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SVI[™] FF DTM Software

Online Help Manual (Rev. C)



About this Help

This help applies to the following instruments and approved software:

- SVI FF
 - with Firmware version 1.0.0.1 or higher
 - with ValVue™ software version 3.61 or higher
 - with handheld communicator with DD published for SVI FF

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In no case does this help guarantee the merchantability of the positioner or the software or its adaptability to a specific client needs.

Please report any errors or questions about the information in this manual to your local supplier or visit www.valves.bakerhughes.com.

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Contents

1.	Introduction SVI FF DTM Introduction SVI FF DTM Software FF Function Blocks About This Help File Masoneilan Documentation Resources	7 7 9 9 11 12
2.	Registration Registration	13 13
3.	Installation Installation Requirements Installing SVI FF DTM Software Failure to Communicate	19 19 19 21 25
4.	SVI FF Work Environment Overview SVI FF DTM Directory Trees	27 27 32
5.	How Do I Do Offline Parameterization? Offline Parameterization	37 37
6.	How Do I Do Online Parameterization? Online Parameterization	39 39
7.	Quick Start Configuration Quick Start Configuration	41 41
8.	Device States Device States Positioner State Positioner Alert Log	45 45 46 52
	Trend and Position Setup Configuration and States for SVI FF R2 only Graph Results Scatter Plot Results Device State	53 56 65 67 69
9.	Trend and Position Setup Configuration and States for SVI FF R2 only. Graph Results Scatter Plot Results Device State Calibration Calibration Find Stops Auto Tune Quick Wizard Full Wizard	53 56 65 67 77 77 77 91 94 99

Diagnostics Ramp Test Graph Results	
Diagnostics Ramp Test Numeric Results	
Diagnostics Start Signature Test	
Diagnostics Signature Test Graph Results	140
Diagnostics Signature Test Numeric Results	144
Position Histogram	145
Position Histogram	
Position Error Histogram	147
Trends Information Presentation	149
Travel Accumulation Trend A and B	149
Cycle Counter Trend A and B	151
11. PST and Data Collection	
Partial Stroke Tests	
Data Collection	
12 Reports	
Configuration Report	174
Test Renort	175
Diagnostic Report	176
Diagnostio report	
13. Control Configuration	
Control Configuration	179
Position	179
Configuration	179
Control Tab	
Position Limits Tab	
Position Control Tab	
Characterization Tab	
Position Alerts	
Deviation Alerts Tab	191
HI and HIHI Alerts Tab	
LO and LOLO Alerts Tab	
Near Closed Alerts Tab	
Setpoint Timeout Alert Tab	
Travel Alarms	
Travel Accumulation A and B Alert Tab	
Cycle Counter A and B Alerts Tab	
Operating Time Alert Tab	
Fault State Tab	205
Discrete	
Control Tab	
Software Switches	207
Pressure	
Pressure Range	
Pressure Alarms	210
Supply Pressure HI Alert Tab	210

Supply Pressure LO Alert Tab	212
Supply Pressure LOLO Alert Tab	214
Temperature	215
Temperature HI Alert Tab	216
Temperature LO Alert Tab	218
IP Output	
IP Output HI Alert Tab	
IP Output LO Alert Tab	
Extend RB Configuration	224
Extend TB Configuration	
Diagnostic Alerts	244
LCD Display	249
14 Security	051
Security	
Parameters Change Access	
Parameters Download Access	
User Interface Access	
Procedures and Methods	
System Security Settings	
Log Configuration	
License	
15.Identification	
Identification	
Positioner	
Valve	
Network Settings	
Contact and Order	
Defaults	
	077
16.Continuous Valve Diagnostics Concept	
Introduction	277
Continuous Diagnostics	279
Reporting Diagnostic Condition to the Host	
Conclusion	
17.Configuring Frame Application to Work with the SVI FF DTM	295
18. Using ValVue 3 and the SVI FF DTM to Change Link Master Configuration	
Instructions	
	000
Iechnology to Maximize Savings and Process Performance	

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1. Introduction

SVI FF DTM Introduction

The **Masoneilan**TM SVI FF DTM (*SVI FF DTM*) is a user-friendly interface that facilitates the setup and diagnostics of a control valve. The DTM enables you to configure, calibrate, and operate FOUNDATION Fieldbus pneumatic control valve positioners with internal process control and limit switches. It fully supports FOUNDATION Fieldbus[®] specifications. DTM operation begins with the *Quick Start Configuration*, where you can quickly configure positioner key parameters of and use the navigation tree to access tabs to access all operational aspects.

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Figure 1 – SVI FF DTM

The DTM comes in two versions – Standard and Advanced. *Advanced versus Standard SVI FF DTM Versions* illustrates the capabilities of each version.

Feature	Sub-feature	Advanced	Standard	
Device States	Positioner State	X	X	
	Positioner Alert Log	X	X	
	Trend and Position Setup	X	_	
	Device State	X	X	
Configuration	Control Configuration	X	X	
	Extended RB Configuration	X	_	
	Extended TB Configuration	X	_	
	Diagnostic Alerts	X	X	
	LCD Display	X	X	
Calibration	Find Stops	X	X	
	Auto Tune	X	X	
	Quick Wizard	X	_	
	Full Wizard	X	_	
Diagnostics	Step Test	X	_	
	Ramp Test	X	_	
	Signature Test	X	_	
	Histograms	X	_	
	Trends	X	_	
Partial Stoke Test - PST		X	X	
Data Collection		X	X	
Identification		X	X	
Security		X	-	
Print		X	X	
Write Notes		X	X	

Advanced versus Standard SVI FF DTM Versions

SVI FF DTM Software

The SVI FF DTM provides, through a variety of proprietary host software, the ability to quickly and easily set up the FF you can also monitor operation and diagnose problems with advanced diagnostic capabilities. This help file primarily explains the operation of the SVI FF DTM using PACTWare*.

The SVI FF DTM is a user-friendly, graphical interface used to efficiently setup an FF mounted on any control valve assembly.

Functionality includes:

- Setup Wizard
- Remote display of valve position, actuator pressure(s)
- Set calibration parameters
- Set configuration parameters
- Monitor status/error indicators
- Input/Output configuration
- Trend setpoint, valve position, actuator pressure
- · Perform diagnostic test procedures
- Perform PST test and Data Collection

FF Function Blocks

FF contains the following function blocks:

Block Type	Description	Supported Modes
AO (Analog Out) block	Accepts a control signal from an upstream block and passes a signal to the Transducer Block (TB) representing the control network location to which setpoint information must be sent for the valve positioner.	RCas, Cas, Auto, Man, (LO), (IMAN), O/S
TB (Transducer) block	Located between hardware I/O (actuator, sensor) and AO/ DI func-tion blocks. This block passes the control signal from the AO func-tion block to the I/P module to control the valve position. It represents all the functionality of the electronic interface to the physical valve.	Auto, O/S
DI (Discrete Input) block (two available)	Receives the discrete signal from the Transducer Block and passes it to an upstream block. It represents two switch inputs (typically valve position switches) that are made available to any part of the system.	Auto, Man, O/S
SPLT (Output Splitter) block	Provides the capability to drive two control outputs from a single input. Each output is a linear function of some portion of the input.	Cas, Auto, (IMAN), O/S

PID block	Offers PID process control function.	ROut, RCas, Cas, Auto, Man, (LO), (IMAN), O/S
Resource block	Manages the information needed by the fieldbus network management including block scheduling and device identification, etc.	Auto, O/S
DO (Discrete Output) block (two available)	Provides a discrete value to generate a discrete output signal.	O/S, LO, Iman, Man, Auto, Cas, RCas
AI (Analog Input) block (three available)	Takes the analog input data from the analog input signal and it makes available to other function blocks. It has scaling conversion, filtering, square root, low cut and alarm processing.	O/S, Man, Auto
MAI (Multiple Analog Input) block	Provides a way to receive eight analog variables from other modules or physical inputs.	O/S, Man, Auto
IS (Input Selector) block	Provides four analog inputs that are selected by an input parameter or according to a criterion as first good, maximum, minimum, middle and average.	O/S, Man, Auto
AR (Arithmetic) block	Calculates some pre-defined equations ready for use in applications as flow compensation, HTG, ratio control and others.	O/S, Man, Auto
CS (Control Selector) block	Selects among highest, lowest, or average of two or three inputs (from other blocks). Provides balanceless transfer of signals.	O/S, IMan, Man, Auto

About This Help File

These instructions are intended to help a field engineer install, setup, and calibrate an FF in the most efficient manner possible. If you experience problems that are not documented, contact Masoneilan or your local Baker Hughes representative.

Conventions Used in This Help File

Conventions used in this help file are as follows:

- *Italicized* letters are used when referencing a term used in the FF display window, for emphasis on important items and for fields where data appears or for user-entered data.
- Actions performed on buttons, checkboxes, etc. appear bolded.
- Active links are in blue.

Note: Indicates important facts and conditions.



Indicates a potentially hazardous situation, which if not avoided could result in property damage or data loss.



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Masoneilan Documentation Resources

Masoneilan publishes several different resources for documentation:

- Bench quick starts contain information related to configuration and testing in a bench top environment.
- Hardware quick starts contain installation information and other basic information related to getting a device installed and very generally configured.
- Hardware instruction manuals contain more complete information for configuration of a device. This manual also includes information on background functionality and special circumstances useful in installation, configuration and operation/ troubleshooting.
- Software manuals contain more complete information for the software configuration of a device. This manual also includes information on background functionality and special circumstances useful in configuration and operation (including diagnostics and their interpretation). These manuals represent the same source material as the online help.
- Handheld documents: Give the DD mappings for the product.

Check the website: https://valves.bakerhughes.com/resource-center

Adobe® Acrobat Reader is required to view pdfs.

Related Documentation for the SVI FF DTM

- ValVue documentation: The SVI FF DTM works inside various software (such as PACTware), however it is designed to work best with out ValVue 3 software. See the ValVue 3 help or 31426 Masoneilan Products ValVue 3 Software Manual.
- 31030 SVI FF Digital Positioner Quick Start Guide
- 31031 SVI FF Digital Positioner Instruction Manual
- 31457 SVI FF Bench Quick Start Manual.
- 32766 SVI FF Quick Card for the Emerson® 475.

2. Registration

Registration

The SVI FF DTM inherits its license from ValVue 3 if you have that program. However, the DTM itself also has a license. The license trial period works as follows:

Once you download and install the SVI FF DTM software you are granted a 60 day trial period. Masoneilan strongly encourages you to register your license with us as soon as possible. The trial period is broken into two phases:

- During the first 30 days you have access to all the features of the SVI FF DTM, including advanced diagnostics. See *Advanced versus Standard SVI FF DTM Versions*. You need to contact sales to purchase a license for using advanced features beyond the trial period. Contact Baker Hughes at <u>software.reg@bakerhughes.com</u>
- During the second 30 day period you no longer have use of the advanced diagnostics, but can still perform basic operations. Once the second 30 day period expires you must register to continue using the product.

Note: The SVI FF DTM can inherit a license from ValVue3.

To open the registration dialog:

1. Right-click the FF device in the *Project* pane and select **Additional functions** > **Registration** or click the **Security** > **License** tab. If the product is on trial a dialog appears.



Figure 2 – Trial Registration Dialog: Newly Installed

After 30 days, you get the following trial dialog:



Figure 3 – Trial Period Down to 30 Days

After 60 days, without purchase or registration, the following dialog appears:



2. Click OK.

Use the registration dialog (SVI FF DTM Registration) to:

- *Register the Product* Required before use or at the end of the 30 day trial period. You need to contact sales to purchase a license. Contact Baker Hughes at <u>software.reg@bakerhughes.com</u>.
- Activate License Required before use or at the end of the 30 day trial period.

• *Upgrade the Product* - Upgrade the product. Contact Masoneilan to discuss upgrade features options. You need to contact sales to purchase a license. Contact Baker Hughes at <u>software.reg@bakerhughes.com</u>.

👆 SVI FF DTM F	Registration [Registration]			—		\times
		SVI FF DTM R	egistration			
	Version: 2.0.0.0	Build ID: 101921	Copyright @ 202	21 Baker Hughes Company		
		Registe	ered			
	Z	Step 1. Enter Serial Number (S representative to purchase a S	See your local Mase Serial Number)	oneilan products		
		Step 2. Enter Contact Information				
	=1	Step 3. Save / Mail Registration File				
	Z	Step 4. Enter Software Key]		
	* 🔽	Step 5. Activate Software Key	InstallationID GT75S73	Reg Center Phone +1(888)784-5463		
	<u> </u>	[License >>		_	

Figure 4 – SVI FF DTM Registration

Register the Product

To register the product:

- 1. Enter the serial number in Step 1.
- 2. Click or click **Next** and *Contact Information* appears.

🐴 SVI FF DTM Re	gistration [Contact In	formation]					×
		SVI FF DTM	Conta	ct Inform	ation		
e 1	Version: 2.0.0.0	Build ID: 101921	l.	Copyright @) 2021 Baker Hughes C	ompany	
	۰c	ompany Name					
	Сору	* First Name		* Last Name			
	•	* E-mail					
		* Address					
		Address2					
		* City/Town		* Province/State			
		* Country		~	Postal Code		
		Country Phone:	Area	Number	Ext		
		Fax:					
		* Required			Save]	
		<< Prev					

Figure 5 – Contact Information

Registration Folder	1	×			
Would you like to email your registration now?					
Yes	No	Cancel			

Figure 6 – Email Registration

4. Ensure you are connected to the internet, click **Yes** and the registration email appears using your default email setup. The email has an *.xml* attachment containing licensing information.

Note: If you do not have access to an internet connection or a default email, click No and follow the prompts to save the data to a file and send it later from another laptop.

5. Send the email. A return email is sent containing the activation code. Proceed to *Activate License*.

Activate License

To activate the license:

1. Enter the emailed software key in Step 4.



NVI FF DTM	Registration [Licensed Fea	atures]	-	
		SVI FF DTM Lic	ensed Features	
	Version: 2.0.0.0	Build ID: 101921	Copyright @ 2021 Baker Hughes Company	
		Included F	Features	
	 Primary Fe: ○ Provio diagn Advanced F ○ Advanced 	atures des user interface to mo ose the connected devir Features need Features The advanced features Block Parameters, Trar Saved Diagnostic Data	nitor, configure, calibrate and ce. include Security Settings, Resource isducer Block Parameters and Review	
	Serial Softv	Number vare Key 01050022190CB1	ED	
		<< Back		

Figure 7 – Included Features

3. Click Close.

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3. Installation

Installation

Requirements

Using the FF DTM installation procedures discussed requires basic knowledge of Microsoft[®] Windows[®] operating systems and the Masoneilan SVI FF positioner. For additional information describing the FF, consult the FF Device Instruction Manual (31031).

Operation of the FF DTM requires installation of ValVue or another DTM frame such as PACTWare software to access the FF DTM. This help uses ValVue 3 as an example.

Hardware and Operating System Requirements

To successfully install and run FF DTM software, your computer system must meet or exceed the following minimum hardware and software requirements:

- Windows Server[®] 2008 R2 SP1, Windows Server[®] 2008 SP2, Windows Server[®] 2012, Windows Server[®] 2016, Windows[®] 7 sp1, Windows[®] 8.0 or Windows[®] 10
- 4 G of RAM
- Microsoft .NET Framework 2.0 SP2, Microsoft .NET Framework 4.0 FULL, and Microsoft .NET Framework 3.5 SP1
- 10 GB of free hard disk space
- · Foundation Fieldbus power supply and power conditioner, with terminators
- · Additional fieldbus devices that are installed on the bus segment, optional
- An available serial communication port or USB port

Before installing the DTM software, you must install the Foundation Fieldbus communications hardware and software. To help to reduce the need for digital communications terminology, refer to an example reference process and Foundation Fieldbus segment in *SVI FF Reference Model Fieldbus Segment*.



Figure 12 – SVI FF Reference Model Fieldbus Segment



Improper setup can interfere with process control.

