboard.



## Curve Selection

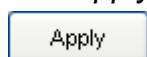
The curves may be selected on the Characterization page or by using the *Characterization Selection* Drop box. To change the characterization curve on this screen just choose the desired curve from the Characterization Selection dropdown box. Press Apply and the changes will take effect immediately. The Retrieve button will display the curve presently used by the positioner.

To customize the custom curve, select the Customize tab. This can be done before or after the Custom curve is applied.

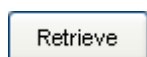


### Action Buttons

The *Apply* button will save changes to the connected device.

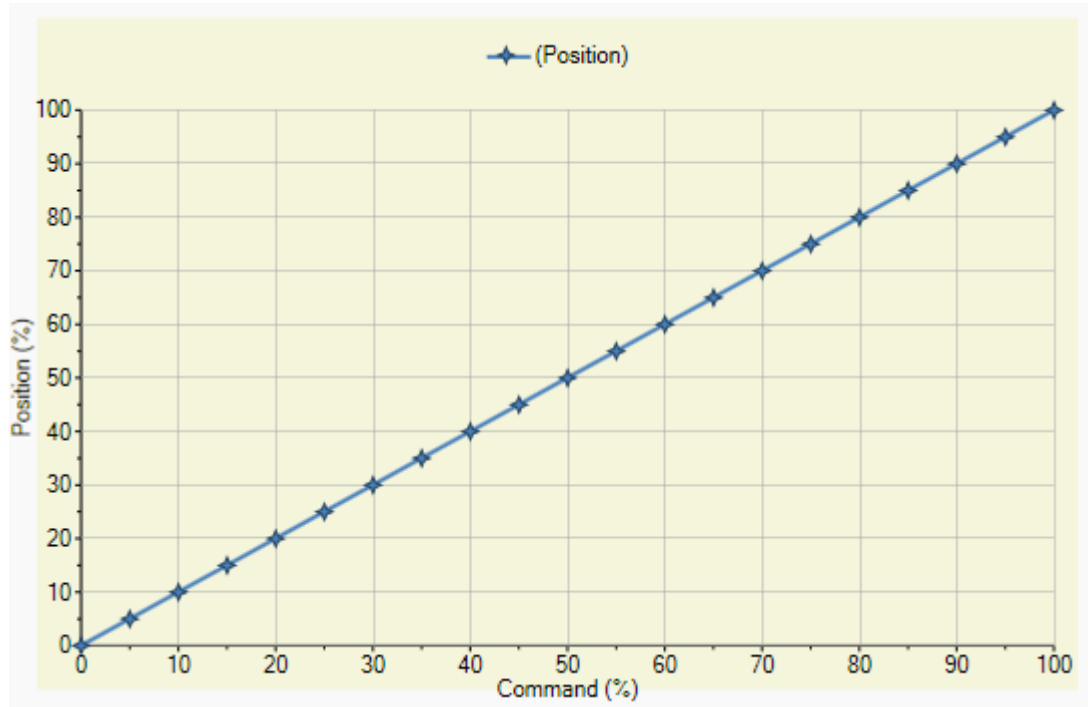


The *Retrieve* button will retrieve the latest information from the device related to this page and tab.

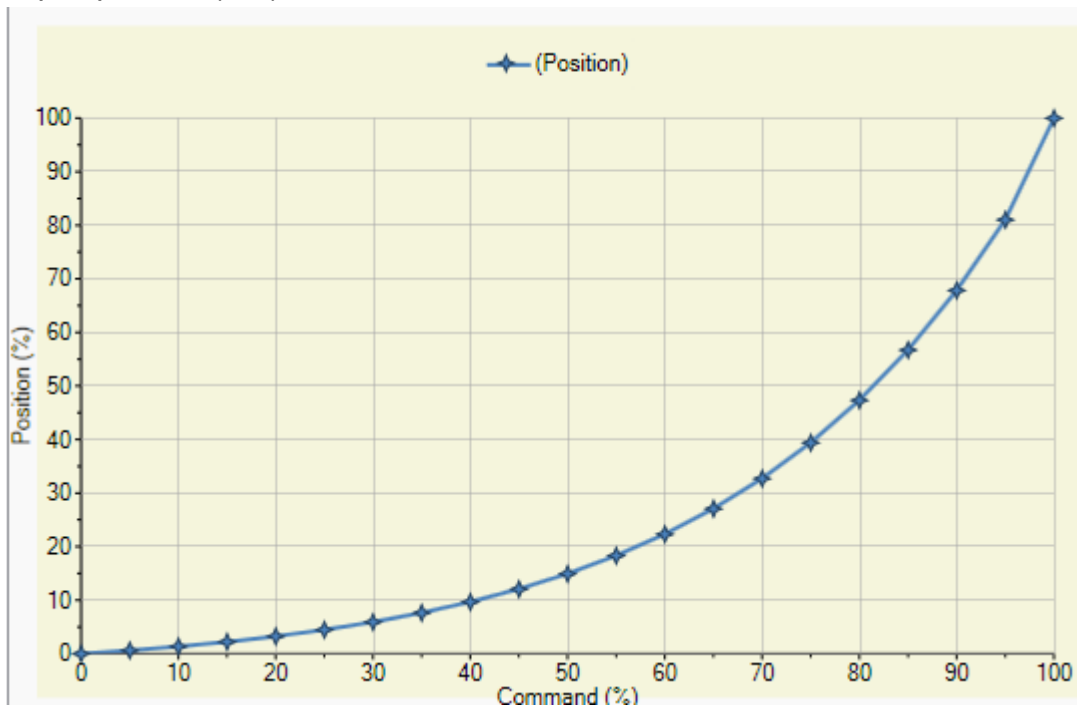


## Default Characterization Curves

### Linear Characterization Curve



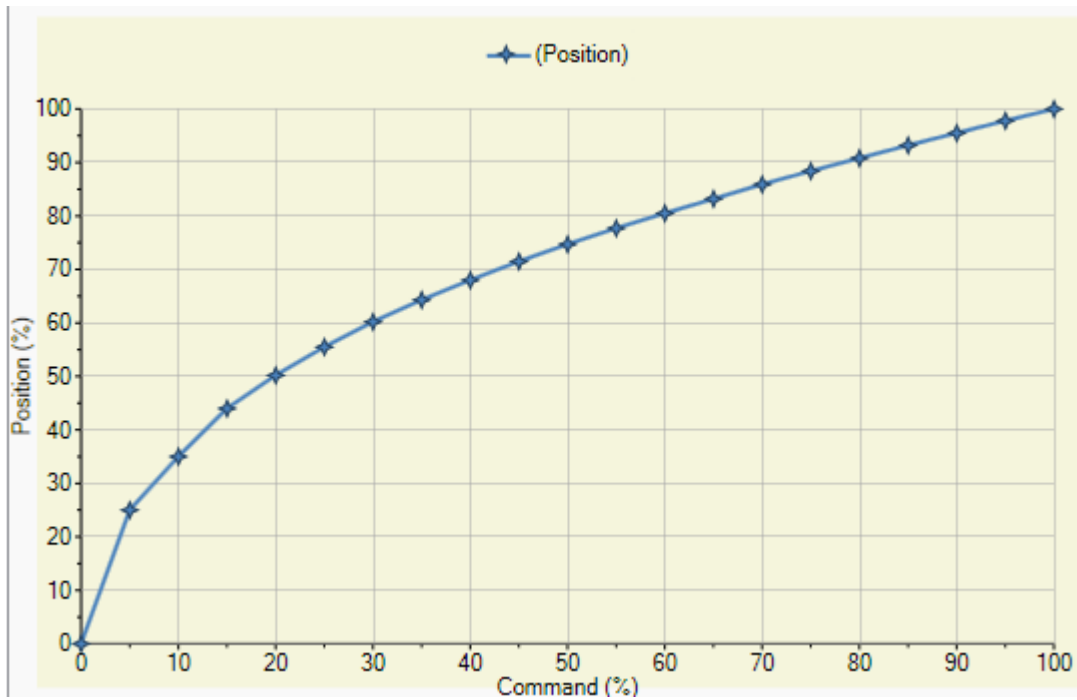
### Equal percent (=%) Characterization Curve