Installing SVI FF DTM Software

To install the software:

1. Double-click **SVI FF DTM Installer.exe**, the Mnregistration UI installs automatically and then the *SVI FF DTM Install Welcome Screen* appears.

SVI FF DTM - InstallShield Wizard		×
	Welcome to the InstallShield Wizard for SVI FF DTM Welcome to the SVI FF DTM Setup program. This program will install SVI FF DTM 2.0.0.0 on your computer.	
	< Back Next > Cancel	

Figure 13 – SVI FF DTM Install Welcome Screen

2. Click Next and SVI FF DTM License Screen appears.

Please read the following license agreement carefully.	Z
END-USER LICENSE AGREEMENT FOR SOFTWARE OF DRESSER, INC.	-
This End-User License Agreement ("EULA") is a legal agreement between you an individual person or a single legal entity, who will be referred to in this EUL "You") and Dresser, Inc. (who is referred to in this EULA as "Dresser") for the product that accompanies this EULA. By selecting Accept or by using the soft agree to be bound by the terms of this agreement. If you do not agree to the this agreement, select Not Accept. 1. Grant of License: This License Agreement permits you to use one copy of the specified version of the software identified above on any single computer.	(either A as software ware, you e terms of
I accept the terms of the license agreement	
 I do not accept the terms of the license agreement 	

Figure 14 – SVI FF DTM License Screen

3. Click I accept the license....., Next

SVI FF DTM - InstallShield Wizard			×
Choose Destination Location Select folder where setup will install files.			Z
Destination Folder C: \Program Files (x86) \Masoneilan \SVI FF DTT	м	C	hange Drive
InstallShield	< Back	Next >	Cancel

Figure 16 – SVI FF DTM Choose Destination Folder Screen

5. Click **Change** and navigate to the target directory or just click **Next** and *FF DTM Ready to Install the Program Screen* appears.

SVI FF DTM - InstallSi	nield Wizard			×
Please dick the Ins	tall button to ins	stall.		
Application		Status		
SVI FF DTM		Not Installed		
InstallShield	< Back	Install	Cancel	

Figure 17 – FF DTM Ready to Install the Program Screen

6. Click **Install** and a Setup Status screen appears, followed by FF DTM Finish Screen.

/I FF DTM - InstallShield Wiz	zard	
The wizard has successfully exit the wizard.Also the hel C:\Program Files (x86)\Mas DTM\SVI_FF_DTM_Help.pdf	installed. Please click Finished to p document installed at oneilan\SVI FF f.	
Application	Status	
SVI FF DTM	Completed	
tallShield		

Figure 18 – FF DTM Finish Screen

7. Click Finish.

Failure to Communicate

If the PC (using a modem) fails to communicate with the SVI I FF the PC then displays either the message *No Devices Found* in the DTM main screen, or a communication error occurs, or the an error message appears if the device communications fails during the session. Communication failure prevents the PC from establishing a link. Possible causes of communications failure related to installation include:

- Insufficient Foundation fieldbus power Poor wiring contacts
- · Improper connection of the FF interface card to the computer or driver
- · Insufficient FF terminators or too many
- Field device has an address outside the configured range
- Network Management parameter settings are incorrect
- FF card configuration is incorrect

DD installation is recommended (not required).

Run Dialog tool to test connections.

If compliance problems are suspect prepare a detailed description of the loop, including all devices on the loop, type of wiring used, loop length, and presence of any possible interference sources before contacting the factory for assistance.

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4. SVI FF Work Environment

Overview

This section describes how to accomplish general SVI FF DTM tasks. After you have successfully launched and logged into the SVI FF DTM screen appears.

ietwork View + 4 ×	SVI FE REV3 1 - Online Parameter	SVLFF - Online Parameter X SVLII & PH5 V3.0 - Online Parameter X Macronellan NL-FRI S-H1 Comm DTM1/NL-FRI S-H1 - Identification	× Masoneil × 4
Q, Search levice Tag Devices Network	Masoneilan o Baker Hughes business	VIFF POSITIONER MASONEILAN PRODUCTS lag: SVI-FF REV3_1 Device ID: 4456440080731202 Aan. ID: 0x445644 Type.ID: 8 Device Rev: 03 DD: 01 SW 31.00.05030378	SE)
Bild 75573 Bild 75573 Commission 160H4) ART Commission 160H4) Start 1 Start 2 Start 2	U Butter Hogine Auditides	Market version 1 pprovide 0 Davise Herr 03 D.0. D.0.	
	C Pata Callertian	×	

Figure 19 – SVI FF DTM Quick Start

Note: This discussion is restricted to the SVI FF DTM operations only using ValVue as the example host program.

Note: If a configured value is outside the acceptable range, a red exclamation point (!) appears next to the field and next to the screen name in the navigation tree.

Identification Area

Identification Area displays the positioner and software information , including device PD-Tag, Device ID, Manufacturer ID, Device Type, Device Revision, DD revision and Software version.

SVI FF POSITIONER MASONEILAN PRODUCTS		
Tag: SVI FF REV3_1		Device ID: 445644000807310202
Man. ID: 0x445644	Type. ID: 8	Device Rev: 03 DD: 01 SW: 3.1.0.0 CSC90378

Figure 20 – Tag Display Area

Icon Bar

Us this bar to perform common tasks. A grayed out icon means the functionality does not apply to the currents application or that you don't have the requisite permission level.



Figure 21 – Icon Bar

Buttons and Fields



Saves the presently configured DTM values to the database. This does not download them to the positioner.

<u>Q</u>

Uploads all parameters from the FF device. These then appear in the fields but are not saved as the DTM's parameters until a save is performed.



Downloads all DTM parameters to the device.



Do not download a configuration to a positioner if the valve is controlling a process. Always isolate the valve from the process before a download. Test the configuration before reconnecting the valve.



Uploads the settings from the active tab.



Downloads the settings from the selected tab.



Opens a menu where you can select from three different reports covering block parameters, diagnostic test results or positioner health. See *Reports*.

Note

The data that appears in the diagnostic tests report is dictated by whether the unit purchased has Standard or Advanced Diagnostics. If you own a Standard Diagnostics unit, the Advanced Diagnostics fields will show NA.



Toggles the navigation pane open/closed.



Toggles the Identification Area area open/closed.

RB:AUTO AUTO OOS Displays and changes the state of the Resource block.

TB.MAN AUTO MAN OOS Displays and changes the state of the Transducer block.



otes	
Current Character Count: 56 / 1000	
The segment connects SVIFF Rev3 and SVIFF Rev 2 devices	
12 11 12 12 12 12 12 12 12 12 12 12 12 1	

Figure 22 – Write Note



Opens the Write Note For Device dialog for adding a note related to device.

Notes	×
Current Character Count: 42 / 1000	
Current Character Count: 42 / 1000 The characterization was set to Quick Open	

Figure 23 – Write Note For Device



Opens the DTM-related help.



Opens the device-related manual.

1000	10	
		(
1.0	100	

Opens the *About SVI FF* dialog.

About SVI	FF DTM		×
	DTM Informatio	n	
	DTM Name:	SVI FF DTM	
	DTM Version:	2.0.0.0	
	DTM Type:	Advanced	
	Build ID:	122821	
	Device Informat	tion	
	Protocol:	FF	
	Type:	SVI FF	
	Version:	3.0.0.x	
	Manufacturer:	Masonellan	
	Copyright(C) 2021 B	aker Hughes Company	

Figure 24 – About SVI

Not Connected **FF** Displays the connection status.

SVI FF DTM Directory Trees

This section discusses the directory trees for configuring SVI FF DTM operations:

- Online Parameterization: Use these tabs to perform tasks with the process active.
- Offline Parameterization: Use these tabs to perform configuration tasks that can later be used for positioner/valve operations.

Online Parameterization

The directory trees (SVI FF DTM Online Parameterization Directory Tree) and are used to navigate the various screens.



Figure 25 – SVI FF DTM Online Parameterization Directory Tree

The tree is broken down into the following functional areas:

- *Quick Start Configuration:* Use this tab to implement air action, control tuning, characterization and network settings (*Quick Start Configuration*).
- *Device States:* Four tabs and sub-tabs that display positioner and device states and signal readings, a positioner alert log and trend configuration tab (*Device States*).
- *Configuration:* Consists of *Control Configuration:* Twenty seven tabs for manual configuring a wide range of settings and alerts (*Control Configuration*). Sub-areas include:
 - Position configuration for limits, alarms and fault states (Position).
 - Discrete switch configuration (Software Switches).
 - Pressure ranges and alarms (Pressure).
 - Temperature alerts (Temperature).
 - IP alerts (IP Output).
 - Extended RB (*Extend RB Configuration*) and TB configurations (*Extend TB Configuration*).
 - Diagnostics Alerts include alert severity configuration, and FD Alert configuration and monitoring
 - LCD display settings (LCD Display).
- Calibration: Four tabs for performing find stops and Auto Tune and a quick and complete wizard setup (Calibration).

- *Diagnostics* Five tabs (with sub-tabs) for performing tests, for fault analysis and for viewing data numerically and graphically to analyze positioner/valve performance (*Diagnostics*) and tabs for histograms (*Position Histogram*) and trends (*Trends Information Presentation*).
- *PST and Data Collection* Two tabs (with sub-tabs) for performing PST test, Data collection, and uploading data triggered by device automatically.
- *Identification* Five tabs for configuring valve and positioner namplate settings, network settings, contact and user related information and downloading and uploading all configuration values from/to file (*Identification*).
- Security: Eight tabs for configuring security and permissions access to parameters and procedures and for performing licensing.

Offline Parameterization

The directory trees (SVI FF DTM Offline Parameterization Directory Tree) and are used to navigate the various tabs.



Figure 26 – SVI FF DTM Offline Parameterization Directory Tree

The tree is broken down into the following functional areas:

- *Quick Start Configuration:* Use this tab to implement air action, control tuning, characterization and network settings (*Quick Start Configuration*).
- Configuration: Consists of Control Configuration: Twenty seven tabs for manual configuring a wide range of settings and alerts (Control Configuration). Sub-areas include:
 - Position configuration for limits, alerts, characterization and fault states (*Position*).
 - Discrete switch configuration (Software Switches).
 - Pressure ranges and alarms (Pressure).
 - Temperature alerts (Temperature).

- IP alerts (*IP Output*).
- Extended RB (Extend RB Configuration) and TB configurations (Extend TB Configuration).
- Alerts (*Alerts*).
- FD Alerts (FD Alerts).
- *Identification* Five tabs for configuring valve and positioner namplate settings, network settings, contact and user related information and downloading and uploading all configuration values from/to file (*Identification*).
- Security: Eight tabs for configuring security and permissions access to parameters and procedures and for performing licensing.

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5. How Do I Do Offline Parameterization?

Offline Parameterization



Ensure once you do reconnect that you do not upload or download configuration settings that you do not want.

Use the offline DTM UI when the device is not connected to the FF interface or when you don't want to immediately work with an online device, such as:

- Offline configuration: Configuring the valve before the positioner is connected to the H1 segment. This can include:
 - Quick Start Configuration: Configuring Air Action, Remote Sensor status, Control Tuning settings, Characterization an Device Address and Tag.
 - Control Configuration: Configuring the valve behavior in normal operations
 - Fail State Configuration: Configuring the valve reaction during failures and abnormal conditions
 - Alert Configuration: Configuring the alert trigger conditions Review of Configuration: Reviewing of offline RB and TB parameter configurations
- Identification: Reviewing/recording information about the positioner, valve, actuator, etc.
- · Security: Configuring the security settings for the device or for a group of devices

This page intentionally left blank.

6. How Do I Do Online Parameterization?

Online Parameterization

Use the online DTM UI when the device is connected to the FF interface. Online parameterization means that the positioner/valve is still live connected. Tasks available:

- Online configuration: Configuring the valve while the positioner is connected to the H1 segment. This can include:
 - Quick Start Configuration: Configuring Air Action, Remote Sensor status, Control Tuning settings, Characterization an Device Address and Tag.
 - Device States: Viewing device states for a broad range of positioner and block values and configuring trend functionality to study behaviors.
 - Control Configuration: Configuring the valve behavior in normal operations.
 - Fail State Configuration: Configuring the valve reaction during failures and abnormal conditions
 - Diagnostic Alert Configuration: Configuring the alert trigger condition, and FD alerts per NE-107 standard.
 - Review of Configuration: Reviewing of offline RB and TB parameter configurations.
- Diagnostics: Configuring, running and viewing results of various diagnostics tests. Viewing position histograms and travel and cycle counter totals (with reset available).
- PST and Data Collection (For SVIFF REV3 only): Configuring/running PST and Data Collection, and managing test result.
- Identification: Reviewing/recording information about the positioner, valve, actuator, etc.
- Security: Configuring the security settings for the device or for a group of devices.

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7. Quick Start Configuration

From Quick Start Configuration screen you can rapidly setup the SVI FF by configuring some basic parameters.

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	_02110061 Device If	D: 4458440008 02110061
a Baker Hughes business Man. ID: 0x44564	14 Type ID: 8 Device P	New: 03 DID: 01 SW. 3.1.0.0 CSC92303
요 년 요 요 / · · · · · · · · · · · · · · · · ·	o oos telauto auto man oos A) 🛃 🥵	👔 🌉 Connected
Image: Solution of the second secon	0 OOS TE-AUTO AUTO MAN OOS ▲)	Connected Connected Sensor Type Internal Sensor Remote Sensor Shew control turing aptions Shew

Figure 46 – Quick Start Configuration

Buttons and Fields

Air Action	 Use this to set actuator type and air action, relay type and valve type. <i>Air-To-Open</i> - Air pressure is used through the FF to open the valve. <i>Air-To-Close</i> - Air pressure is used through the FF to close the valve.
Remote Sensor	Use the radio buttons to activate/deactivate the Remote Sensor option
Control Tuning Show control tuning options for single acting/ Show control tuning options for double acting	Click a radio button to select type: <i>Single Acting</i> or <i>Double Acting</i> . The options below in this area become restricted to appropriate choices.
Fastest (Smallest) Fast (Small) Medium Slow (Big) Slowest (Biggest) Auto Tune Custom	Click a radio button to select the tuning profile from <i>Fastest</i> for a very small valve to <i>Slowest</i> for a very large valve. Additionally, the preferred method of <i>Auto Tune</i> , which automatically tunes the valve. <i>Custom</i> requires manually entering values and is only for experts and under special circumstances.
Characterization Type	Use the buttons list to select the characterization type. Control valves are characterized to give a specific relationship between flow capacity (Cv) and percent opening of the valve. The valve can be characterized with special purpose trim or with the FF positioner. Several characterizations are available:
	• Linear: Causes the valve to open proportionally with the input signal. Select this option if non-linear trim is used in the valve.
	 Equal percent (50:1) and Equal percent (30:1): Two equal percentage characterizations are available, one with R=50 and the other with R=30.
	 Quick Open: The quick opening characterization is the inverse to the Equal percent 50 characterization curve.
	 Camflex %: This characterizes the valve as a Camflex* valve with settings of Linear and Equal percent 50. Characterization Curves shows the characterization curves in a graphical format.



Input Signal %

Figure 47 – Characterization Curves

• *Custom:* Selecting this option activates the *Customize* functionality to access an additional dialog where you can enter or draw a custom characterization curve. The curve can have up to 21 points and points in between are linearly interpolated.

Network Settings Device Address Enter the device address. Device Tag Enter the tag. Part Number Part Number Enter the part number.

Run the Quick Start Configuration

- 1. Place the system in Out of Service mode.
- 2. Click Air to Open or Air to Close.
- 3. Set *Control Tuning* by clicking **Single** or **Double Acting** and setting tuning type. Autotune is recommended, *Custom* requires entering your values.
- 4. Set *Characterization Type* by clicking either Linear, EQ% 30, EQ% 50, Quick Open, Camflex or Custom. *Custom* requires entering your values.
- 5. Enter a Device Address and Device Tag.
- 6. Write data to the device on the Network Settings tab.
- 7. When finished, ensure the Transducer block is returned to Auto.