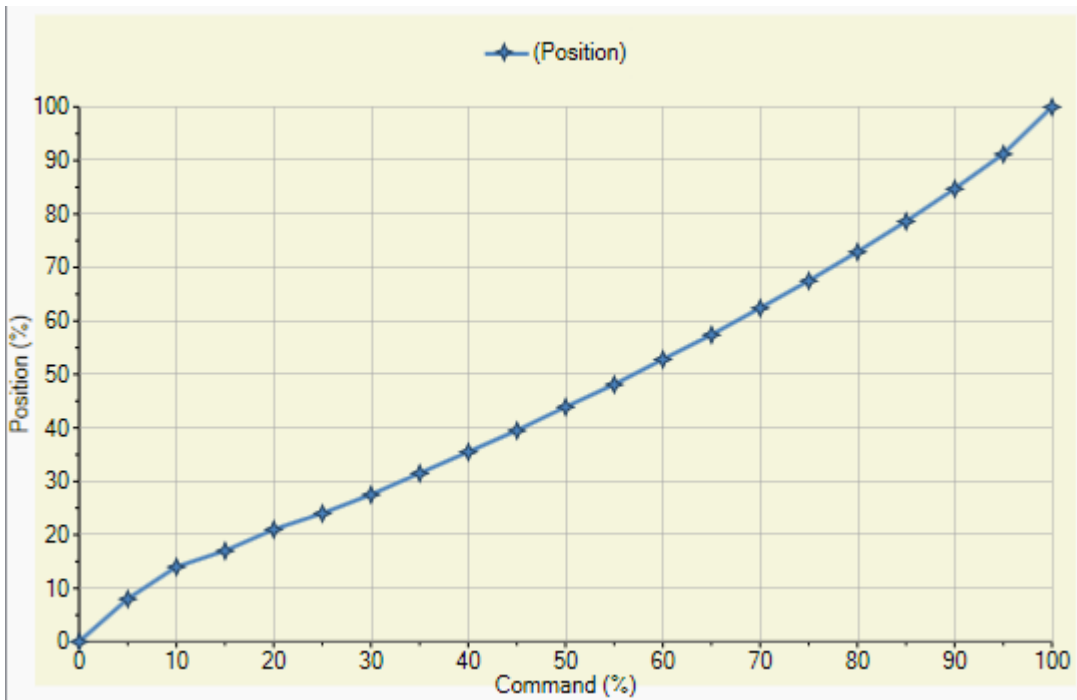
### Shear Stream Linear Characterization Curve