If the Transducer block is switched to Auto, it then follows the setpoint received from the AO block (if scheduled). If you fail to switch the Transducer block to Auto, then the valve will not be in control.

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8. Device States

Device States

Use these tabs to observe the overall condition of the valve and of the blocks. *ValVue SVIFF Setpoint to Position Schema* graphically explains how setpoint and position interact.



Figure 48 – ValVue SVIFF Setpoint to Position Schema

Positioner State

Use this tab to view the major position control variables, their state and the status of related alerts. Additionally, some items display a detected process value that turns red when outside of user-specified alert levels. Areas presented include:

- Hardware
 Position
- Pressure
 Temperature

Positioner State shows the various components of the tab using color coded boxes by functional area:

- · Red boxes indicate alert states.
- · Green boxes contain bar graphs for measurements of interest.
- Blue boxes contain key values



Figure 49 – Positioner State

Buttons and Fields

Device State Icons

\otimes	Indicates that a value is out of control. The number of times this alert has occurred since the last reset appears next to the icon. The color corresponds to the alert condition:
	 Black: Value is in a good state (good cascade or non-cascade value). Red: Value is in an uncertain or bad state. The value may not be accurate or applicable for the device.
1	Indicates a commissioning failure. The number of alerts appear next to the icon.
9	Indicates the device is still operating but needs maintenance. The number of alerts appear next to the icon.
	Indicates no failure alert.
	Indicates the color used on the associated bar graph. For example, setpoint or actual position.
	Indicates the color used on the associated bar graph.
	Hardware
Sensor Failure	Indicates a sensor failure. The Transducer block detects an error condition (e.g. the A/D converter can not provide supply pressure, etc.), and the error is reported in both the Resource and Transducer blocks. The number of times this alert has occurred since the last reset appears to the right. The color corresponds to the alert condition:
	 Black: Value is in a good state (good cascade or non-cascade value). Red: Value is in an uncertain or bad state. The value may not be accurate or applicable for the device.
	If the sensor failure is persistent, replace the positioner.
Processor	Indicates a processor failure. If the processor failure is persistent, replace the positioner.
Valve Control	Indicates a valve control issue. To resolve issues, ensure there are no mechanical obstructions, that friction is not too high and that supply pressure is appropriate.
Commissioning	Indicates a failure during the comissioning.
Air Supply	Indicates an air supply issue. See the <i>Pressure</i> area below on the tab. The air supply must be five psi above the <i>Spring Range</i> . See <i>Pressure Range</i> .
Supporting Hardware	Indicates a supporting hardware failure for: position sensor, temperature sensor, current sensor, pressure sensor and the value of IP, temperature and reference voltage being out of range. If failure is persistent, replace the device.



Opens the *Fault Details* dialog. On this dialog you can view all faults. Use the buttons to:

Details button

- Clear Current Faults: Clears currently active faults.
- Clear All Faults: Clears currently active and historical faults.
- Position Control State: Indicates the present control state and contains a button to set the state back to Normal.





Position

<i>Setpoint</i> Bar Graph	Displays a bar graph of the setpoint presently in use. The final command value to the positioning algorithm before characterization.
<i>Actual Position</i> Bar Graph	Displays a bar graph of the detected position. The actual measured feedback position before decharacterization.
Setpoint	Displays the setpoint presently in use.
Actual Position	Displays the detected position.

Setpoint from AO block	Lists the setpoint output from the AO block.
Setpoint from DO block	Lists the setpoint output from the DO block.
On/Off SP from DO block	Indicates whether the setpoint is coming from the DO block.
Discrete SP from DO block	Indicates whether the setpoint is coming from the DO block.
Characterized Setpoint	Displays the characterized setpoint.
Characterized Position	Displays the characterized position.
Setpoint Deviation	Indicates this parameter is in alert. See Deviation Alerts Tab.
Setpoint Timeout	Indicates that a valid setpoint is not available. See Control Tab.
Position HIHI	Indicates there is an active HIHI alert condition. See <i>HI and HIHI Alerts Tab</i> . Possible causes include: slippage at position sensor, incorrect configuration, or out of range.
Position HI	Indicates there is a HI alert set. See HI and HIHI Alerts Tab.
Position LO	Indicates there is a LO alert set. See LO and LOLO Alerts Tab.
Position LOLO	Indicates there is a LOLO alert set. See LO and LOLO Alerts Tab.
Travel Accumulation A/ Travel Accumulation B	Indicates there is a <i>Travel Accumulation</i> alert set. See <i>Travel Accumulation A and B Alert Tab</i> .
Cycle Counter A/ Cycle Counter B	Indicates there is a Cycle Counter alert set. See Cycle Counter A and B Alerts Tab
Near Closed	Indicates there is a Near Closed alert set. See Near Closed Alerts Tab.
Working Time	Time Indicates there is a Working Time alert set. See Operating Time Alert Tab.

Pressure



Changing the pressure units requires a reboot of NI Configurator for conversion to take effect.

<i>Supply Pressure</i> Bar Graph	Displays a bar graph of the detected supply pressure.
<i>Actuator Pressure</i> <i>A</i> Bar Graph	Displays the detected actuator pressure.
Supply Pressure	Displays the detected supply pressure.
Actuator Pressure A/ Actuator Pressure B	Displays the detected actuator pressure.
Pilot Pressure	Displays the detected pilot pressure. The pilot pressure, which is controlled by the electropneumatic converter, controls the rate of air flow that fills or exhausts the actuator.
	If the temperature compensated pressure sensor reading is outside the range [–1250, 15000] counts for five reads in a row, an alert is set
Atmospheric Pressure	Displays the detected atmospheric pressure.
Supply Pressure HI Alert	Indicates there is a <i>Supply Pressure HI</i> alert set. See <i>Supply Pressure HI Alert Tab</i> .
Supply Pressure LO Alert	Indicates there is a <i>Supply Pressure LO</i> alert set. See <i>Supply Pressure LO</i> Alert <i>Tab</i> .
Supply Pressure LOLO Alert	Indicates there is a <i>Supply Pressure LOLO</i> alert set. See <i>Supply Pressure LOLO Alert Tab</i> .
	Temperature / Current
<i>Temperature</i> Bar Graph	Displays the current detected temperature in a bar graph.
<i>IP Output</i> Bar Graph	Displays the detected <i>IP Output</i> current in a bar graph.
Analog Input Bar Graph	Display the current reading from Analog Input in bar graph.
Temperature	Displays the current detected temperature.
IP Output	Displays the detected IP Output current.
Analog Input	Displays the current value of Analog Input, in mA.

Temperature HI Alert / Temperature LO Alert Indicates there is a *Temperature* alert set. See *Temperature HI Alert Tab* or *Tempera-ture LO Alert Tab*.

IP Current HI Alert/ Indicates there is a *IP Current* alert set. See *IP Output HI Alert Tab* or *IP Current LO Alert IP Output LO Alert Tab*.

Positioner Alert Log

Use this tab to view a list of historical and active alerts.



Figure 51 – Positioner Alert Log

Buttons and Fields

Alert in device	Shows a list of alert that are stored in the device.
Save to local	Shows a list of alerts that are stored in local file.
Show only active alerts	Click to filter out inactive alerts.
Refresh Log	Click to get latest alert state.
Clear Davisa Los	Click to clear the device's saved log file.

Clear Device Log

Clear Saved Log

Click to clear the alters that are stored in local file.

Trend and Position Setup

Use this tab to configure a trend showing a combination of temperature, position, pressure and current over time. You can add color-coded traces for a number of different values to track their behaviors. Additionally, you can manipulate the setpoint and study how that affects the system behavior. Once finished, you can set a time frame and export the results.



Figure 52 – Trend and Position Setup

Buttons and Fields

General Graph Functionality

All graphs have some common functionality, including:

- Click-and-hold on any axis' legend to drag along the axis.
- · Press the CTRL button and mouse drag to zoom/unzoom on the graph.
- Right-click menu: There is a menu available by right-clicking any axis that has three selections:
 - Tracking Enabled: Enables/disables tracking.
 - Update Resume Values: Store the axis scale for the *Tracking Enabled*. The next time *Tracking Enabled* is engaged, the tracking restores the axis to the stored scale instead the initial scale.
 - Zoom to Fit: Activates a function that sizes the graph to fit the selected display area.

Click a checkbox associated with a value you need to track and it appears on the trend.

Use this button and Keep Last pulldown to configure a time period and export results

Add traces checkboxes

Export functionality

Setpoint adjustment

Use this area to create the setpoint:

to a .csv file (Export the Trend Setup).

- Manually (Create a Setpoint Functionality: Manual).
- Automatically using a step, ramp or sine basis (see *Create a Setpoint Functionality: Step, Ramp or Sine*).



Figure 53 – Setpoint Adjustment

Create a Setpoint Functionality: Step, Ramp or Sine

You can create a setpoint based on a step, ramp or sine function:

- 1. Click the Step, Ramp or Sine radio button.
- 2. Enter a Size and Period. From here you can Export the Trend Setup

Create a Setpoint Functionality: Manual

You can manually manipulate the setpoint to study results:

- 1. Click the Manual radio button.
- 2. Either drag the slider or enter a value in the *Manual Setpoint* field. From here you can *Export the Trend Setup*

Export the Trend Setup

Use this area to create and export a trend.

- 1. Use the *Keep Last* pulldown to select an increment:
 - Last 10 minutes
 - Last 1 Hour
 - Last 10 Hours
 - Infinite
- 2. Click **Export** and a Save As dialog appears.
- 3. Navigate to the required directory and click **Save**.

Configuration and States for SVI FF R2 only

Use this tab to configure and run one of four types of data collections to study a positioner/valve performance and to create a running series of data collections to historically track valve/positioner performance.

These data collections are done during normal valve operations; there is no need to disturb the control process.

As data collection occurs and once it is complete you can use the associated *Graph Results* ("Graph Results" on page 83) and *Scatter Plot Results* ("Scatter Plot Results" on page 85) tabs to view both results for the present data collection and call up an historical curve for comparison.

Note: This tab appears only when connected to an SVI FF device version 2.1 and with DTM version 1.4 or higher.

The data collections types that you run from this tab include:

- Solenoid Test (see "Run a Solenoid Test" on page 77)
- Predefined Test (see "Run a Predefined Test" on page 81)
- Signature Test (see "Run a Signature Test" on page 80)
- Custom Test (see "Run a Custom Test" on page 82)

The collected data shown for all types include: *Actuator Pressure A*, *Actuator Pressure B* (if double-acting), *IP Current*, *Pilot Pressure*, and *Supply Pressure*. All collections collect 2700 or more data points.



Figure 54 – Configuration and States

Buttons and Fields

General Graph Functionality

All graphs have some common functionality, including:

	All graphs have some com	mon functionality, including.											
	 Click-and-hold on any axis' legend to drag along the axis. 												
	 Press the CTRL button and mouse drag to zoom/unzoom on the graph. 												
	 Right-click menu: There is three selections: 	s a menu available by right-clicking any axis that has											
	- Tracking Enabled: En	ables/disables tracking.											
	- Update Resume Value The next time Trackin to the stored scale ins	<i>tes</i> : Store the axis scale for the <i>Tracking Enabled</i> . <i>Ing Enabled</i> is engaged, the tracking restores the axis stead the initial scale.											
	 Zoom to Fit: Activates display area. 	s a function that sizes the graph to fit the selected											
		Data Collection Period											
Solenoid Test	Runs a test where you can without removing the valve limited time sequence ~ thre	test using a very brief pulse the action of an installed solenoid form the control loop. High frequency (105 ms per point) - ee minutes											
Signature Test	Runs a standard diagnostic time sequence.	cs test. Lower frequency (1 point per second) with a longer											
Predefined Test	Select a radio button to rur actual position as well as s	n a test where you can configure the setpoint and/or the electing form four predetermined test cycles:											
	• 0.1 sec - 3 Mins Data: Co than three minutes.	llects data every 0.105 seconds for more											
	 1 Sec - 30 Mins Data: Co 1 Min - 30 Hours Data: Co 	llects data once every second for 30 minutes. ollects data once every minute for 30 hours.											
	• 30 Mins - 30 Days Data:	Collects data once every 30 minutes for 30 days.											
	In each case, the left hand are collected and the right	number represents the time interval at which data points hand number is the overall test duration.											
Custom Test	Select this radio button to r the actual position and set	un a test where you can configure the setpoint and/or the <i>Data Collection Period</i> .											
Data Collection	Use the pulldown to select	a data collection period, including (Custom Test only):											
renou	• 105 mSec (3.15 Min.)	• 26.88 Sec (13.44 Hours)											
	• 210 mSec (6.3 Min.)	• 53.76 Sec (1.12 Days)											
	• 420 mSec (12.6 Min.)	• 1.792 Min (2.24 Days)											
	• 840 mSec (25.2 Min.)	• 3.584 Min (4.48 Days)											
	• 1.68 Sec (50.4 Min.)	• 7.168 Min (8.96 Days)											
	• 3.36 Sec (1.68 Hours)	• 14.336 Min (17.92 Days)											
	• 6.72 Sec (3.36 Hours) • 13.44 Sec (6.72 Hours)	• 28.672 Min (35.84 Days)											

In each case, the left hand number represents the time interval at which data points are collected and the right hand number is the overall test duration.

Setpoint / Actual Position

Click an individual checkbox to add/remove this item from the data collected from the device.

	Start Data Collection
ſ	Stop

Click **Start data Collection** to commence a test and the button turns to **Stop** to interrupt the test.

Run a Solenoid Test

The solenoid is used to force the valve to an open/close position. It stops the air flow from the positioner and releases actuator into the atmosphere. *General Diagram: Solenoid Test Setup* shows a general configuration for a solenoid test.



Figure 55 – General Diagram: Solenoid Test Setup

- 1. Click the Solenoid Test radio button.
- 2. Click the checkbox associated with Setpoint and/or Actual Position.
- 3. Click Start Data Collection The data in the graph begins updating.

Trend and Position C	onfiguration and States	Graph Results	Scat	ter Plo	ot Res	ults																	
			Data	a Colle	ection	is Sto	pped.																
 Solenoid Test 	© Signature 1	ſest		100 -	1				1														
Predefined Tes	it		L		-	100 -		80 -															
🔘 0.1 Sec - 31	Mins Data 🔘 1 Sec - 30 l	lins Data	L	80 -		100																	
🔘 1 Min - 30 H	lours Data 🛛 🔘 30 Mins - 31) Days Data	L			80 -		60 -			_												
Custom Test				c0 -	(j		9		-		-												
Select All			ent (%		nre (p	60 -	ion ()	40 -	ŀ														
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🗸 Actual Positi	on 54	.97 %	<u>ا</u>	-0-	ā	40 -																	
✓ Actuator Pre	ssure A	V/A psi	L			20 -		20 -	-		_												
Actuator Pre	ssure B	V/A psi	L	20 -							_												
IP Current	1	V/A %	L			0 -		0 -			_												
V Pilot Pressur	e I	V/A psi	L	0 -							· · ·				_								
Supply Press	sure	V/A psi								10	20		30	⁴⁰ Tin	ne	Num	ber	of	ро	ints	col	ecte	d in
			_											K	/	, the c	levi	се	•				
Data Collection Pe	riod: 105 mSec (3.15 Min)	T										340 P	Points Col	llected		Num	ber	of	po	ints	upl	bade	ed to
	Start Data Colle	ection										264 P	oints Up			the E	DTM	.				•- •	
														-				-					

Figure 56 – Solenoid Test

Note: Once you see the waveform indicate in the black box in Solenoid Test, the solenoid has finished operation and you can stop the test.

4. Compare results on the Graph Results tab.



Figure 57 – Graph Results Tab: With a Comparison Curve Added

Scatter Plots Results and *Scatter Plots Results II* show the *Scatter Plot Results* tabs for two solenoid test with comparison plots shown as well. In both examples you can see that the newer data collection and the historical data collection vary very little, indicating that the valve/positioner performance is consistent.



Figure 58 – Scatter Plots Results



Figure 59 – Scatter Plots Results II

Solenoid Test: Short vs. Long Burst

You can do a text where a short solenoid operation occurs or a longer burst, as in the red box and black boxes in *Short Burst and Long Burst Solenoid Test*, respectively.



Figure 60 – Short Burst and Long Burst Solenoid Test

Run a Signature Test

Use this tab to ensure that the pressure/position relationship is consistent.



Figure 61 – Signature Test

- 1. Click the Signature Test radio button.
- 2. Click the checkbox associated with Setpoint and/or Actual Position.
- 3. Click Start Data Collection and wait until all data is uploaded.
- 4. Review the results using the *Scatter Plots* tab. See "Run a Solenoid Test" on page 57 for a scatter plots discussion.



Figure 62 – Scatter Plots

Run a Predefined Test

Use this tab to analyze valve performance for longer periods. For example:

- Range of travel for a day, week or month.
- Setpoint/position error during a day as caused by temperature or other factors.

Igoopoilan	SVI FF POSITION	ER	MASONEIL	N PRODUCTS					
viasonellan	Teg: SVI	73	Device ID: 0	047450008		7240383			
o Boker Hughes business	Man. ID: 0x8745	Type. ID: 0	Device Rev.	02 00:0	1 SW:21	0.0 CSC52340			
BBBBB.	REAUTO AUT	O OOS TEMAN AUTO MAIN	005 🔥 🛃 付	Corre	ted .				
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X Duick Waard			Start: Data Collection						
K Full Witcord							648 Points Uploaded		
Diagnestics					-				

Figure 63 – Predefined Test

- 1. Click the **Predefined Test** radio button.
- 2. Click one of the activated radio buttons to select a collection period and overall duration.
- 3. Click the checkbox associated with Setpoint and/or Actual Position.
- 4. Click Start Data Collection

Run a Custom Test

Use this tab to detect:

- Fast variations in setpoint and actual positions.
- Cycling.
- Tuning issues.

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Masonellan Tes	1. 81/173	Device ID: 004745000807240363	
d Boker Hughes business Ma	n ID: 0x4745 Type ID: 8	Device Rev 02 DD 01 999 210.0 CSC52340	
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Constant Samt Configuration Device States Device States Device States Positioner State Device State Positioner State Positi	Tend and Processon Configuration See California Ferrod Seeman Test Provide Test Second Test	does and States Graph Results. Scatter Piot Results Signature Text Signature	- 40 - 20 - 40

Figure 64 – Custom Test

- 1. Click the **Custom Test** radio button.
- 2. Use the *Data Collection Period* pulldown to select a collection period and overall duration.
- 3. Click the checkbox associated with Setpoint and/or Actual Position.
- 4. Click Start Data Collection

Graph Results

or start Centiguration	3 Transf and Position Configuration and States Graph Results Scatter Plat Results	
Constantion States	Graph Results over The Cac)	
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Control Configuration		
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- 🚓 Configuration		
Position Alerts	2 so	-50
🐝 Travel Alerts	8	
GB Foult Idate	2 -	
Decrete		
Configuration		
Software Switzhes		- g
Pressare Switches	α	- 9
Schware Swetzhen Premare Premare Range	α.1L	-g
Software Software Software	a J	- g
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Demans Demans	a -	- 9
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Software Software Noncone Noc	a	- 300
Software Software Normane Normane Normane Normane Possone Pos	a 6,0 5,0 50,0 50,0 25,0 30,0 25,0 30,0 35,0 40,0 45,0 50,0 50,0 40,0 46,0 50,0 50,0 40,0 46,0 50,0 50,0 40,0 46,0 50,0 50,0 40,0 46,0 50,0 50,0 40,0 46,0 50,0 50,0 40,0 46,0 50,0 50,0 40,0 46,0 50,0 50,0 40,0 46,0 50,0 50,0 40,0 46,0 50,0 50,0 40,0 46,0 50,0 50,0 40,0 46,0 50,0 50,0 40,0 46,0 50,0 50,0 40,0 46,0 50,0 50,0 40,0 46,0 50,0 50,0 40,0 46,0 50,0 50,0 40,0 40,0 40,0 40,0 40,0 40	- 9
Applications Southern Pressure Pressure Pressure Pressure Pressure Processe	a	- 300 - 90
Software Software Normane Pressure Press Pre	C C C C C C C C C C C C C C C C C C C	- 300 - 90

Figure 65 – Graph Results

Buttons and Fields

General Graph Functionality

All graphs have some common functionality, including:

- Click-and-hold on any axis' legend to drag along the axis.
- Press the CTRL button and mouse drag to zoom/unzoom on the graph.
- Right-click menu: There is a menu available by right-clicking any axis that has three selections:
 - Tracking Enabled: Enables/disables tracking.
 - Update Resume Values: Store the axis scale for the *Tracking Enabled*. The next time *Tracking Enabled* is engaged, the tracking restores the axis to the stored scale instead the initial scale.
 - Zoom to Fit: Activates a function that sizes the graph to fit the selected display area.

Curve Use the color-designated checkboxes to add/ remove traces from the graphs. checkboxes This does not impact data collection.

Position vs. Time (sec) vs. Pressure graph	 There are two of these graphs: The top graph represents the running or just completed test. The bottom is a saved test that you can display using the <i>Show Saved Results</i> pulldown list for comparison. Left axis displays a scale for the percentage of position. Bottom axis displays time. Right axis displays pressure in psi.
	Use the checkboxes above the graph to activate/deactivate the following traces:
	 The red line represents the current supply pressure. The purple line represents the current <i>Actuator A</i> pressure. The yellow line represents the current <i>Actuator B</i> pressure (box grayed out if no double-acting). The navy-blue line represents a saved test setpoint. The green line represents the <i>Actual Position</i>. The light blue line represents the <i>Pilot Pressure</i>. The brown line represents the <i>Analog Input</i>.
Save Save	Click to save the results. You can load back the result in the selection <i>Show Saved Result</i> .
Export Export	Exports the results as a .csv file. See <i>Export Step Test Results</i> for instructions.
Zoom Out - Zoom Out -	Toggles the view out according to preset values to two times.
Zoom In+ Zoom In +	Toggles the view in according to preset values to 50%.
Show Saved Results	Use the pulldown to select a results file and the graph is populated. See <i>Diagnostics Start Step Test</i> for instructions on how to create these files.

Scatter Plot Results

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Figure 66 – Scatter Plots Results

Buttons and Fields

General Graph Functionality

All graphs have some common functionality, including:

- Click-and-hold on any axis' legend to drag along the axis.
- Press the **CTRL** button and mouse drag to zoom/unzoom on the graph.
- Right-click menu: There is a menu available by right-clicking any axis that has three selections:
 - Tracking Enabled: Enables/disables tracking.
 - Update Resume Values: Store the axis scale for the *Tracking Enabled*. The next time *Tracking Enabled* is engaged, the tracking restores the axis to the stored scale instead the initial scale.
 - Zoom to Fit: Activates a function that sizes the graph to fit the selected display area.

Curve Use the color-designated checkboxes to add/ remove traces from the graphs. checkboxes This does not impact data collection.

Position vs. Time (sec) vs. Pressure graph	There are two of these graphs: The top graph represents the running or just completed test, or a test previously completed that is stored on the system (accessed using the <i>Show Results</i> pulldown). The bottom is a saved test that you can display using the <i>Show Saved Results</i> pulldown list for comparison.
	 Left axis displays a scale for the percentage of position. Bottom axis displays time. IP Current Setpoint Pilot Pressure Actuator Pressure A . Right axis displays pressure in psi.
	 Use the checkboxes above the graph to activate/deactivate the following traces: The purple line represents the current <i>Actuator A</i> pressure. The yellow line represents the current <i>Actuator B</i> pressure (box grayed out if no double-acting). The green line represents the <i>Actual Position</i>. The brown line represents the <i>Pilot Pressure</i>.
Save Save	Click to save the results. You can load back the result in the selection <i>Show Saved Result</i> .
Export Export	Exports the results as a .csv file. See <i>Export Step Test Results</i> for instructions.
Zoom Out - Zoom Out -	Toggles the view out according to preset values to two times.
Zoom In+ Zoom In +	Toggles the view in according to preset values to 50%.
Show Results	<i>Show Results</i> Use the pulldown to select a results file and the graph to the left is populated. See <i>Diagnostics Start Step Test</i> for instructions on how to create these files.
Show Saved Results	Use the pulldown to select a results file and the graph is populated. See <i>Diagnostics Start Step Test</i> for instructions on how to create these files.

Device State

Use this tab to view block parameters on a block-by-block basis. The detected value appears where appropriate and the tag state is indicated by the background color, where:

• Red indicates that the item is in alert state.

Note: For information on particular parameters and operations refer to FOUNDATION fieldbus documents FF890-FF984.

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Figure 67 – Device State

Buttons and Fields

	Fields appear for all block types
Out of Service	Indicates the block is out of service.
Sensor Failure	Indicates a sensor failure in the block parameters.
Power Up	Indicates the block is in power up mode.
Fault State	 Indicates the block is in a fault state. The device goes to this state if: The host sends a message to Set Fault State The processor detects a Fault State and forces the device to this state There is a processor communication issue
Maint Now	Indicates that maintenance is required.
Maint Soon	Indicates that maintenance is required soon.
Readback	Indicates a failure detected in readback value.
Local Override	Indicates that the block is in local override mode. The FF device keypad is in control of the device.
NV Data	Indicates the status of non-volatile memory.
Simulation	Indicates the block is in simulation mode.
Static Data	Displays whether there is an error with this data set. If there is an error then the default data is used.
Link Error	Displays the link error status.
Memory Failure	Indicates a memory failure. This error indicates that a RAM data item had a bad checksum.
Configuration	Displays whether or not the configuration of the block allows for normal operations.
Output Failure	Indicates when an output failure is detected by this block (backcalculation input has a BAD status, Device Failure).
Other	Indicates calibration, find stops, autotune failed or factory mode enabled.
	RB: Resource Block Tag
Fault State	Indicates, in the field to the right, the fault state: • <i>Clear</i> • <i>Active</i>
	Condition set by loss of communication to an output block, where the fault is promoted to an output block or a physical contact. When <i>Fault State</i> condition is set, output function blocks perform their FSTATE actions.
	It is set by a physical input to the device provided for that purpose, or by setting the <i>SET_FSTATE</i> parameter with a message over the bus. It is cleared by setting the <i>CLR_FSTATE</i> parameter, if the physical input is reset.

Write Lock	Indicates, in the field to the right, the write lock state: Unlocked Locked
	See <i>Device Access</i> for an explanation of these states.
	TB: Transducer Block Tag
Setpoint	Displays the present TB block working setpoint,
Setpoint from AO Block	Displays the last setpoint value output from the AO block.
On/Off Setpoint from DO Block	Indicates whether the setpoint is coming from the DO block.
Discrete Setpoint from DO Block	Indicates whether the setpoint is coming from the DO block.
Characterized Setpoint	Displays the characterized setpoint.
Actual Position	Displays the present TB block position.
AO Actual Position	Displays the present AO block position.
On / Off Actual Position	Displays whether or not the TB block is using actual position. Actual discrete valve position, provided to DO block as boolean.
Discrete Actual Position	Displays the present TB block actual position from DO block.
Characterized Position	Displays the characterized position.
Supply Pressure	Displays the present TB block supply pressure.
Actuator Pressure A / Actuator Pressure B	Displays the present TB block actuator pressures.
Pilot Pressure	Displays the detected pilot pressure. The pilot pressure, which is controlled by the electropneumatic converter, controls the rate of air flow that fills or exhausts the actuator.
	If the temperature compensated pressure sensor reading is outside the range [–1250, 15000] counts for five reads in a row, an alert is set.
Atmospheric Pressure	Displays the present TB block atmospheric pressure.

Transducer Err. Position	Displays the present TB block transducer position error.
Transducer Err. Pressure	Displays the present TB block transducer pressure error.
Transducer Err. Temperature	Displays the present TB block transducer temperature error.
Temperature	Displays the present TB block temperature.
IP Output	Display the present TB block IP output current.
	AO: Analog Output Block Tag
Setpoint	Displays the present AO block working setpoint.
CAS_IN	Displays the CAS_IN setpoint value.
RCAS_IN	Displays the <i>RCAS_IN</i> setpoint value.
Process Value	Displays the position as derived from either the primary analog value for use in executing the function, or a process value associated with it. Can also be calculated from the <i>READBACK</i> value of an AO block.
Readback	Indicates the readback of the actual continuous valve or other actuator position, in transducer units.
OUT	The output setpoint value.
BKCAL_OUT	Displays the setpoint that is sent to the TB block.
RCAS_OUT	Displays the setpoint that is sent to the TB block.
Target Mode	Displays the target mode.
Actual Mode	Displays the actual block mode.
Period of Execution	Displays the period of the last block execution.
	AO: Analog Output Block Tag
Set Point	Displays the present PID block working setpoint.
Process Value	Displays the position as derived from either the primary analog value for use in executing the function, or a process value associated with it. Can also be calculated from the <i>READBACK</i> value of an AO block.
CAS_IN	Displays the CAS_IN setpoint value.
RCAS_IN	Displays the <i>RCAS_IN</i> setpoint value.
FF_VAL	Displays the feed forward value.
BKCAL_IN	Displays the <i>BKCAL_OUT</i> value.
ROUT_IN	Displays the remote output.
TRK_IN_D	Displays the discrete input used to initiate external tracking of the block output to the value specified by TRL_VAL.
----------------------------	---
TRK_VAL	Displays the value, if tracking is engaged, to track the as OUT.
OUT	Displays the OUT used for setpoint.
BKCAL_OUT	Displays the setpoint that is sent to the TB block.
RCAS_OUT	Displays the setpoint that is sent to the TB block.
ROUT_OUT	Displays the <i>ROUT_OUT</i> value.
Target Mode	Displays the target mode.
Actual Mode	Displays the actual block mode.
Period of Execution	Displays the period of the last block execution.
	DO1: DO Block Tag / DO2: DO Block Tag
CAS_IN_D	Displays the remote setpoint value, which must come from another Fieldbus block, or a DCS block through a defined link.
RCAS_IN_D	Displays the target setpoint and status provided by a supervisory Host to a discrete control or output block.
BKCAL_OUT_D	Displays the output value and status provided to an upstream block output tracking when the loop is broken, as determined by the status bits. This information provides bumpless transfer to closed loop control.
OUT_D	Displays the discrete output value.
RCAS_OUT_D	Displays the remote setpoint value that is sent to the TB block.
Target Mode	Displays the target mode.
Actual Mode	Displays the actual block mode.
Period of Execution	Displays the period of the last block execution.
	OS: OS Block Tag
CAS_IN	Displays the CAS_IN setpoint value.
BKCAL_IN_1 / BKCAL_IN_2	Displays the <i>BKCAL_OUT</i> value.
OUT_1/OUT_2	Displays the block OUT value.
BKCAL_OUT	Displays the setpoint that is sent to the TB block.
Target Mode	Displays the target mode.
Actual Mode	Displays the actual block mode.
Period of Execution	Displays the period of the last block execution.