## StarTalk™ DTM Help for StarPac 3 System



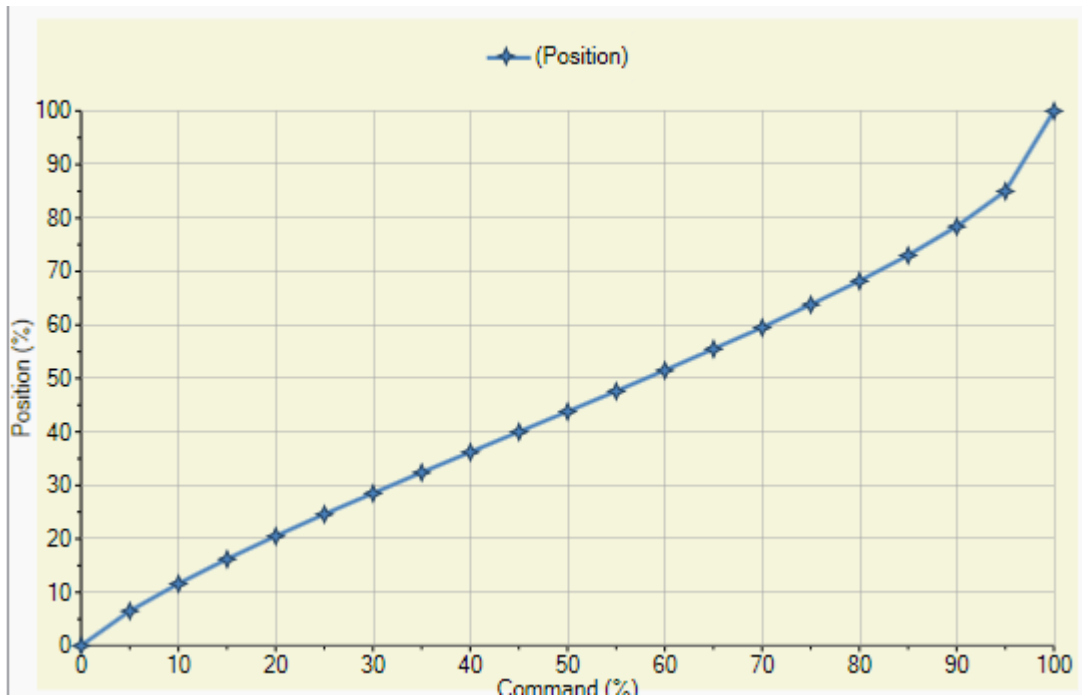
Shear Stream =%Characterization Curve



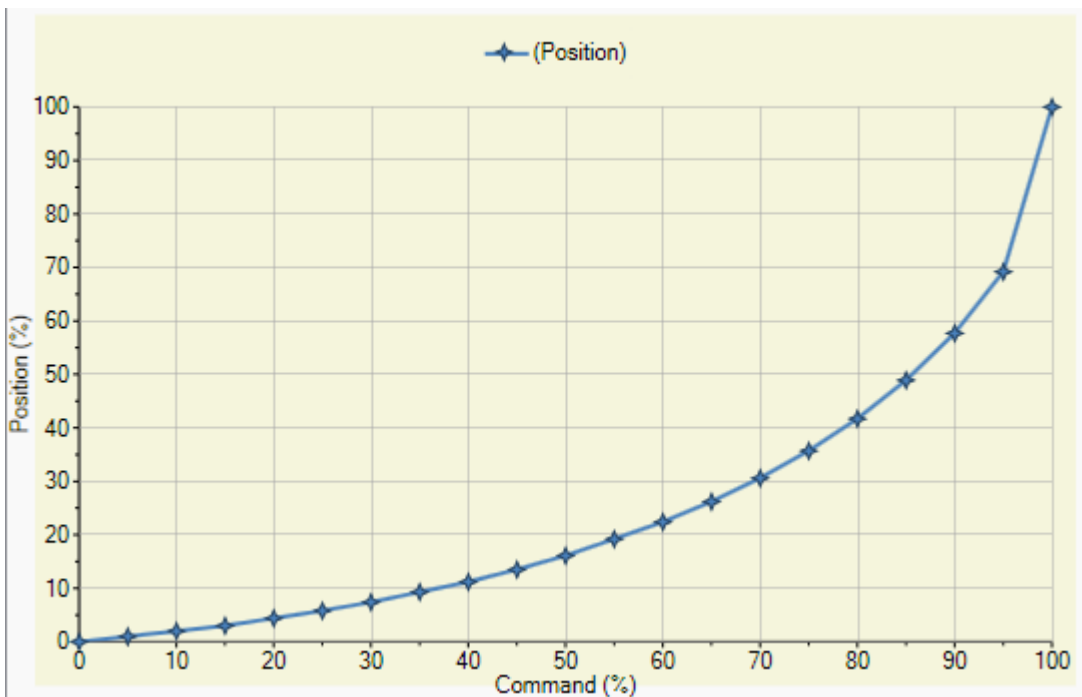
Max Flo Linear Characterization Curve



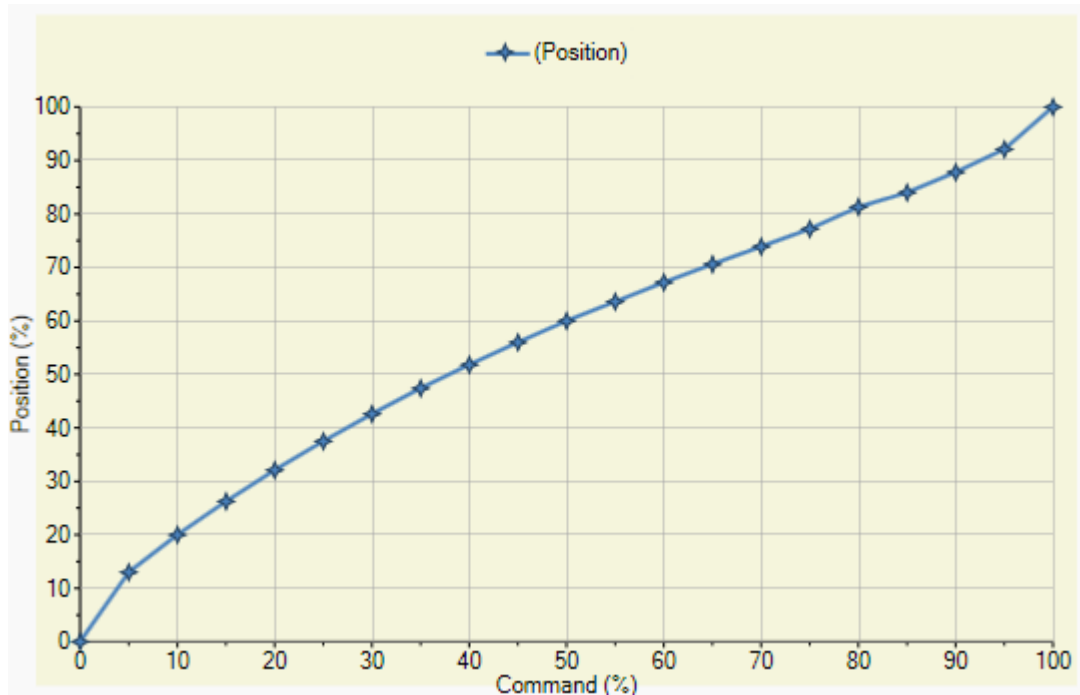
## StarTalk™ DTM Help for StarPac 3 System



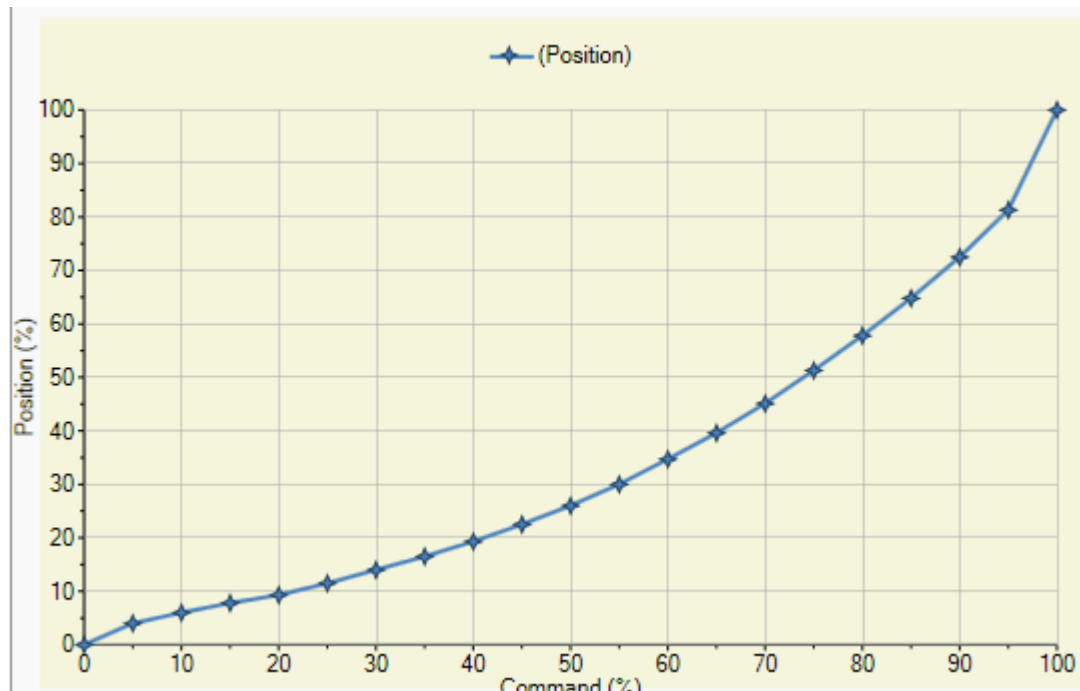
Max Flo =% Characterization Curve



Valdisk Linear Characterization Curve



Valdisk =%Characterization Curve



The StarPac is capable of characterizing the command to position response. Characterization can be enabled and disabled. The StarPac provides 21 input values (x) and 21 output values (y) which can be edited to build a response curve to meet your process needs.

## Enabled / Disabled

Function: Enables/disables custom characterization.

1 = Enable

0 = Disable



## StarTalk™ DTM Help for StarPac 3 System

StarPac 3 Register: 40137

Access: RW

Range: 0 to 1

**Function:** Stem position must reach this point in order for tight shut off to occur. Reaching this point will also cause an alarm.

**Register:** StarPac 3

X values 70745 - 70785

Y values 70787 - 70827

Access: RW

Range: -20 to 120

Manage Configuration (VCT) Dataset

Retrieve All Load VCT Save VCT

Retrieve Configuration from Device Status

Register Count: 0

Register Record: 358

Data Acquisition Progress:

Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

Load VCT

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

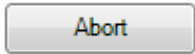
Save VCT



## ***StarTalk™ DTM Help for StarPac 3 System***

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

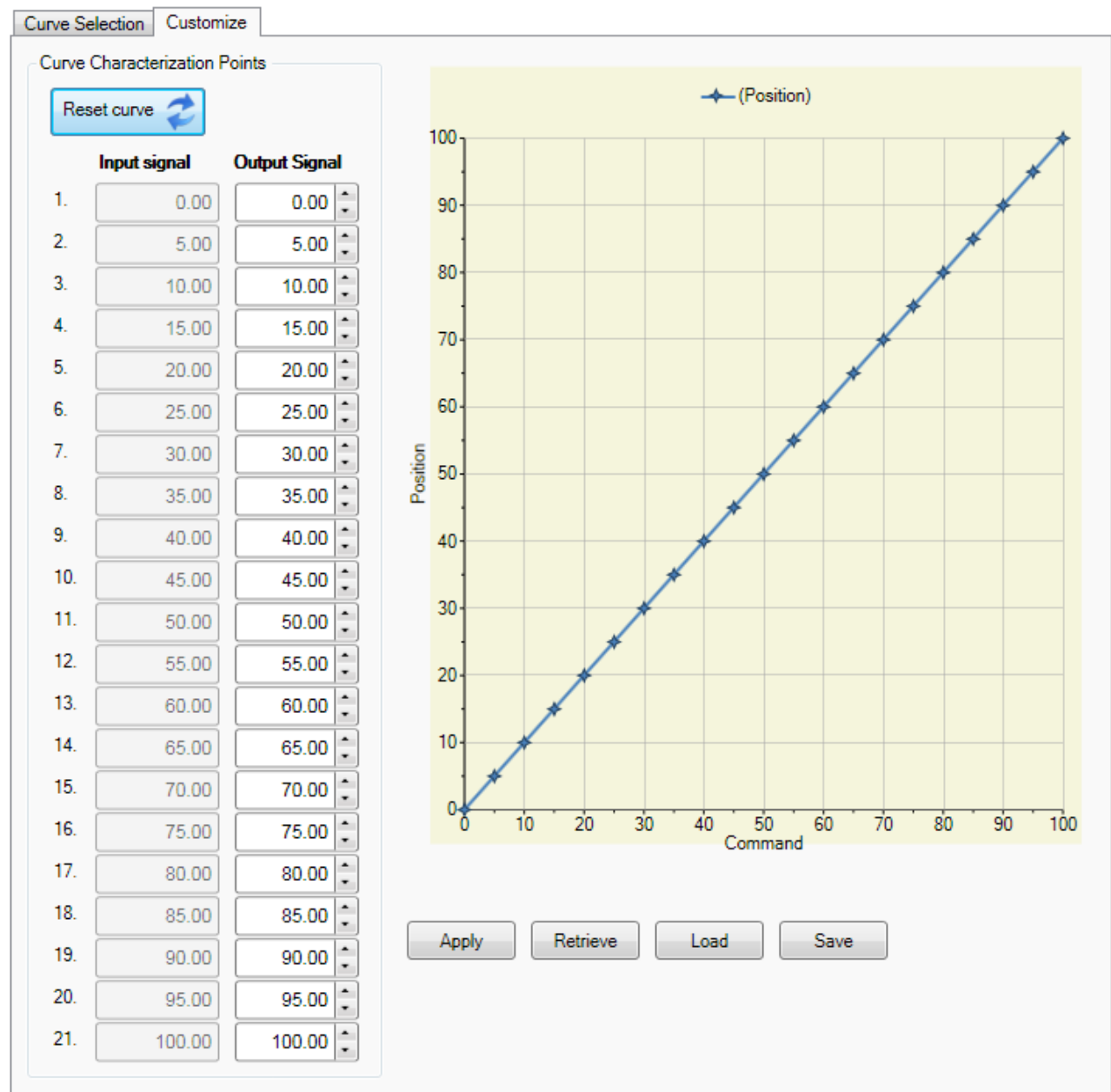


The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## Customize Curve

The *Stroke Characterization (Custom)* page enables you to create a custom relationship between the command input and the valve position. This relationship is shown by the characterization curve. The characterization curve changes the *Input Command* into a corresponding *Final Command*.



### Characterization Curve

The *Characterization Curve* box allows you to quickly load a rangeability curve or manually modify the curve.

*Inherent Rangeability (R)* is defined as the change in which the deviation from a desired inherent flow characteristic will not exceed some stated controllable limits. It is generally used to describe the ratio of the minimum controllable flow to the maximum controllable flow in terms of Valve Cv. In practice, the inherent rangeability is the ratio between maximum and minimum controllable Cv, where Cv is the valve flow coefficient representing valve capacity.





## StarTalk™ DTM Help for StarPac 3 System

In the formula,

$n$  is the *Output Signal*

$R$  is the value in the input field (default is 30)

$i$  is the *Input Signal*

**Inherent Rangeability (R)**

$$n=100 \left[ R \left( \frac{i}{100} - 1 \right) - \frac{1}{R} \right]$$

The *Input Signal* column represents the X axis of the graph and is not adjustable. The *Output Signal* column represents the Y axis of the graph. The Output Signal may be edited by typing or clicking the up/down buttons.

	Input signal	Output Signal
1.	0.00	0.00
2.	5.00	5.00
3.	10.00	10.00
4.	15.00	15.00
5.	20.00	20.00
6.	25.00	25.00
7.	30.00	30.00
8.	35.00	35.00
9.	40.00	40.00
10.	45.00	45.00
11.	50.00	50.00
12.	55.00	55.00
13.	60.00	60.00
14.	65.00	65.00
15.	70.00	70.00
16.	75.00	75.00
17.	80.00	80.00
18.	85.00	85.00
19.	90.00	90.00
20.	97.00	95.00
21.	100.00	100.00

### Action Buttons

The *Apply* button will save changes to the connected device.

Apply

The *Retrieve* button will retrieve the latest information from the device related to this page and tab.

Retrieve

### Manage Configuration (VCT) Dataset

Retrieve All

Load VCT

Save VCT

### Retrieve Configuration from Device Status

Register Count: 0

Register Record: 358

Data Acquisition Progress:



Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

Load VCT

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

Save VCT

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Abort

The *Abort* button will abort the current retrieval of the StarPac Configuration.



## ***StarTalk™ DTM Help for StarPac 3 System***

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## System Clock

Option sets the internal StarPac clock. The internal clock is battery driven and keeps time whether the unit is powered or not. Use the F1 and F2 function keys to select the field to edit. Note that the time is in the 24 hour format and the date is the mm/dd/yy format.

System Clock

Date and Time

5/10/2013

1:18:57 PM

Apply
Retrieve

### Action Buttons

The *Apply* button will save changes to the connected device.

Apply

The *Retrieve* button will retrieve the latest information from the device related to this page.

Retrieve

Manage Configuration (VCT) Dataset

Retrieve All
Load VCT
Save VCT

Retrieve Configuration from Device Status

Register Count: 0
Register Record: 358
Data Acquisition Progress:

Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

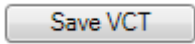
Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

Load VCT



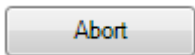
## ***StarTalk™ DTM Help for StarPac 3 System***

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.



The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.



The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## System Information

Allows the user to check the factory hardware configuration for reference or spare parts.

General
Body
Actuator
Trim
Transducers
Password
Notes

Modbus network address
1

StarPac model
StarPac 3

Embedded software version
00.22

Electronics serial number
082508000P

EEPROM version
OL 3.0b IL 3E0a

Apply
Retrieve

Manage Configuration (VCT) Dataset

Retrieve All
Load VCT
Save VCT

Manage Configuration (VCT) Dataset

Retrieve All
Load VCT
Save VCT

Retrieve Configuration from Device Status

Register Count:
0

Register Record:
358

Data Acquisition Progress:

Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

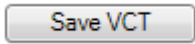
Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

Load VCT



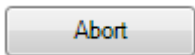
## ***StarTalk™ DTM Help for StarPac 3 System***

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.



The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.