	DI1: DI1 Block Tag / DI1: DI1 Block Tag					
CHANNEL	Displays the configured measurement channel.					
OUT_D	Displays the primary discrete value calculated as a result of executing the function block.					
Target Mode	Displays the target mode.					
Actual Mode	Displays the actual block mode.					
Period of Execution	Displays the period of the last block execution.					
	Al1: Al! Block Tag / Al2: Al2 Block Tag / Al3: Al3 Block Tag					
CHANNEL	Displays the configured measurement channel.					
OUT	Displays the output value.					
Target Mode	Displays the target mode.					
Actual Mode	Displays the actual block mode.					
Period of Execution	Displays the period of the last block execution.					
	MAI: MAI Block Tag					
CHANNEL	Displays the configured measurement channel.					
OUT_1OUT_8	Displays the a block output required by the OS and analog calculate blocks.					
Target Mode	Displays the target mode.					
Actual Mode	Displays the actual block mode.					
Period of Execution	Displays the period of the last block execution.					
	IS: IS Block Tag					
IN_1 IN_4	Displays the block input value.					
DISABLE_1 DISABLE_4	Displays the value of the parameter to switch off the input from use.					
OP_SELECT	Displays the status of a forced input on a settable parameter.					
OUT	Displays the block output value.					
SELECTED	Displays the integer indicating the selected input number.					
Target Mode	Displays the target mode.					
Actual Mode	Displays the actual block mode.					
Period of Execution	Displays the period of the last block execution.					

74 | Baker Hughes

AR: AR Block Tag

<i>IN</i> and <i>IN_1</i> <i>IN_</i> 3	Displays the block input value.
OUT	Displays the block output value.
Target Mode	Displays the target mode.
Actual Mode	Displays the actual block mode.
Period of Execution	Displays the period of the last block execution.
	CS: CS Block Tag
SEL_1 SEL_3	Displays the block input value from the Selector block.
BKCAL_IN	Displays the <i>BKCAL_OUT</i> value.
OUT	Displays the block output value.
BKCAL_SEL1 BKCALSEL_3	Displays the <i>BKCAL_SEL</i> value from the Selector block.
Target Mode	Displays the target mode.
Actual Mode	Displays the actual block mode.
Period of Execution	Displays the period of the last block execution.

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9. Calibration

Calibration

The Calibration tree contains the following tabs:

- Find Stops
- Auto Tune
- Quick Wizard
- Full Wizard

Find Stops

Use this tab to automatically search for the mechanical valve travel limits and tune the valve position PID control algorithm.

The following list details actuators that must be tuned manually. Look for a Manual Tune Only notice in the TB block tag descriptor. Actuators that may require manual tuning include:

- Actuators with internal leaks, such as pistons.
- Large actuators with high spring ranges.



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

Note: If manual tuning is performed enter Manual Tune Only in the TB block tag Descriptor.

Use the *Travel Range* to adjust calibration at 0% and 100% to match the valve's working stroke when there is over-travel at one or both stops. Additionally, if the valve linkage introduces a non-linearity, it can be corrected by setting a correction at 50%. The corrections in this dialog box are applied over corrections applied with the *Open Stop Adjustment*. Use only one set of correction tools for adjusting zero, span, and non-linearity calibrations.

Determining Values to Disable Tight Shutoff Below, Full Open Above, and Limits

If *Travel Limits* have been readjusted after performing *Find Stops*, then the values that disable the *Tight Shutoff Below, Full Open Above, Position Lower Limit*, and *Position Upper Limit* functions must be determined by testing the limits. To disable these functions, set them 10% above the full open mechanical stop position or 10% below fully closed mechanical stop position.

Note: When calculating the relationship between Open Stop Adjustment and Tight Open use the following equation:

Tight Open_{New} = Open Stop Adjustment_{Previous}/Open Stop Adjustment_{New} x Tight Open_{Previous}

Limit Testing

- 1. Isolate the valve from the process.
- 2. Place the FF in manual operating state. The valve must be calibrated and supplied with correct supply pressure.
- 3. Measure closed position Enter a *Set Point* of -10%. After the valve reaches it's final value, record the actual position of the closed mechanical stop. The actual position must be less negative than the target position to verify the valve has reached the stop. If the actual position and target position are equal reduce the *Set Point* until the valve reaches the stop.
- 4. Disable Tight Shutoff Below, and Position Lower Limit by deducting 10% from the recorded value.
- 5. Measure open position Enter a *Set Point* of *110%*. After the valve reaches it's final value, record the actual position of the open mechanical stop. The actual position must be less than the target position to verify the valve has reached the stop. If the actual position and target position are equal increase the *Set Point* until the valve reaches the stop.

6. Disable Full Open Above and Position Upper Limit by adding 10% to the value recorded above.



Figure 68 – Calibration Find Stops

Buttons and Fields

Auto Stop Limits Use this radio button to perform an automatic find stops procedure. This sets the calibration position of the valve at the fully vented position and at full supply pres-sure.

To determine valve position, the positioner must measure and save the closed and open positions of the valve. The FF first exhausts the actuator and measures the position, then fills the actuator and measures the position. From these measurements the valve position is determined. Correction can be made for nominal valve travel if it is less than full travel. For double acting actuators, both ports are filled and exhausted.

See Find Stops Procedures.

Manual High and
Low Stop LimitUse this radio button to perform a procedure that sets the High Stop Limit and Low
Stop Limit. See Find Stops Procedures.

Manual Low Stop Limit	Use this radio button to perform a procedure that sets the <i>Low Stop Limit</i> . See <i>Find Stops Procedures</i> .					
Manual High Stop Limit	Use this radio button to perform a procedure that sets the <i>High Stop Limit</i> . See <i>Find Stops Procedures</i> .					
Manual Stop Limits	Use this radio button to run the manual stops.					
	On some actuators, it is possible that the automatic <i>Automatic Find Stops</i> procedure will not find the correct end positions of the travel. A semi-automatic method of calibrating the stop positions is provided.					
	<i>Manual Stops</i> moves the valve to full closed and you respond when the valve reaches the closed position. The valve then moves to full open and you respond when the valve reaches the full open position.					
	For some valves where the travel exceeds the nominal travel of the valve, use open <i>Stop Adjustment</i> for details about how to trim the open stop.					
Travel Range	Enter a value to set as the maximum travel. This is used to calculate the working Set Point value.					
Travel Units	Use the pulldown to select units for <i>Travel Range</i> : • Inch • cm • mm • deg • Rad •%					
Open Stop Adjustment	Use this field and <u>Start</u> to recompute the position scale so that at the value entered in the <i>Open Stop Adjustment</i> edit box as a percent of full stops, becomes 100%.					
	this so that the valve position reads 100% at the nominal travel.					

Open Stop Adjustment Diagram shows how this works. This calibrates the position with the full travel of the valve.



Figure 69 Open Stop Adjustment Diagram

Note: When calculating the relationship between Open Stop Adjustment and Tight Open use the following equation:

Tight Open_{New} = Open Stop Adjustment_{Previous}/Open Stop Adjustment_{New} x Tight Open_{Previous}

Start	Click to start the procedure selected above.
Accept	Click, once the calibration is complete, to accept the values.
Counts vs.	Displays the procedure results graphically.
Time Graph	See <i>Counts vs. Time Graph</i> for a full description of functionality. Left axis displays raw positioner sensor value.
	Bottom axis displays time.
	 Click-and-hold on any axis' legend to drag along the axis.
	 The red line represents a HIHI alert condition.
	 The yellow represents a HI alert condition.
	 Press the CTRL button and mouse drag to zoom/unzoom on the graph.
Raw Sensor Value	Displays the temperature compensated value; in counts. The value typically is between -15000 and +15000 counts.
Pressure vs. Time Graph	Use this graph to graphically see the pressure and position versus time during the <i>Find Stops</i> procedure.
	 Left axis displays a scale for the position (blue trace).
	Right axis displays the actuator pressure (red trace).
	Bottom axis displays time.
	Click-and-hold on any axis' legend to drag along the axis.
	• Press the CTRL button and mouse drag to zoom/unzoom on the graph.
Actuator Pressure	Displays the pressure determined from the procedure.
Position	Displays the position determined from the procedure.
Travel	Displays the maximum travel determined from the procedure.
Find Stops Log	Displays device nameplate information, procedural messages during the runtime and results.

Counts vs. Time Graph

Use this graph to graphically see the counts versus time during the Find Stops procedure.



Figure 70 – Counts versus Time Graph

Note 1: The red line in *Counts versus Time Graph* indicates that the valve sensor is rotated to an angle where the reading of the position is impossible. The *Find Stops* is failing.

Note 2: The yellow line in *Counts versus Time Graph* indicates that the sensor is too close to the maximum position and this is a warning condition. The *Find Stops* will work, but the position sensor resolution may not be high.

The magnet graphic displays the rotation real-time degree of the magnet sensor:

- -60° to 60° green appears
- -60° to 70° or 60 to 70° yellow appears
- Less than -70° or greater than 70° red appears

Pressure and Position vs. Time Graph

Use this graph to graphically see the pressure and position versus time during the *Find Stops* procedure.



Figure 71 – Pressure versus Time Graph

Find Stops Procedures



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

Auto Stop Limits



Tuning strokes the valve over its entire travel. Isolate the valve from the process prior to calibration.

- 1. Ensure the system is in manual.
- 2. Click Auto Stops.
- 3. Enter a *Travel Range* value.
- 4. Use the Travel Units pulldown to select a unit.
- 5. Enter and Open Stop Adjustment value. See Find Stops to perform Open Stop Adjustment.

Note: When calculating the relationship between Open Stop Adjustment and Tight Open use the following equation:

Tight Open_{New} = Open Stop Adjustment_{Previous}/Open Stop Adjustment_{New} x Tight Open_{Previous}

6. Click , the two graphs beginning showing results, the *Find Stops Log* lists detected values, test results appears (*Auto Stop Limits Results: Succeeded*) and if the test fails a list of reasons.



Figure 72 – Auto Stop Limits Results: Succeeded

7. When finished, ensure the Transducer block is returned to Auto.



If the Transducer block is switched to Auto, it then follows the setpoint received from the AO block (if scheduled). If you fail to switch the Transducer block to Auto, then the valve will not be in control.

Manual High and Low Stop Limit

Tuning strokes the valve over its entire travel. Isolate the valve from the process prior to calibration.

- 1. Ensure the system is in manual.
- 2. Click Manual High and Low Stop Limit.
- 3. Enter a Travel Range value.
- 4. Use the *Travel Units* pulldown to select a unit.
- 5. Enter and Open Stop Adjustment value. See Find Stops to perform Open Stop Adjustment.

Note: When calculating the relationship between Open Stop Adjustment and Tight Open use the following equation:

Tight Open_{New} = Open Stop Adjustment_{Previous}/Open Stop Adjustment_{New} xTight Open_{Previous}

6. Click start, the two graphs beginning showing results.

The test seeks the *Low Stop* position and the <u>Accept Low</u> button appears.



Ensure that the Raw Sensor Value stabilizes before proceeding.

7. Click Accept Low , the test seeks the *High Stop* position and the Accept High button appears.



Ensure that the Raw Sensor Value stabilizes before proceeding.

The

Confirm button appears.

8. Click <u>Confirm</u>, the *Find Stops Log* lists detected values, test results appears (*Manual Low and High Stop Limits Results: Succeeded*) and if the test fails a list of reasons.



Figure 73 – Manual Low and High Stop Limits Results: Succeeded

9. Click Accept

10. When finished, ensure the Transducer block is returned to Auto.



If the Transducer block is switched to Auto, it then follows the setpoint received from the AO block (if scheduled).

If you fail to switch the Transducer block to Auto, then the valve will not be in control.

Manual Low Stop Limit



6. Click

and the

button appears.

7. Click Confirm, the Find Stops Log lists detected values, test results appears (Manual Low and High Stop Limits Results: Succeeded) and if the test fails a list of reasons.



Figure 74 – Manual Low Stop Limits Results: Succeeded



9. When finished, ensure the Transducer block is returned to Auto.

CAUTION

If the Transducer block is switched to Auto, it then follows the setpoint received from the AO block (if scheduled).

If you fail to switch the Transducer block to Auto, then the valve will not be in control.

Manual High Stop Limit



Tuning strokes the valve over its entire travel. Isolate the valve from the process prior to calibration.

- 1. Ensure the system is in manual.
- 2. Click Manual High Stop Limit.
- 3. Enter a *Travel Range* value.
- 4. Use the Travel Units pulldown to select a unit.
- 5. Enter and Open Stop Adjustment value. See Find Stops to perform Open Stop Adjustment.

6. Click start, the two graphs beginning showing results.

The test seeks the *High Stop* position and the Accept Low button appears.



Ensure that the Raw Sensor Value stabilizes before proceeding.

7. Click Accept Low

and the Confirm

button appears.

8. Click <u>Confirm</u>, the Find Stops Log lists detected values, test results appears (Manual Low and High Stop Limits Results: Succeeded) and if the test fails a list of reasons.



Figure 75 – Manual High Stop Limits Results: Succeeded



10. When finished, ensure the Transducer block is returned to Auto.

CAUTION

If the Transducer block is switched to Auto, it then follows the setpoint received from the AO block (if scheduled).

If you fail to switch the Transducer block to Auto, then the valve will not be in control.

Auto Tune

Use the *Calibration Auto Tune* tab for commissioning a valve positioner. It includes the ability to configure PID parameters and aggressiveness while tuning. It is most useful for first time setup of the positioner.

Auto Tune is successful for most valves. However, very large actuators or high hysteresis may require manual tuning.



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.



Do not Auto Tune if manual tuning has been used. Auto Tune creates new parameters that override the manual tuning parameters.



Before beginning the Auto or Manual range calibration, confirm that the valve is isolated from the process. This procedure exhausts and then fills the valve actuator to supply pressure and therefore strokes the valve over its full range. Supply pressure MUST NOT exceed the actuator pressure rating marked on the actuator. Positioner supply pressure MUST BE at least 5 psi higher than the upper spring range of the valve.



Figure 76 – Calibration Auto Tune

Buttons and Fields

Auto Tune

Auto Tune Aggressiveness	Enter a value that tends the value to either a slow response (-9) to or overshoot(9). It is advised to increment the value one digit at a time to see the operational results. The default is 0 .
Auto Tune Supply Pressure	Enter a value for the expected supply pressure.
PID Configuration Parameters	Displays the values for these parameters. The PID parameters update after Auto Tune.
Start Auto Tune	Click to start the tuning procedure. Updates appear in the Auto Tune Log.
Auto Tune	Progress messages appear in this area.
Actual Position	Dynamically displays the position as a percent of the configured range.

Supply Pressure	Enter a value that tends the value to either a slow response (-9) to or overshoot(9). It is advised to increment the value one digit at a time to see the operational results. The default is 0 .						
Actuator A Pressure /	Displays the detected pressure is the user-configured units. <i>Actuator Pressure A</i> and <i>B</i> are combined into <i>Actuator Pressure</i> .						
Actuator B	For single acting, this equals Actuator Pressure A.						
Tressure	For double acting, this is equal to the difference between <i>Actuator Pressure A</i> and <i>B</i> .						
Position vs.	Displays the time-based results during the Auto Tune procedure:						
Time Graph	 Left axis displays a scale for the position (blue trace). 						
	 Right axis displays the actuator (red and orange traces) and supply pressures (green trace). 						
	• Bottom axis displays time.						
	Click-and-hold on any axis' legend to drag along the axis.						
	Press the CTRL button and mouse drag to zoom/unzoom on the graph.						
Auto Tune Log	Displays test information for completed tests.						

Auto Tune

CAUTION

For a successful Auto Tune process, the supply pressure must be at least 5 PSI (34.5 kPa) above the spring range.

- 1. Ensure the system is in manual.
- 2. Select an Auto Tune Aggressiveness.
- 3. Enter an Auto Tune Supply Pressure.
- 4. Click Start Auto Tune

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Quick Wizard

Running the *Quick Wizard* is one of three ways to set up the FF. When you decide to run the setup you can either run the entire wizard or pick and choose which components to run. If you choose not to use the *Quick Wizard*, you can use the components it accesses to configure components separately on the following tabs:

- Quick Start Configuration tab
- Find Stops tab
- Auto Tune tab

Alternately, you can use the *Full Wizard*.



The valve must be Out-of-Service and isolated from the process during this process.



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

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Biagnostics				

Figure 77 – Quick Wizard Configuration

Buttons and Fields

Procedure Area

No.

Displays the number of the procedure.