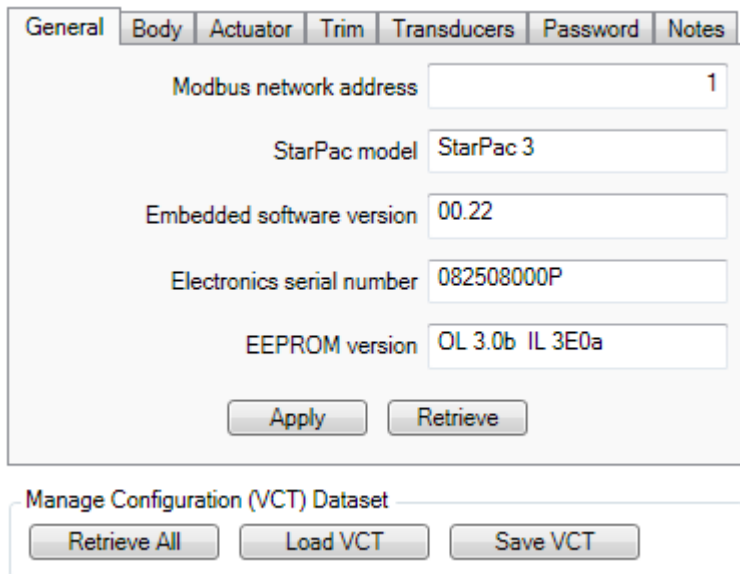
The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## General

The following list shows the items available to read and apply related to the system general information:

- Modbus network address
- StarPac model
- Embedded software version
- Electronics serial number
- EPROM version



General | Body | Actuator | Trim | Transducers | Password | Notes

Modbus network address

StarPac model

Embedded software version

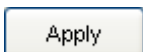
Electronics serial number

EEPROM version

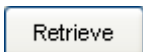
Manage Configuration (VCT) Dataset

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.



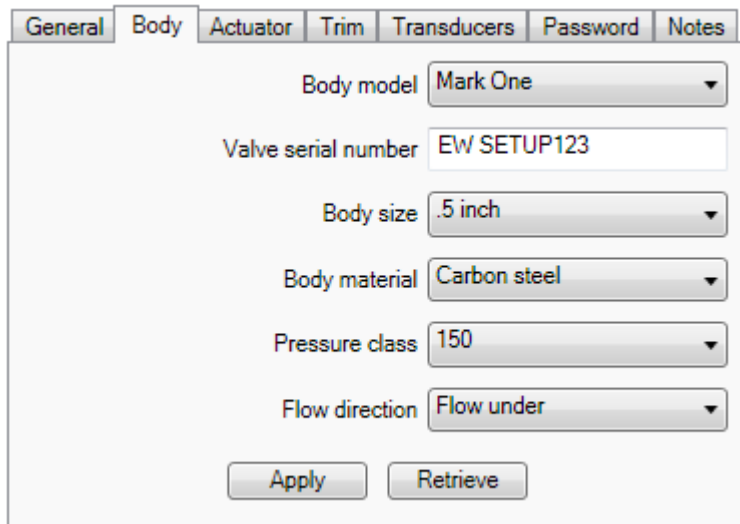


## Body

The following list shows the items available to read and apply related to the valve body information:

- Body model
- Valve serial number
- Body size
- Body material
- Pressure class
- Flow direction

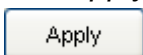
**NOTE:** This information is for record keeping and information purposes only and does not affect the operation of the positioner or control valve.



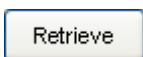
General	Body	Actuator	Trim	Transducers	Password	Notes
<div> <div>Body model</div> <div>Mark One</div> </div> <div> <div>Valve serial number</div> <div>EW SETUP123</div> </div> <div> <div>Body size</div> <div>.5 inch</div> </div> <div> <div>Body material</div> <div>Carbon steel</div> </div> <div> <div>Pressure class</div> <div>150</div> </div> <div> <div>Flow direction</div> <div>Flow under</div> </div> <div> <div>Apply</div> <div>Retrieve</div> </div>						

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.



### Actuator

The following list shows the items available to read and apply related to the actuator information:

- Actuator size
- Spring type
- Spring fail direction

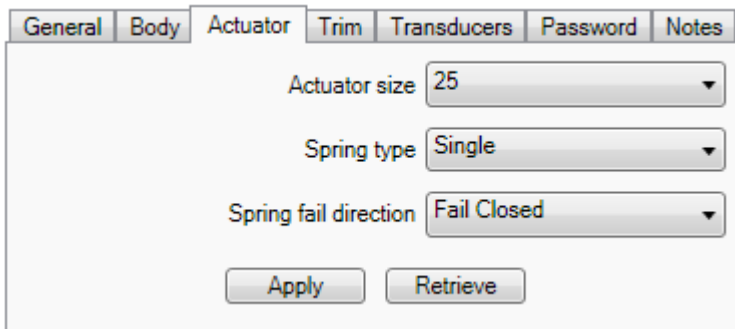
#### Mechanical Action

The *Mechanical Action* area is for the selection of the positioner mechanical *Fail Position* and the *Actuation Type*.

The *Fail Position* should be selected to match the tubing and actuator spring position.

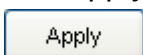
**CAUTION:** The Fail Position is only a record and will not change the fail position of the valve.

The actuator Action should be selected to match the tubing of the actuator. Select Double only if a double acting relay is used on a double acting actuator.

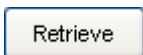


#### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.



## Trim

The following list shows the items available to read and apply related to the trim information:

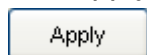
- Trim number
- Trim Characteristic
- Trim type
- Packing style
- Packing material
- Gasket material
- Stroke length

**NOTE:** This information is for record keeping and information purposes only and does not affect the operation of the positioner or control valve.

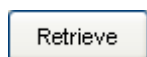
General	Body	Actuator	Trim	Transducers	Password	Notes
Trim number .12a						
Trim Characteristic equal percent						
Trim type CavControl						
Packing style Safeguard						
Packing material AFPI						
Gasket material AFG						
Stroke length 0.000 inches.						
<div>Apply</div> <div>Retrieve</div>						

### Action Buttons

The *Apply* button will save changes to the connected device.



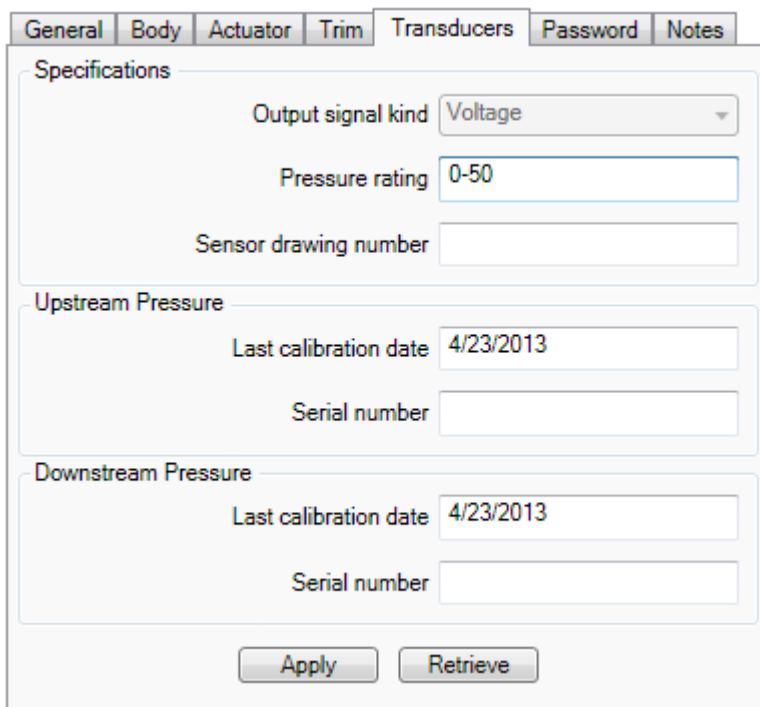
The *Retrieve* button will retrieve the latest information from the device related to this page and tab.