Procedure Name and checkbox	Displays the procedure as listed on the tab where fields are configured. Use the checkbox to activate the procedure for use by the wizard. These include:								
	 Change to OOS Mode: Changes the positioner to OOS mode. 								
	• Set Tag: Sets the physical device tag.								
	Set Address: Sets the device address.								
	 Set Parameters: Sets parameters configured in the DTM to the device for the following: Air Action, Remote Sensor, Control Tuning and Characterization Type. 								
	Download All Parameters: Downloads all parameters to the device.								
	• Find Stops: Runs all <i>Find Stops</i> operations, including: <i>Travel Range, Travel Units</i> and <i>Open Stops Adjustment</i> .								
	 Auto Tune: Runs all Auto Tune procedures, including; Aggressiveness and Supply Pressure. 								
	• Step Test: Runs a Step Test.								
	• Ramp Test: Runs a Ramp Test.								
	Signature Test: Runs a Signature Test.								
	 Saves All Test Results: Automatically saves all test results. 								
	 Upload All Parameters: Uploads all parameters from the device to the DTM. 								
	 Save All Parameters: Saves all parameters to the DTM database file. 								
Status	Displays a progress bar during execution for each selected item.								
Check All	Click the checkbox to select/deselect all Procedure Name items. Prameter Area								
	Parameter Area								
No.	Displays a number for each parameter associated with the <i>Procedure Name</i> selected in the procedure area.								
Parameter	Lists the parameters associated for the <i>Quick Wizard</i> for the <i>Procedure Name</i> selected.								
Value	Lists the parameter value read from the tab where it is configured.								
Edit the settings	Click the button and you are taken to the Quick Start Configuration Tab where the values are input. Return to the <i>Quick Wizard</i> tab to continue the process.								
<i>Edit the</i> settings button									
Quick Wizard Graph	Displays a graph of % (percentage of the procedure complete) vs. <i>Time</i> with <i>Supply Pressure</i> (red) and <i>Position</i> (blue) traces during the <i>Quick Wizard</i> procedure.								

General Graph functionality

All graphs have some common functionality, including:

- Click-and-hold on any axis' legend to drag along the axis.
- Press the CTRL button and mouse drag to zoom/unzoom on the graph.
- Right-click menu: There is a menu available by right-clicking any axis that has three selections:
 - Tracking Enabled: Enables/disables tracking.
 - Update Resume Values: Store the axis scale for the *Tracking Enabled*. The next time *Tracking Enabled* is engaged, the tracking restores the axis to the stored scale instead the initial scale.
 - Zoom to Fit: Activates a function that sizes the graph to fit the selected display area.
- *Quick Wizard Log* Displays basic information about test run time and device, along with test-related messages and outcome.

Execute Quick Wizard Click to begin execution of configured items.

Execute Quick Wizard button

Run the Quick Wizard

To run the wizard:

AWARNING

This procedure moves the valve.



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

- 1. Place the system in Out of Service mode.
- 2. Click an item in the Procedure Name list or click Check All.
- 3. Click and individual line in the *Procedure Name* list and the items related to that appear in the *Parameter Area*.
- 4. Click Edit the settings and the tab related to the settings appears.
- 5. Enter values into fields as required.
- 6. Repeat steps 3, 4 and 5 as required.
- 7. Click Execute Quick Wizard and the wizard commences. If the procedure fails, use the log information window to get results and advice.
- 8. A Quick Setup Wizard report will be generated.
- 9. When finished, ensure the Transducer block is returned to Auto.



If the Transducer block is switched to Auto, it then follows the setpoint received from the AO block (if scheduled). If you fail to switch the Transducer block to Auto, then the valve will not be in control.

Full Wizard

Running the *Full Wizard* is one of three ways to set up the FF. When you decide to run the setup you can either run the entire wizard or pick and choose which components to run. This wizard has the advantage of accessing diagnostics test. This can be useful for troubleshooting and during initial commissioning. If you choose not to use the *Full Wizard*, you can use the components it accesses to configure components separately on the following tabs:

- Quick Start Configuration tab
- Find Stops tab
- Auto Tune tab

• Run *Diagnostics Start Step Test*, *Diagnostics Start Ramp Test*, *Diagnostics Start Signature Test* Alternately, you can use the *Quick Wizard*.



The valve must be Out-of-Service and isolated from the process during this process.



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

SVI FF REV3_1 - Online Parameter	× NEW SVIFF PC	(SVI3RE	V2) - Online	Parameter	×				MASO				8		
a Baker Hughes business	Tag: SV Man. ID:	1 FF REV3 0x44564	_1 14 T	ype. ID:	8				Device Device	ID: 4 Rev:	4564	440008 DD:	07310202 01 SW: 3.1.0.0 (CSC90378	<u> Se</u>
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															Execute Full Wizard

Figure 78 – Full Wizard Configuration

Buttons and Fields

	Procedure Area
No.	Displays the number of the procedure.
Procedure Name and checkbox	Displays the procedure as listed on the tab where fields are configured. Use the check- box to activate the procedure for use by the wizard.
Status	Displays a progress bar during execution for each selected item.
Check All	Click the checkbox to select/deselect all Procedure Name items. Parameter Area
	Parameter Area
No.	Displays a number for each parameter associated with the <i>Procedure Name</i> selected in the procedure area.
Parameter	Lists the parameters associated for the Full Wizard for the Procedure Name selected.
Value	Lists the parameter value read from the tab where it is configured.
Edit the settings Edit the settings button	Click the button and you are taken to the tab where the values are input. Return to the <i>Full Wizard</i> tab to continue the process.
Full Wizard Graph	Displays a graph of % (percentage of the procedure complete) vs. <i>Time</i> with <i>Supply Pressure</i> (red) and <i>Position</i> (blue) traces during the <i>Quick Wizard</i> procedure.
	General Graph functionality
	All graphs have some common functionality, including:
	 Click-and-hold on any axis' legend to drag along the axis.
	 Press the CTRL button and mouse drag to zoom/unzoom on the graph. Right-click menu: There is a menu available by right-clicking any axis that has three selections:
	 <i>Tracking Enabled</i>: Enables/disables tracking. <i>Update Resume Values</i>: Store the axis scale for the <i>Tracking Enabled</i>. The next time <i>Tracking Enabled</i> is engaged, the tracking restores the axis to the stored scale instead the initial scale. <i>Zoom to Fit</i>: Activates a function that sizes the graph to fit the selected display area.
Full Wizard Log	Displays basic information about test run time and device, along with test-related mes- sages and outcome.
Execute Full Wizard Execute Full Wizard button	Click to begin execution of configured items.

Run the Full Wizard

To run the wizard:

AWARNING

This procedure moves the valve.



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

- 1. Place the system in Out of Service mode.
- 2. Click an item in the Procedure Name list or click Check All.
- 3. Click and individual line in the *Procedure Name* list and the items related to that appear in the *Parameter Area*.
- 4. Click Edit the settings and the tab related to the settings appears.
- 5. Enter values into fields as required.
- 6. Repeat steps 3, 4 and 5 as required.
- 7. Click Execute Quick Wizard and the wizard commences. If the procedure fails, use the log information window to get results and advice.
- 8. When finished, ensure the Transducer block is returned to Auto.

CAUTION

If the Transducer block is switched to Auto, it then follows the setpoint received from the AO block (if scheduled). If you fail to switch the Transducer block to Auto, then the valve will not be in control.

10. Diagnostics

Diagnostics Signature Measurement: General Discussion

The Signature function is a component of the diagnostic function. This function protects the valve from degradation failure and reports on the condition of the control valve or the positioner by comparing the history of signature characterization. To accomplish this objective a positioner must have the ability to measure and retain data describing the characteristics of the control valve and the positioner.

Measurement procedures for signature of the control valve and the positioner force the control valve to move the stem position; thus the measurement procedures must be performed while the process is off line and the device is in Out of Service state.

The DTM has the ability to store locally, the standard actuator signature data. When connected to the SVI FF, the valve signatures can be retrieved from FF non-volatile memory and compared to the current valve position, output pressure and other process information with valve signatures to determine if there is a change in system performance.

CAUTION

Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

The FF with option supports three types of user signature functions:

- Diagnostics Start Step Test
- Diagnostics Start Ramp Test
- Diagnostics Start Signature Test

Additionally, you can view:

- Position Histogram
- Position Error Histogram

Diagnostics Start Step Test

Use this tab to configure and run a Step Test.

The *Step Test* produces a time vs. position graph where the valve is submitted to a stepped input. The graph can contain data for 2 to 60 seconds of data with data taken up to every 0.05 seconds. The step profile may contain multiple steps. To run a step profile, you must enter the starting position, the ending position, the pause between each step, the step size, and whether or not to measure both up and down steps.

The step test starts at the starting position and makes steps according to the *Step Size* field until the ending position is reached. For each step, the FF measures the position at even time intervals for the amount of time specified in *Time*. If *Both Ways* is specified, when the end position is reached, the procedure is repeated from the end position to the start position.

This test measures the step response characteristic of control valve system. There are four types of step response test:

Single Step	The single step test consists of a single step response test, with a start time, start point and end point for the test incremented by the step time.
Multiple Steps	The multiple step response test consists of a series of single step response tests, with new set point for each following test incremented by the step size, executed consecutively in the overall user-specified range. All individual single step tests use the same user-specified step size except the last one, which uses the step size of the remaining portion.
Pre-Defined Steps	This test consists of steps where step size and timing are configurable. See <i>Run Pre-Defined Steps</i> .
Custom	Displays an empty table below where you can add settings to customize a test. See <i>Run Custom: Step Test</i> .

The measurement parameter is the output signal of control valve system; the feedback signal of the device (*FINAL POSITION VALUE.Value*).

This procedure moves the valve. This results in loss of process control.



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

Audio Solution Tag: SVIFFF o Boker Hughes business Man. ID: Owd Image: SVIFFF Man. ID: Owd Image: SVIFFF RB-AUTO Image: SVIFFF Image: SVIFFF Image: SVIFFF Image: SVIFF Image: SVIFFF Image: SVIFFF Image: SVIFFF Image: SVIFF Image: SVIFFF Image: SVIFF Image: SVIFF Image: SVIFF Image: SVIFF Image: SVIFF Image: SVIFF Image: S	REV3_1 Type. ID: 8 445644 Type. ID: 8 0 AUTO OOS TB-MAN AUTO N rt Step Test Graph Results Step Test Configuration Current Position: 79.99	MAN OOS (A) Results	Device ID: 4456 Device Rev: 00	DD: 01	07310202 SW: 3.1.0.0 CSC90378	ġ.
O BOKEF HUGGIES DUSINESS Man. ID: 0x4 Image: Start Configuration RB-AUTO Image: Operation Device States Start Configuration Image: Operation Device States Start Configuration Image: Operation Device States Start St	A43644 Type, ID: 8 O AUTO OOS TB:MAN AUTO N rt Step Test Graph Results Numeric Step Test Configuration Current Position: 79.99 %	AAN OOS A	Device Rev: 0.	DD: 01 Connected Step Te Step T	SW: 3.1.0.0 CSC90378	
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Quick Start Configuration Star Device States Configuration S Calibration Cali	rt Step Test Graph Results Numeric Step Test Configuration Current Position: 79.99	Current Setpoin		Step Te Step T	stlog	^
Ramp Test Signature Test Signature Test Signature Test Signature Test Histograms Trends Posta Collection Oration Stroke Test - PST Data Collection Jentification Source Test Valve Network Settings Contact and Order Defaults Security Device Access Parameters Change Access Parameters Change Access Parameters Change Access Porcedures and Methods System Security Setting Log Configuration License	Single Step Multiple Step One Way Number of Points: Initial Time: Start Position End Position Step Time	S Pre-Define Both Ways Maximum 2 20 80 10 10 5	ed Steps O Custon s sec % sec	TB is in Startin Start	ests Type: Single Step Manual Mode. g Ostpont: 77.19% g Position: 77.24% 19: Supply Pressure 31.20 psi 19: The status of final Value is initialized. 20: Step 1: Statu Formers Cleared 31: Brournet actemes cleared 49: Ma Supply pressure observed: 31.67 psi 49: Ma Supply pressure observed: 31.67 psi 49: Ma Supply pressure observed: 31.65 % 32: Restore Brournet observed: 48.65 % 35: Main P current observed: 48.65 % 35: Main P current observed: 48.65 % 35: Main P current observed: 48.65 % 35: Restore Brournet observed: 48.65 % 35: Restore Brournet observed: 48.65 % 35: Restore Brournet observed: 48.05 % 40: Main Supply and Completed or of Points: 717 Test completed 5: Dompleted 5: Dompleted	%

Figure 79 – Diagnostics Start Step Test

Procedure Area

	Procedure Area
Current Position	Displays the current position as a percent of fully open or closed.
Current Setpoint	Displays the current setpoint as a percent.
Step Test Type	Use the radio buttons to select the test type:
	 Single Step: Displays fields to configure a One Way or Two Way test. See Run a Single Step Test. Multiple Steps: Displays fields to configure a One Way or Both Ways test where you can set Step Size during the test time. See Run a Multiple Steps Step Test. Pre-Defined Steps: Displays fields to configure a test where you can dictate settings for steps. See Run Pre-Defined Steps. Custom: Displays an empty table below where you can add settings to customize a test. See Run Custom: Step Test.
One Way	Click to conduct the test only from the Start Position to the End Position.

Both Ways	Click to conduct the test only from the <i>Start Position</i> to the <i>End Position</i> and back to the <i>Start Position</i> . The values of the <i>Start Position</i> and the <i>End Position</i> determine the direction of the valve stem movement. When the value of the <i>Start Position</i> is more than that of the <i>End Position</i> , the valve steps down in one way trip, then steps up at return trip, if <i>Both Ways</i> is used.
Initial Time	Enter the time after start is clicked to wait before commencing the actual test. This gives time for stabilization.
Start Position	Enter the position for the valve positioning before the test start.
End Position	Enter the final position for the valve positioning during the test.
Step Time	Enter the time to for each step during the test. The software then operates the test between the <i>Start Position</i> and <i>End Position</i> in this timeframe.
Step Size	Enter the size for each step during a <i>Multiple Steps</i> test.
Around Middle	Click to run the <i>Pre-Defined Steps</i> test centered on the middle of the test range (<i>Multi Steps</i> test only).
Around Current Setpoint	Click to run the <i>Pre-Defined Steps</i> test centered on the <i>Current Setpoint</i> (<i>Multi Steps</i> test only).
Up and Down/ Up/Down	Click one to run the test both ways or only one direction (Multi Steps test only).
Step Increase	Enter a percentage per each step. This is the step size, limited by <i>Max Step</i> , which along with the <i>Step Time</i> dictates the number of steps performed in the test range (<i>Multi Steps</i> test only).
Max Step	Enter a percentage for limiting the maximum step size per step of the test range (<i>Multi Steps</i> test only).
Custom Test table	Enter values for <i>No</i> . (number of steps), <i>Initial Time</i> , <i>Start Position</i> , <i>End Position</i> and <i>Step Time</i> per test execution line. You can add, rearrange and delete multiple lines of test actions to configure a test.
Step Test Log	Displays progress message, values and error messages as the test proceeds.
Step Test Graph	Displays graphical results as the test proceeds. The test status appears above the graph.
Start	Click to start the test. Updates appear in the Step Test Log.
Save	Click to save the results. You can load back the result in the selection <i>Show Saved Result</i> in Graph/Numeric tabs. See <i>Save Step Test Results</i> .
Export	Click and a dialog appears to export the results to an Excel file. See <i>Export Step Test Results.</i>

Run a Single Step Test



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

- 1. Ensure the system is in manual mode.
- 2. Click Single Step.

Massanailan	SVITT POSITION	E91		MA	ONEILAN PRODUCT	10	
o Boker Hughes business	Fag: 51/1 Man: 8D: 0+1765	73 Types HD 1	i	Des	ice ID: 0047450000 ice Rev: 02 DD:	07240383 01 GW : 21.0.0 C6C52340	
4 96 191 91 92 64 - 112 0	REAUTO AU	TO OOS TE MAN	AUTO MAN OO	\$ 1 .A) 🛃	Cores	betheil	
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Presture Range Presture Alams Tempersture Presture Alams Presture Alams Presture Alams Powpad Powpa		50er	Number of Points: postal Town Start Position Cod Position Stage Town	Maximum 2 10.00 90.00 8	v se se se se se	Days Testi Not Ella lad	- Portion 3.0 Time (Sec) 10.0 33.0 ure to icon out

Figure 80 – Diagnostics Start Step Test

- 3. Click One Way or Both Ways.
- 4. Enter values for Initial Time, Start Position, End Position, and Step Time and click

Start

The Step Test Log begins displaying test data. The results appear.

Masonailan	SVI FF POSITIONER			MASONEILAN PRODUCTS					
Musonellan	Tag: SVI07240383			Device ID: 4456440008 07240383					
a Baker Hughes business	Man. ID: 0x445644	Type. ID: 8	Device F	Rev 03	DD 01 3	W 3100C8093190			
赴这赴法者-四		DOS TEMAN AUTO MAN DO	A 能 #	(# M)	Connected				
P Quick Start Configuration		Start Step Test Graph Results No	neric Results						
Device States						The second se			
Postioner State		Step Test Configuration				shep Test Log and a to the Thir stapper provide to some your struct part			
Positioner Alert Log						20:14:23: Restore extremes pressure value			
F Irend and Position Setup	P	OursetDeaters 00.8	Count	and a	05.00	20: L4:40: Min IP current observed: 0.82 %			
S Device state		Carteni Pusitori Sola	a content s	edicare -	area at	20:14:23: Restore IP current extremes value			
Configuration						20: 01:11:12: Opisiading Data - Completed Number of Points: 354			
Concros Consiguration		CONTRACT CANNO				20:14:47: Step 2: Start Point 90.00%, End Point 30.00%			
E-su Postion		O Single Step Multip	e Steps - O Pre-	-Defined Steps	s Costom	20:14:49: Supply pressure extremes deared			
Contiguistion						20:15:05: Max Scopily pressure observed: 36.85 psi			
Travel Alerte						20:15:05: Min Supply pressure observed: 20.69 ps			
Fault State						20:15:06: Max IP current observed: 73.02 %			
La Discrete		C one V	by O Bot	in Ways		20:15:05: Min 3P current observed: 54,75 %			
Configuration		0.0000				20:15:12: Uploading Data - Completed			
Software Switche	5					Number of Points: 353			
Pressure	254					Step Test completed.			
i - 🎒 Pressure Range									
Pressure Alerts		Number of Po	atar Maximum						
1 - 🚳 Temperature		and the second se				Step Test: In Progress			
P Output		Initial Times	2	sec					
-X Extended RB Configurati	an	and a second	1000	2012		- 52 - Foster			
-X Extended TB Configurati	on	Start Position	10.00	56		100.4			
🕆 📣 Oiegnostic Alerts									
Alorts		End Position	98.00						
D Alerts									
LCD Display		Stop Teso	5	SEC.					
Calibration						P 99			
- X Find stops									
Auto sune									
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Disconting									
Chan Tert						ing the traction			
Runni Test		Cancel Ourrent step is	1 put of 2	Save	Export	10.0 20.0 20.0 40.0 Time (Sec)			
Signature Test						Press Ctrl and drag the mouse to zoom in or out			
Histograms									
- Conds									
There is a start									

Figure 81 – Diagnostics Step Test Complete: Single Step Both Ways

You can now Save Step Test Results or Export Step Test Results.

5. When finished, ensure the Transducer block is returned to Auto.



If the Transducer block is switched to Auto, it then follows the setpoint received from the AO block (if scheduled). If you fail to switch the Transducer block to Auto, then the valve will not be in control.
Single Step Graph Results

Use this tab to view numeric results. See *Single Step Numeric Results* for further explanation of screen components.



Figure 82 – Single Step Both Ways Graph Results

Buttons and Fields

General Graph functionality

All graphs have some common functionality, including:

- Click-and-hold on any axis' legend to drag along the axis.
- Press the CTRL button and mouse drag to zoom/unzoom on the graph.
- Right-click menu: There is a menu available by right-clicking any axis that has three selections:
 - Tracking Enabled: Enables/disables tracking.
 - Update Resume Values: Store the axis scale for the *Tracking Enabled*. The next time *Tracking Enabled* is engaged, the tracking restores the axis to the stored scale instead the initial scale.
 - Zoom to Fit: Activates a function that sizes the graph to fit the selected display area.

% vs. <i>Time (sec)</i> graph	 Left axis displays a scale for the percentage of step complete. Bottomaxis displays time. The red line represents the current test setpoint. The purple line represents the current test position. The navy blue line represents a saved test setpoint. The light blue line represents a saved test position.
Show Point	 Toggles the appearance of the data points on/off.
Show Point	
Save Save	Click to save the results. You can load back the result in the selection <i>Show Saved Result</i> in <i>Graph/Numeric</i> tabs.
Export	Exports the results as a .csv file. See Export Step Test Results for instructions.
Export	
Zoom Out -	Toggles the view out according to preset values to two times.
Zoom Out -	
Zoom In+ Zoom In +	Toggles the view in according to preset values to 50%.
Show Saved Results	Use the pulldown to select a results file and the graph is populated. See <i>Diagnostics Start Step Test</i> for instructions on how to create these files.

Single Step Numeric Results

See Single Step Numeric Results for further explanation.

rent Step Test Log	Saved Step Test Log
- 372077732 E00001: OINI0111	A Device Tao: 0047450008 03323031
vice Tag: 004745000803223031	Device ID: 0047450008 03223031
0323031	
p Tests	Step Tests
arting Setpoint: -4.00%	Starting Setpoint: -4.00%
arting Position: 0.79%	Starting Position: 0.79%
mber of Points: 600	Temperature 200
mperature: 22.09 °C	Telipelature: 22.09 %
	••••••
ep=1	Step#1
art Point 10.00%, End Point 90.00%	Start Point 10.00%, End Point 90.00%
6: 0.45 s	Td: 0.12 c
3-0.32e	T63: 0.33 s
x OverShoot: 1.81 %	Max OverShoot: 1.81 %
erage Error: 0.05 %	E Average Error: 0.05 %
iximum Supply Pressure: 49.40 psi	Maximum Supply Pressure: 49.40 psi
nimum Supply Pressure: 49.20 psi	Minimum Supply Pressure: 49.20 psi Maximum Achuster A Pressure: 21.20 psi
iximum Actuator A Pressure: 21.70 psi	Minimum Actuator A Pressure: 9.50 psi
andin Actuator A Pressure: 9.30 psi	
n#7	Step#2
art Point 90.00%. End Point 10.00%	Start Point 90.00%, End Point 10.00%
6: 0.60 s	T86: 0.60 s
: 0.15 s	Td: 0.15 s
3: 0.48 s	10.3; U.40 S Max OverShoot: 3: 29.%
erane Error: 0.10.%	Average Error: 0.10 %
ximum Supply Pressure: 49.40 psi	Maximum Supply Pressure: 49.40 psi
nimum Supply Pressure: 49.20 psi	Minimum Supply Pressure: 49.20 psi
ximum Actuator A Pressure: 19.10 psi	Maximum Actuator A Pressure: 19.10 psi
nimum Actuator A Pressure: 9.20 psi	 Minimum Actuator A Pressure: 9.20 bsi
Save Export	Show Saved Results: None

Figure 83 – Single Step Both Ways Numeric Results

Buttons and Fields

Results

Currents Step	Displays the results from a current step test. These results can be saved or exported.
Test Log	Displays the results from an historical step test accessed using the <i>Show Saved Results</i> pulldown.
Save Save	Click to save the results. You can load back the result in the selection <i>Show Saved Result</i> in <i>Graph/Numeric</i> tabs.
Export Export	Exports the results as a .csv file. See <i>Export Step Test Results</i> for instructions.
Show Saved	Use the pulldown to select a results file and the graph is populated. See Diagnostics

Show SavedUse the pulloown to select a resultsResultsStart Step Test for instructions on how to create these files. Use the pulldown to select a results file and the graph is populated. See *Diagnostics*

Run a Multiple Steps Step Test



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

- 1. Ensure the system is in manual mode.
- 2. Click Multiple Steps.



Figure 84 – Diagnostics Start Step Test: Multiple Steps

- 3. Click One Way or Both Ways.
- 4. Enter values for Initial Time, Start Position, End Position, and Step Time and click

Start

The Step Test Log begins displaying test data. The results appear.

Massansilan	SVI FE POSITIONED	2		MASONI	LILAN PR	ODUCTS	
Masonelian	Tag: SVI	0724030	3	Device I	D: 445844	0000	07240383
a Boker Hughes business	Man. ID. 0x445644	Type, ID, 8		Device P	Rev. 03	00 01	3W 3 100 C8C93190
a die 1992 die 1992 auf - 🚥	NB:AUTO AUTO	UOS TEMAN AUT	O MAN OUS	き 巻 同	ng 📾	Connected	d .
- 🥐 Quick Start Configuration	1	Start Step Test Gra	ph Besults - Nomeri	c Results			
a 🖓 Device States	1	Chan Trank Can Mar a	12.2				Charlen and and a second se
- Postsoner State		Step Year Conngue	acon.				Step restudg
I land and Restore Satur							20:92:52: Reatone extremes pressure velac 20:92:08: Max 0* current observed: 58,46,%
- Device State		Current Pr	initian: 10.02 5	· Gumente S	aniore	10.00 m	20+12:08: Min D* concert observed: 48: 32 %
an Configuration		1.000					20:40: 15: Uniteding Date - Completed
🗄 🌰 Control Configuration							Number of Pointe: 355
Position		Concession and		OPPA	Cettred Ster	e Craistan	20:42:10: 5060 10: 5060 Point 20.0016, Child Point 20.0016 20:12: 17: Supply projectory extraines deared
📔 📄 🛏 📣 Configuration		Conderes.		an avere			20:12:17:17: 17 content entremes deared
Position Alerts							2011/2013/ Plan Supply pressure absenced, 35,52 ps.
- 🖓 Travel Alerta							20:40:17: Rectore extremes pressure value
- was heult state			Commenter of	0.00	to Malazina		20:42:34: Max Dr current observed: 50.05 %
La was Discrete			Channe step	1000			20: 12: 17: Restore IP current extranes value
Consiguration							20112110: Operating Data Completion Number of Phones 194
Branchiste Divitioner							
Pressure Range							step fest competen.
Provine Alerty			Number of Points:	Hadman			
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1 -> Extended RB Configurate	en i			-			- SP - Paation
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i i interested							Construction of the state of Addition (1)

Figure 85 – Diagnostics Step Test Complete: Multiple Steps Both Ways

You can now Save Step Test Results or Export Step Test Results.

5. When finished, ensure the Transducer block is returned to Auto.



If the Transducer block is switched to Auto, it then follows the setpoint received from the AO block (if scheduled). If you fail to switch the Transducer block to Auto, then the valve will not be in control.

Multiple Steps Graph Results

Use this tab to view the graphical results and compare with a previous test. See *Single Step Graph Results* for further discussion of screen components.



Figure 86 – Multiple Steps Graph Results

Multiple Steps Numeric Results

Use this tab to view numeric results. See *Single Step Numeric Results* for further explanation of screen components.

irrent Step Test Log	Saved Step Test Log
itep Tests tar ting Setpoint: 60.00% tarting Position: 60.05% lumber of Points: 2700	Step Tests Starting Setpoint: 60.00% Starting Position: 60.05% El worker of Position: 2000
emperature: 22.41 °C	Temperature: 22.41 °C
oing Up Step Tests:	Going Up Step Tests:
taximum 786 - 516p 99: 0.496 Step 99: Start Point 85:00%, End Point 95:00% fimimum 176 - Step #2: 0.256 Step #2: Start Point 15:00%, End Point 25:00% verage T86: 0.376	Maximum T86 - Step =9: 0.49s Step =9: Start Point 65.00%, End Point 95.00% Minimum T86 - Step =2: 0.25s Step =2: Start Point 15.00%, End Point 25.00% Average T86: 0.37s
taximum Td - Step≠7: 0. 10s Step≠7: Start Point 65.00%, End Point 75.00% finimum Td: 0.0% Step#3: Start Point 45.00%, End Point 55.00% Step#3: Start Point 56.00%, End Point 65.00% Step#3: Start Point 55.00%, End Point 95.00% wreage Td: 0.0%	Maximum Td - Step≢7: 0.10s Step≢7: Start Point 65.00%, End Point 75.00% Minimum Td: 0.078 Step≢5: Start Point 55.00%, End Point 55.00% Step≢5: Start Point 55.00%, End Point 55.00% Step≢9: Start Point 85.00%, End Point 95.00% Average Td: 0.098
taximum TG3 - Step =9: 0.22s Step =9: Start Point 85.00%, End Point 95.00% finitum T63 - Step =2: 0.166 Step =2: Start Point 15.00%, End Point 25.00% verage T63: 0.159	Maximum T63 - Step ≠9: 0.22s Step ≠9: Start Point 85.00%, End Point 95.00% Minimum T63 - Step ≠2: 0.16s Step ≠2: Start Point 15.00%, End Point 25.00% Average T63: 0.19s
faximum Overshoot - Step #1: 4.97% Step #1: Start Point 5.00%, End Point 15.00% finimum Overshoot - Step #9: 0.00% Step #9: Start Point 85.00%, End Point 95.00% verage Overshoot: 2.85%	Maximum Overshoot - Step #1: 4.97% Step #1: Start Point 5.00%, End Point 15.00% Minimum Overshoot - Step #9: 0.00% Step #9: Start Point 85.00%, End Point 95.00% Average Overshoot: 2.85%
Save Export	Show Saved Results: None

Figure 87 – Multiple Steps Numeric Results

Run Pre-Defined Steps



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

- 1. Ensure the system is in manual mode.
- 2. Click Pre-Defined Steps.

Masonoilan	SVI FF POSITIONER		MASONEILAN PRODUCTS	8
Masonellan	Tag: SVI	07240383	Device ID: 4456440008	07240383
a Baker Hughes business	Man. ID: 0x445644	Type. ID: 8	Device Rev. 03 DD: 0	01 SW: 3 1.0.0 CSC93190
1. 注 上 注 点 - 田	BBAUTD AUTO	001 TEMAN AUTO MAN 005	🛆 🍏 💣 🧊 📄 🛛 Come	cded
Control Configuration Configuration		Start Step Test Graph Results - Barn Step Test Configuration Current Position: 10.06 Dingle Step Ortubal Around 1 Distant Times Number of Points Direct Time Step Time Step Time	A. M. Routh Correct Scipaint 10.00 %. Correct Scipaint 10.00 Steps O Producted Steps Correct Scipaint %. O Producted Steps Scipaint %. O Scipaint V %. Scipaint V %. Scipaint V %. Scipaint V %. Scipaint V	Step Test Lag Step Test Lag 94 20:41.51: Resize extremely pressure value 95:20:20:85: Real Transmit Unservation Stude 50:82.56: 50: 20:42.005: Run JP current observations value 20:42:05: Run JP current observations value 20:42:05: Run JP current observations value 20:42:05: Run JP current observations 20:42:07: Run JP current observation 20:42:07: Run JP current observations 20:42:07: Run JP current observation 20:42:07: Run JP curent observation 20:40:00:00:00:00:00:0
Diagnostics		Court Depart deput A	en ef a	-13 C
- Signature Test		Cares Construction		Press Cal and drag the mouse to accord in or out

Figure 88 – Diagnostics Start Step Test: Pre-Defined Steps

- 3. Click Around Middle or Around Current Setpoint.
- 4. Enter values for Initial Time, Max Step, Step Time and Step Increase and click

C	+	+	
3	Lai	ι.	

The current step in process appears and the *Step Test Log* begins displaying test data. The results appear.