## Transducer

The following list shows the items available to read and apply related to the transducer information:

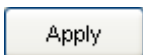
- Output signal kind
- Pressure rating
- Sensor drawing number
- Upstream last calibration date
- Upstream serial number
- Downstream last calibration date
- Downstream serial number



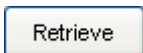
The screenshot shows the 'Transducers' tab selected in a software interface. The 'Specifications' section contains a dropdown for 'Output signal kind' set to 'Voltage', a text field for 'Pressure rating' with '0-50', and an empty 'Sensor drawing number' field. The 'Upstream Pressure' section has a 'Last calibration date' field with '4/23/2013' and an empty 'Serial number' field. The 'Downstream Pressure' section also has a 'Last calibration date' field with '4/23/2013' and an empty 'Serial number' field. At the bottom are 'Apply' and 'Retrieve' buttons.

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.

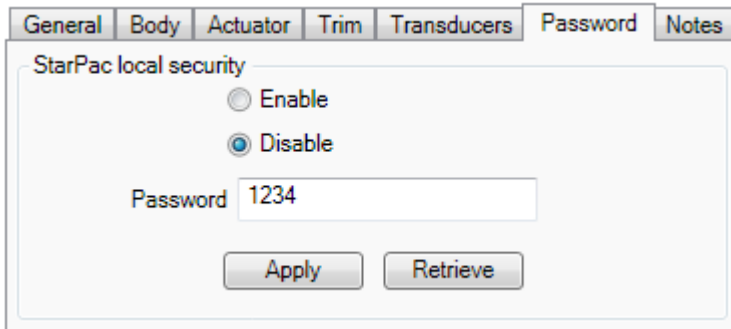


### Password

---

The following list shows the items available to read and apply related to the password information:

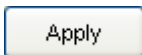
- Enable / disable password
- Actual password



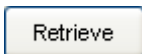
The image shows a software window titled "StarPac local security". It has a tabbed interface with tabs for "General", "Body", "Actuator", "Trim", "Transducers", "Password", and "Notes". The "Password" tab is currently selected. Inside the window, there are two radio buttons: "Enable" and "Disable". The "Disable" radio button is selected. Below the radio buttons is a text field labeled "Password" containing the text "1234". At the bottom of the window, there are two buttons: "Apply" and "Retrieve".

#### Action Buttons

The *Apply* button will save changes to the connected device.



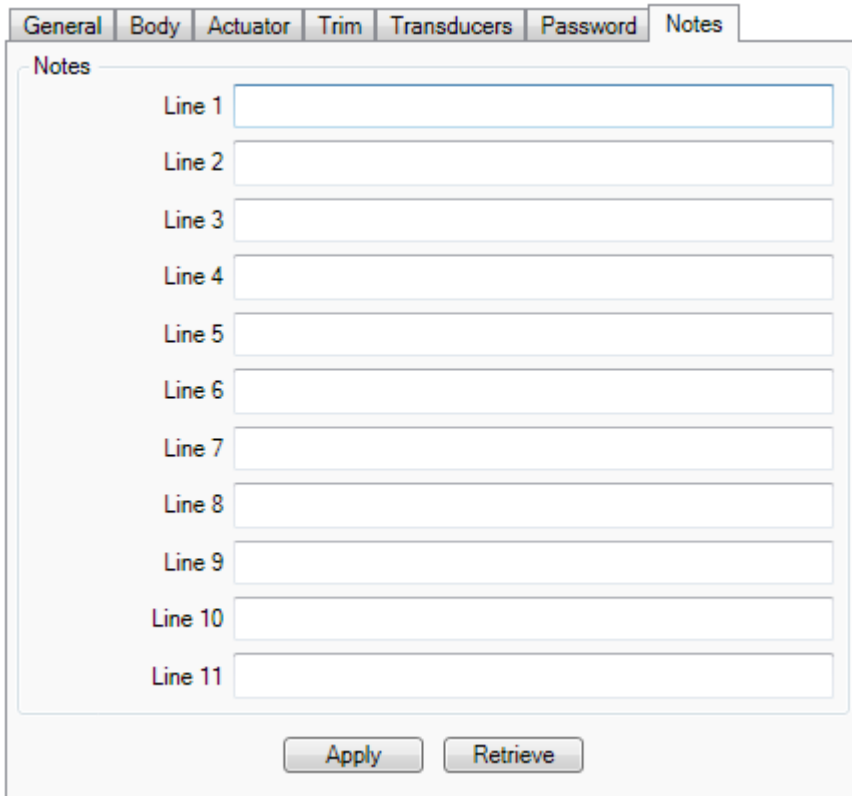
The *Retrieve* button will retrieve the latest information from the device related to this page and tab.



### Notes

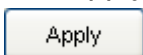
The following list shows the items available to read and apply related to the Notes information:

- Notes line 1
- Notes line 2
- Notes line 3
- Notes line 4
- Notes line 5
- Notes line 6
- Notes line 7
- Notes line 8
- Notes line 9
- Notes line 10
- Notes line 11

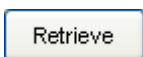


#### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.



## Units

The *Units* page allows you to change the units of measure in all places in the DTM and on the positioner.

Units of measurement

Liquid flow
gpm

Gas flow
User Defined

Process pressure
psig

Actuator pressure
psig

Process temperature
°F

Atmospheric pressure
psia

Custom flow units

Rate unit label
KG/S

Total unit label
KG/S

Conversion factor
0.00

Time base
sec

Apply
Retrieve

### Units

Units of measure change the values displayed on DTM screens and the positioner. The Units page allows the selection of each unit individual.

### Action Buttons

The *Apply* button will save changes to the connected device.

Apply

The *Retrieve* button will retrieve the latest information from the device related to this page.

Retrieve



## StarTalk™ DTM Help for StarPac 3 System

Manage Configuration (VCT) Dataset

Retrieve All Load VCT Save VCT

Retrieve Configuration from Device Status

Register Count: 0

Register Record: 358

Data Acquisition Progress:

Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

Load VCT

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

Save VCT

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Abort

The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.





## StarTalk™ DTM Help for StarPac 3 System

### Virtual Registers

The StarPac system has 32 virtual floating point registers and 32 virtual integer registers that can be used to group registers for better block read and write support from remote devices. To use the virtual registers, load the pointer register with the desired internal register in the corresponding virtual register. The pointer register must use the actual StarPac internal register number, not the Modbus register number. To determine the internal StarPac register number take the Modbus register number and remove the first digit and any remaining zeros preceding the significant digits and then subtract one. For example, to put the current valve position in the first virtual floating point register 71361 (floating-point variable number 33) set the corresponding pointer register 41201 (floating-point table pointer number 33) to a value of 252 (corresponding to Modbus register 70253).

StarPac 3 Registers	Type	Range	Description
42083	RW	0 to 199	Integer table pointer number 33
42084	RW	0 to 199	Integer table pointer number 34
42085	RW	0 to 199	Integer table pointer number 35
42086	RW	0 to 199	Integer table pointer number 36
42087	RW	0 to 199	Integer table pointer number 37
42088	RW	0 to 199	Integer table pointer number 38
42089	RW	0 to 199	Integer table pointer number 39
42090	RW	0 to 199	Integer table pointer number 40
42091	RW	0 to 199	Integer table pointer number 41
42092	RW	0 to 199	Integer table pointer number 42
42093	RW	0 to 199	Integer table pointer number 43
42094	RW	0 to 199	Integer table pointer number 44
42095	RW	0 to 199	Integer table pointer number 45
42096	RW	0 to 199	Integer table pointer number 46
42097	RW	0 to 199	Integer table pointer number 47
42098	RW	0 to 199	Integer table pointer number 48
42099	RW	0 to 199	Integer table pointer number 49
42100	RW	0 to 199	Integer table pointer number 50
42101	RW	0 to 199	Integer table pointer number 51
42102	RW	0 to 199	Integer table pointer number 52
42103	RW	0 to 199	Integer table pointer number 53
42104	RW	0 to 199	Integer table pointer number 54
42105	RW	0 to 199	Integer table pointer number 55
42106	RW	0 to 199	Integer table pointer number 56
42107	RW	0 to 199	Integer table pointer number 57



## StarTalk™ DTM Help for StarPac 3 System

42108	RW	0 to 199	Integer table pointer number 58
42109	RW	0 to 199	Integer table pointer number 59
42110	RW	0 to 199	Integer table pointer number 60
42111	RW	0 to 199	Integer table pointer number 61
42112	RW	0 to 199	Integer table pointer number 62
42113	RW	0 to 199	Integer table pointer number 63
42114	RW	0 to 199	Integer table pointer number 64

StarPac 3 Registers	Type	Range	Description
42147	RW	200 to 598	Floating Point table pointer number 33
42148	RW	200 to 598	Floating Point table pointer number 34
42149	RW	200 to 598	Floating Point table pointer number 35
42150	RW	200 to 598	Floating Point table pointer number 36
42151	RW	200 to 598	Floating Point table pointer number 37
42152	RW	200 to 598	Floating Point table pointer number 38
42153	RW	200 to 598	Floating Point table pointer number 39
42154	RW	200 to 598	Floating Point table pointer number 40
42155	RW	200 to 598	Floating Point table pointer number 41
42156	RW	200 to 598	Floating Point table pointer number 42
42157	RW	200 to 598	Floating Point table pointer number 43
42158	RW	200 to 598	Floating Point table pointer number 44
42159	RW	200 to 598	Floating Point table pointer number 45
42160	RW	200 to 598	Floating Point table pointer number 46
42161	RW	200 to 598	Floating Point table pointer number 47



## StarTalk™ DTM Help for StarPac 3 System

42162	RW	200 to 598	Floating Point table pointer number 48
42163	RW	200 to 598	Floating Point table pointer number 49
42164	RW	200 to 598	Floating Point table pointer number 50
42165	RW	200 to 598	Floating Point table pointer number 51
42166	RW	200 to 598	Floating Point table pointer number 52
42167	RW	200 to 598	Floating Point table pointer number 53
42168	RW	200 to 598	Floating Point table pointer number 54
42169	RW	200 to 598	Floating Point table pointer number 55
42170	RW	200 to 598	Floating Point table pointer number 56
42171	RW	200 to 598	Floating Point table pointer number 57
42172	RW	200 to 598	Floating Point table pointer number 58
42173	RW	200 to 598	Floating Point table pointer number 59
42174	RW	200 to 598	Floating Point table pointer number 60
42175	RW	200 to 598	Floating Point table pointer number 61
42176	RW	200 to 598	Floating Point table pointer number 62
42177	RW	200 to 598	Floating Point table pointer number 63
42178	RW	200 to 598	Floating Point table pointer number 64

StarPac 3 Registers	Type	Range	Description
42307	*	*	Integer variable number 33
42308	*	*	Integer variable number 34
42309	*	*	Integer variable number 35
42310	*	*	Integer variable number 36
42311	*	*	Integer variable number 37



## StarTalk™ DTM Help for StarPac 3 System

42312	*	*	Integer variable number 38
42313	*	*	Integer variable number 39
42314	*	*	Integer variable number 40
42315	*	*	Integer variable number 41
42316	*	*	Integer variable number 42
42317	*	*	Integer variable number 43
42318	*	*	Integer variable number 44
42319	*	*	Integer variable number 45
42320	*	*	Integer variable number 46
42321	*	*	Integer variable number 47
42322	*	*	Integer variable number 48
42323	*	*	Integer variable number 49
42324	*	*	Integer variable number 50
42325	*	*	Integer variable number 51
42326	*	*	Integer variable number 52
42327	*	*	Integer variable number 53
42328	*	*	Integer variable number 54
42329	*	*	Integer variable number 55
42330	*	*	Integer variable number 56
42331	*	*	Integer variable number 57
42332	*	*	Integer variable number 58
42333	*	*	Integer variable number 59
42334	*	*	Integer variable number 60
42335	*	*	Integer variable number 61
42336	*	*	Integer variable number 62
42337	*	*	Integer variable number 63
42338	*	*	Integer variable number 64

StarPac 3 Registers	Type	Range	Description
72307	*	*	Floating point variable number 33
72309	*	*	Floating point variable number 34
72311	*	*	Floating point variable number 35
72313	*	*	Floating point variable number 36



## StarTalk™ DTM Help for StarPac 3 System

72315	*	*	Floating point variable number 37
72317	*	*	Floating point variable number 38
72319	*	*	Floating point variable number 39
72321	*	*	Floating point variable number 40
72323	*	*	Floating point variable number 41
72325	*	*	Floating point variable number 42
72327	*	*	Floating point variable number 43
72329	*	*	Floating point variable number 44
72331	*	*	Floating point variable number 45
72333	*	*	Floating point variable number 46
72335	*	*	Floating point variable number 47
72337	*	*	Floating point variable number 48
72339	*	*	Floating point variable number 49
72341	*	*	Floating point variable number 50
72343	*	*	Floating point variable number 51
72345	*	*	Floating point variable number 52
72347	*	*	Floating point variable number 53
72349	*	*	Floating point variable number 54
42351	*	*	Floating point variable number 55
42353	*	*	Floating point variable number 56
42355	*	*	Floating point variable number 57
42357	*	*	Floating point variable number 58



## StarTalk™ DTM Help for StarPac 3 System

42359	*	*	Floating point variable number 59
42361	*	*	Floating point variable number 60
42363	*	*	Floating point variable number 61
42365	*	*	Floating point variable number 62
42367	*	*	Floating point variable number 63
42369	*	*	Floating point variable number 64

RO= Read Only; RW = Read/Write; \* = Dependent upon the selected register

**Example 1:** StarPac system is attached to a PLC that has both integer and floating point Modbus communication capability. For system startup, the unit needs to be put in Manual mode and hold a position of approximately 16 percent without updates from the PLC. When in operation the StarPac system will be in Automatic mode, controlling liquid flow at approximately 225 gpm with a range of 0 to 500 gpm. Normal system updates should be at two-second intervals. If the system loses communications then the system should initially stay on line for five minutes and then close the valve if no update is received. The PLC needs to monitor the valve position, flow rate, process temperature, and upstream pressure, regardless of the current operating mode.

### Control register for Manual mode

Register	Value	Description
40036	2280 (16%)	Valve command scaled as an integer 0-9999 with 0 = -12.5% and 9999 = 112.5% Example: $16\% \gg (16\% - (-12.5\%)) * 10000 \text{ counts} / 125\% = 2280$

### Initialization values for Automatic mode

Register	Value	Description
70705	45 (225 gpm)	Setpoint in percent of the process max set in 70271 (500 gpm)

### Control register for Automatic mode (Ask Ken if this is right)

Register	Value	Description
70705	45 (225 gpm)	Setpoint in percent of the process max set in 70271 (500 gpm)

### Registers for monitoring process

Register	Description
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## StarTalk™ DTM Help for StarPac 3 System

70407	Reads the current valve position in percent
70393	Reads the current liquid flow rate in engineering units.
70403	Reads the current process temperature in engineering units.
70397	Reads the current upstream process pressure in engineering units.

**Example 2:** StarPac system is attached to a PLC that has only integer Modbus communication capability. When in operation, the StarPac will be in Automatic mode, controlling gas flow at approximately 4500 LB/HR with a range of 0 to 5000 LB/HR. The PLC needs to monitor the valve position, flow rate, process temperature, and upstream pressure, regardless of the current operating mode. The pressure will range from 100 to 600 psi, and the temperature will range from 30 to 300 degrees Fahrenheit (-1 to 149° Celsius).

### Initialization values for Automatic mode

Register	Value	Description
40037	0	Sets the mode source to Digital
40038	2	Puts the unit into Automatic mode
40041	1	Sets the setpoint source to Digital
40039	6	Selects gaseous flow as the control variable
70427	5000	Full scale flow of 5000 lb/hr for controller (must be set using StarTalk DTM user interface because it is a floating point register).

### Control register for Automatic mode

Register	Value	Description
40047	8200 (4500 lb/hr = 90% of 5000 lb/hr and 8200 counts represents scaled 90%)	Setpoint scaled as an integer 0-999 with 0 = -12.5 and 999 = 112.5% (a 125% range) of the maximum process variable set in register 70271. Example: $90\% \gg (90\% - (12.5\%)) * 10000 \text{ counts} / 125\% = 8200$

### Scaling the Integer registers

Variable	Minimum Scale Register	Maximum Scale Register	Description
Gas Flow	70627 (set to 0)	70631 (set to 5000)	Sets the normalized range for gaseous flow in lb/hr (these must be set using the DTM user interface because they are floating pint registers).
Upstream Pressure	70633 (set to 100)	70635 (set to 600)	Sets the normalized range for upstream pressure in psi (these



## StarTalk™ DTM Help for StarPac 3 System

			must be set using the DTM user interface because they are floating pint registers).
Process Temperature	70627 (set to 30)	70647 (set to 300)	Sets the normalized range for process temperature in Deg F (these must be set using the DTM user interface because they are floating pint registers).
Valve Position	Fixed at -12.5%	Fixed at 112.5%	The position is fixed range where 0 = -12.5% and 9999 = 112.5%

### Integer Registers for monitoring process

Register	Description
30020	Reads the normalized valve position in current percent open. $\text{Position percent open} = (\text{Counts (125)} / 1000) + (-12.5)$
30013	Reads the normalized gaseous flow in currently selected engineering units. $\text{Flow lb/hr} = (\text{Counts (5000 - 0)} / 10000) + 0$
30018	Reads the normalized process temperature in currently selected engineering units $\text{Temperature Deg F} = (\text{Counts (300 - 30)} / 10000) + 30$
30014	Reads the normalized Upstream process pressure in currently selected engineering units $\text{Pressure in psi} = (\text{Counts (600 - 100)} / 10000) + 100$



## Integer Map

To assign a Virtual register follow the steps below:

- Select the desired Register from the third column.
- Hold the mouse button down and drag the selected register to the desired Virtual register.
- Let go of the mouse button.
- Click the apply button to assign the selected register to the Virtual register.

(IntegerMap)
(FloatMap)

Virtual_Register	Points to	Register	Description
42051	30001	30001	ADC value for cylinder Port 2 pressure
42052	30001	30002	ADC value for cylinder port 1 pressure
42053	30001	30003	ADC value for 4-20mA command
42054	30001	30004	ADC value for ambient temperature
42055	30001	30005	ADC value for 4-20mA auxiliary
42056	30001	30006	Upstream pressure sensor ADC value
42057	30001	30007	Downstream pressure sensor ADC value
42058	30001	30008	ADC value for position channel
42059	30001	30009	ADC value for process temperature channel
42060	30001	30010	Current flow state (liquid/gas)
42061	30001	30011	Fixed scale normalized process variable
42062	30001	30012	Variable scale normalized liquid flow
42063	30001	30013	Variable scale normalized gas flow
42064	30001	30014	Variable scale normalized P1 isa
42065	30001	30015	Variable scale normalized P2 isa
42066	30001	30016	Variable scale normalized delta P
42067	30001	30017	Variable scale normalized process temp.
42068	30001	30018	Variable scale normalized auxiliary input
42069	30001	30019	Fixed scale normalized 4-20mA command

Apply
Retrieve

### Action Buttons

The *Apply* button will save changes to the connected device.

Apply

The *Retrieve* button will retrieve the latest information from the device related to this page and tab.

Retrieve



## StarTalk™ DTM Help for StarPac 3 System

Manage Configuration (VCT) Dataset

Retrieve All Load VCT Save VCT

Retrieve Configuration from Device Status

Register Count: 0

Register Record: 358

Data Acquisition Progress:

Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

Load VCT

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

Save VCT

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Abort

The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.

## Float Map

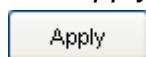
To assign a Virtual register follow the steps below:

- Select the desired Register from the third column.
- Hold the mouse button down and drag the selected register to the desired Virtual register.
- Let go of the mouse button.
- Click the apply button to assign the selected register to the Virtual register.

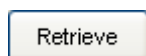
(IntegerMap)		(FloatMap)	
Virtual_Register	Points to	Register	Description
42115	70351	70351	Fluid vapor pressure
42116	70351	70353	Fluid specific gravity
42117	70351	70355	Process temperature (deg. R)
42118	70351	70357	Calculated FI
42119	70351	70359	Calculated z
42120	70351	70361	Calculated xt
42121	70351	70363	Valve delta pressure to produce choked flow
42122	70351	70365	Valve delta pressure
42123	70351	70367	Totalized flow (user units)
42124	70351	70369	Totalized time (sec.)
42125	70351	70371	Totalized liquid flow (user units)
42126	70351	70373	Totalized gas flow (user units)
42127	70351	70375	Position (%) before temperature compensation
42128	70351	70377	DAC#2 output percent
42129	70351	70379	Ambient Temperature
42130	70351	70381	Upstream process pressure (psig)
42131	70351	70383	Downstream process pressure (psig)
42132	70351	70385	Port 2 cylinder pressure in selected units
42133	70351	70387	Port 1 cylinder pressure in selected units

### Action Buttons

The *Apply* button will save changes to the connected device.



The *Retrieve* button will retrieve the latest information from the device related to this page and tab.





## StarTalk™ DTM Help for StarPac 3 System

Manage Configuration (VCT) Dataset

Retrieve All Load VCT Save VCT

Retrieve Configuration from Device Status

Register Count: 0

Register Record: 358

Data Acquisition Progress:

Abort

Retrieve All

Clicking the *Retrieve All* button will start the retrieval of all the connected StaPac System configuration to be store in the instance of the DTM memory. It will also retrieve and update the values related to the current page and tabs within the page.

The *Retrieve Configuration from Device Status* group box will appear automatic to display the status of the retrieval of the entire configuration.

Note 1: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Note 2: VCT (Valtek Configuration Table) is the StarPac entire configuration file extension name.

Load VCT

The *Load VCT* button will open an open file dialog to allow the select of a VCT file to be load into memory.

Save VCT

The *Save VCT* button will save the entire configuration store in the memory of the DTM to a folder location and file name. A *save file* dialog will allow the selection of the folder location and file name.

Note: The *Save VCT* button will only be enable once the entire configuration is load into memory either from the *Retrieve All* or the *Load VCT* functionality is complete.

Abort

The *Abort* button will abort the current retrieval of the StarPac Configuration.

Note: If no configuration is stored in memory, this action will stop the *Save VCT* button from been enabled.