Figure 89 – Diagnostics Step Test Complete: Pre-Defined Steps Around Middle

You can now Save Step Test Results or Export Step Test Results.

5. When finished, ensure the Transducer block is returned to Auto.



If the Transducer block is switched to Auto, it then follows the setpoint received from the AO block (if scheduled). If you fail to switch the Transducer block to Auto, then the valve will not be in control.

Pre-Defined Steps Graph Results

Use this tab to view the graphical results and compare with a previous test. See *Single Step Graph Results* for further discussion of screen components.



Figure 90 – Pre-Defined Steps Graph Results

Pre-Defined Steps Numeric Results

Use this tab to view numeric results. See *Single Step Numeric Results* for further explanation of screen components.

urrent Step Test Log	Saved Step Test Log	
************		*****
Date Executed: Aug 14 2013 Started: 11:58:34 AM By: 502077433 Location: Unknown Device Tag: SVI13130120 Device ID: 004745000813130120		Date Executed: Aug 10.2013 Started: 01:20:34 AM By: 502077433 Location: Unknown Device Tag: SVI
Step Tests Starting Setpoint: 10.00% Starting Position: -14.38% Number of Points: 80 Temperature: 23.69 ℃		Step Tests Starting Setpoint: 10.00% Starting Position: -14.38% Number of Points: 80 Temperature: 23.69 °C
******		*****
Going Up Step Tests: ###################################		Going Up Step Tests:
Maximum T86 - All steps are too small to estimate maximum T86 Minimum T86 - All steps are too small to estimate minimum T86 Average T86 - All steps are too small to estimate average T86		Maximum T86 - All steps are too small to estimate maximum T86 Minimum T86 - All steps are too small to estimate minimum T86 Average T86 - All steps are too small to estimate average T86
Maximum Td - All steps are too small to estimate maximum Td Minimum Td - All steps are too small to estimate minimum Td Average Td - All steps are too small to estimate average Td		Maximum Td - All steps are too small to estimate maximum Td Minimum Td - All steps are too small to estimate minimum Td Average Td - All steps are too small to estimate average Td
Maximum T63 - All steps are too small to estimate maximum T63 Minimum T63 - All steps are too small to estimate minimum T63 Average T63 - All steps are too small to estimate average T63		Maximum T63 - All steps are too small to estimate maximum T63 Minimum T63 - All steps are too small to estimate minimum T63 Average T63 - All steps are too small to estimate average T63
<pre>Maximum Overshoot : 0.00s Step#1: Start Point 50.00%, End Point 60.00% Step#1: Start Point 40.00%, End Point 50.00% Minimum Overshoot : 0.00s Step#1: Start Point 50.00%, End Point 60.00% Step#1: Start Point 40.00%, End Point 50.00% Average Overshoot: 0.00%</pre>	Ŧ	Maximum Overshoot : 0.00s Step#1: Start Point 50.00%, End Point 60.00% Step#4: Start Point 40.00%, End Point 50.00% Minimum Overshoot : 0.00s Step#1: Start Point 50.00%, End Point 60.00% Step#4: Start Point 40.00%, End Point 50.00% Average Overshoot: 0.00%
Save Export	Show Sav	ed Results: None

Figure 91 – Pre-Defined Steps Numeric Results

Run Custom: Step Test



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

- 1. Ensure the system is in manual mode.
- 2. Click Custom.



Figure 92 – Diagnostics Start Step Test: Custom Step

3. Enter values for No., Initial Time, Start Position, End Position, and Step Time

4. Right-click in the row and a menu appears to add rows or erase selected rows (*Custom Step Test Manage Rows*).



Figure 93 – Custom Step Test Manage Rows

- 5. Right-click and select **Insert Before** or **Insert After** or **Erase** to manage the test sequence.
- 6. Enter the data from step 2 for all subsequent steps.
- 7. Click Start . The current step in process appears and the Step

Test Log begins displaying test data. The results appear.

	MASO	NEILAN PRODU	JCTS	
240383	Device	ID 4456440008	3	07240383
8	Device	Rev: 03 D	D: 01	SW: 3.1.0.0 CSC93190
N AUTO MAN	005 🔺 🛃	88	Connected	
it Graph Results Configuration Iment Position:	9.03 % Curren	t Setpoint: 10	00 %	Step Test Log 21:17-44: Restore extremes pressure value 21:18:01: Nn IP current observed: 53:17 % 21:18:01: Nn IP current observed: 53:17 % 21:17:44: Restore IP current extremes value 21:10:10: Uploading Data - Completed Number of Testore IP Surent extremes value 21:10:00: Step & Pisart Point 0.00%, End Point 10.00% 21:10:00: Step & Pisart Point 0.00%, End Point 10.00%
Number	of Points: Maximum	× 1		21:18:10: IP current extremes devined 21:18:26: Max Supply pressure observed: 37.17 psi 21:10:30: Max Supply pressure observed: 36.63 psi 21:18:10: Resture extremes pressure value
. Initial Time [s]	Start Position [%]	End Position [%]	Step Time	21: 18:25: Max IP current observed: 60.62 % 21: 18:25: Min IP current observed: 15:86 %
2	10	15.5	5	21:18:10: Restore IP current extremes value
2	15.5	10	5	21:18:33: Uploading Data - Completed
2	10	4.5	5	Humber of Ports: 535
2	4.5	10	5	Step Test completed.
2	10	20	5	
2	20	10	5	
2	10	0	5	Step Test: Completed
srt	-	Save	Export	Position 20.0 20.0 20.0 30 100 100 100 100 100 100 100
	tart	tart	tart Save	tart Save Export

Figure 94 – Diagnostics Step Test Complete: Custom Step

You can now Save Step Test Results or Export Step Test Results.

8. When finished, ensure the Transducer block is returned to Auto.



If the Transducer block is switched to Auto, it then follows the setpoint received from the AO block (if scheduled). If you fail to switch the Transducer block to Auto, then the valve will not be in control.

Custom Step Graph Results

See Single Step Graph Results for further explanation.



Figure 95 – Custom Step Graph Results

Custom Step Numeric Results

Use this tab to view numeric results. See *Single Step Numeric Results* for further explanation of screen components.

**************************************	**************************************
Date Executed: Aug 14 2013 Started: 01:32:25 PM By: 502077433 Location: Unknown Device Tag: SVI 13130120 Device Tag: SVI 13130120 Step Tests 13130120 Starting Setpoint: 50.00% Starting Position: -14.40% Number of Points: 80 Temperature: 23.85 °C ************************************	Date Executed: Aug 04 2013 Started: 11:32:20 PM By: 502077433 Location: Unknown Device Tag: SVI13130120 Device ID: 004745000813130120 Step Tests Starting Setpoint: 50.00% Starting Position: -14.40% Number of Points: 80 Temperature: 23.85 °C
by:sucurr433 Location: Unknown Device Tag: SVI	By: 50/2077433 Location: Unknown Device Tag: SVI13130120 Device ID: 004745000813130120 Step Tests Starting Setpoint: 50.00% Starting Position: -14.40% Number of Points: 80 Temperature: 23.85 °C
Device ID: 004745000813130120 Estep Tests Starting Setpoint: 50.00% Starting Position: -14.40% Number of Points: 80 Temperature: 23.85 °C ************************************	Device 1ag: SVI
Evice 10: 004743000813130120 Step Tests Starting Setpoint: 50.00% Starting Position: -14.40% Number of Points: 80 Temperature: 23.85 °C ************************************	Step Tests Starting Setpoint: 50.00% Starting Position: -14.40% Number of Points: 80 Temperature: 23.85 °C
Exep Tests Starting Setpoint: 50.00% Starting Position: -14.40% Number of Points: 80 Temperature: 23.85 °C ************************************	Step Tests Starting Setpoint: 50.00% Starting Position: -14.40% Number of Points: 80 Temperature: 23.85 °C
Step Tests Starting Setpoint: 50.00% Starting Position: -14.40% Number of Points: 80 Temperature: 23.85 °C ************************************	Step Tests Starting Setpoint: 50.00% Starting Position: -14.40% Number of Points: 80 Temperature: 23.85 °C
Starting Setpoint: 50.00% Starting Position: -14.40% Number of Points: 80 Temperature: 23.85 °C ************************************	Starting Setpoint: 50.00% Starting Position: 14.40% Number of Points: 80 Temperature: 23.85 °C
Starting Position: -14.40% Number of Points: 80 Temperature: 23.85 °C ************************************	Starting Position: -14.40% Number of Points: 80 Temperature: 23.85 °C
Number of Points: 80 Temperature: 23.85 ℃ ************************************	Number of Points: 80 Temperature: 23.85 ℃ ************
Temperature: 23.85 °C	Temperature: 23.85 °C
**************************************	***
Going Up Step Tests:	
*****	Going Up Step Tests:

Maximum T86 - All steps are too small to estimate maximum T86	Maximum T86 - All steps are too small to estimate maximum T86
Minimum T86 - All steps are too small to estimate minimum T86	Minimum T86 - All steps are too small to estimate minimum T86
Average T86 - All steps are too small to estimate average T86	Average T86 - All steps are too small to estimate average T86
Maximum Td - All steps are too small to estimate maximum Td	Maximum Td - All steps are too small to estimate maximum Td
Minimum Td - All stens are too small to estimate minimum Td	Minimum Td - All steps are too small to estimate minimum Td
Average Td - All steps are too small to estimate average Td	Average Td - All steps are too small to estimate average Td
······································	
Maximum T63 - All steps are too small to estimate maximum T63	Maximum T63 - All steps are too small to estimate maximum T63
Minimum T63 - All steps are too small to estimate minimum T63	Minimum T63 - All steps are too small to estimate minimum T63
Average T63 - All steps are too small to estimate average T63	Average T63 - All steps are too small to estimate average T63
Maximum Overshoot : 0.00s	Mayimum Quarchast + 0,00c
Sten#1: Start Point 50,00%, End Point 60,00%	Step #1: Start Point 50 00% End Point 60 00%
Sten#4: Start Point 40.00%, End Point 50.00%	Step#4: Start Point 30:00 %, End Point 50:00 %
Minimum Overshoot : 0.00s	Minimum Overshoot : 0.00s
Step#1: Start Point 50.00%, End Point 60.00%	Step#1: Start Point 50.00%. End Point 60.00%
Step#4: Start Point 40.00%, End Point 50.00%	Step#4: Start Point 40.00%, End Point 50.00%
Average Overshoot: 0.00%	
Save Export Show	Saved Results: None

Figure 96 – Custom Step Numeric Results

Save Step Test Results

See Save Step Test Results.

Export Step Test Results

See Export Step Test Results.

Diagnostics Start Ramp Test

Use this tab to configure and run a Ramp Test.



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.



Figure 97 – Diagnostics Start Ramp Test

Buttons and Fields

Ramp Test Configuration

- Current Position Displays the current position as a percent of fully open or closed.
- *Current Setpoint* Displays the current setpoint as a percent.

Ramp Test Type	Use the radio buttons to select the test type:
	 Single Ramp: Displays fields to configure a One Way or Two Way test. See Run a Single Step Test.
	• <i>Custom</i> : Displays an empty table below where you can add settings to customize a test. See <i>Run Custom: Ramp Test</i> .
One Way	Click to conduct the test only from the Start Position to the End Position.
Both Ways	Click to conduct the test only from the <i>Start Position</i> to the <i>End Position</i> and back to the <i>Start Position</i> . The values of the <i>Start Position</i> and the <i>End Position</i> determine the direction of the valve stem movement. When the value of the <i>Start Position</i> is more than that of the <i>End Position</i> , the valve steps down in one way trip, then steps up at return trip, if <i>Both Ways</i> is used.
Initial Time	Enter the time after start is clicked to wait before commencing the actual test. This gives time for stabilization.
Start Position	Enter the position for the valve positioning before the test start.
End Position	Enter the final position for the valve positioning during the test.
Ramp Time	Enter the time for the ramp to run.
Ramp Rate	Enter the rate at which upward setpoint changes are acted on in Manual mode, in PV units per second. If the ramp rate is set to zero, then the setpoint is used immediately. For control blocks, rate limiting applies in Auto, Cas and RCas modes.
	The Setpoint from another function block or remote application can also be limited to change at a configurable ramp rate.
Ramp Test Log	Displays progress message, values and error messages as the test proceeds.
<i>Ramp Test</i> Graph	Displays graphical results as the test proceeds. The test status appears above the graph.
Start	Click to start the test. Updates appear in the Ramp Test Log.
Save	Click to save the results. You can load back the result in the selection <i>Show Saved Result</i> in <i>Graph/Numeric</i> tabs.
Export	Click and a dialog appears to export the results to an Excel file. See <i>Export Ramp Test Results.</i>

Run Single Ramp Test



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

- 1. Ensure the system is in manual mode.
- 2. Click Single Ramp.



Figure 98 – Diagnostics Start Ramp Test

- 3. Click One Way or Both Ways.
- 4. Enter values for *Initial Time*, *Start Position*, *End Position*, *Ramp Time*, *Ramp Rate* and click The *Ramp Test Log* begins displaying test data.

Start



Figure 99 – Diagnostics Ramp Test Complete: Single Ramp Both Ways

You can now Save Ramp Test Results or Export Ramp Test Results.

5. When finished, ensure the Transducer block is returned to Auto.



If the Transducer block is switched to Auto, it then follows the setpoint received from the AO block (if scheduled). If you fail to switch the Transducer block to Auto, then the valve will not be in control.

Run Custom: Ramp Test



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

- 1. Ensure the system is in manual mode.
- 2. Click Custom and the table appears below to enter multiple test steps.



Figure 100 – Diagnostics Start Custom Test

3. Enter values for Initial Time, Start Position, End Position, Ramp Time, and Ramp Rate.

4. Right-click in the row and a menu appears to add rows or erase selected rows (*Custom Ramp Test Manage Rows*).

Initia	l Time	Start Position	End Position	Ramp Time	Ramp Rate
2		10.00	99.00	8	10
	Inse	rt Before			
	Inse	rt After			
	Eras	e			

Figure 101 – Custom Ramp Test Manage Rows

- 5. Right-click and select Insert Before or Insert After or Erase to manage the test sequence.
- 6. Enter the data from step 2 for all subsequent steps.
- 7. Click Start . The Ramp Test Log begins displaying test data.

Test C	onfiguration	0.01 % Curre	ent Setpoint: -16	5.00 %	Ramp Test Log 23:36:09: Min Actuator B Pressure Observed: 24:67 psi 23:36:09: Max IP Current Observed: 66:38 % 23:36:09: Min IP Current Observed: 66:19 % 23:36:10: Supply pressure extremes restored 23:36:10: IP current extremes restored
		le Ramp	O Custom		Number of Points: 2340 TB remains in Manual mode as requested
	Numbe	r of Points: Maxim	um 🗸		Ramp: 1 Maximum Error: 3.12 % Average Error: 2.10 %
No.	Initial Time [s]	Start Position [%]	End Position [%]	Ramo Time	Ramp: 2 Maximum Error: 0.90 %
1	5	5	95	30	Average Error: 0.45 %
2	5	95	5	30	
					- SP: % - Position: %
Start			Save	Export	0

Figure 102 – Diagnostics Ramp Test Complete: Custom

You can now Save Ramp Test Results or Export Ramp Test Results.

8. When finished, ensure the Transducer block is returned to Auto.



If the Transducer block is switched to Auto, it then follows the setpoint received from the AO block (if scheduled). If you fail to switch the Transducer block to Auto, then the valve will not be in control.

Save Ramp Test Results

See Save Ramp Test Results.

Export Ramp Test Results

See Export Ramp Test Results.

Diagnostics Ramp Test Graph Results



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

Use this tab to view the graphical results.



Figure 103 – Diagnostics Ramp Test Graph Results

Buttons and Fields

General Graph	All graphs have some common functionality, including:				
functionality	 Click-and-hold on any axis' legend to drag along the axis. 				
	 Press the CTRL button and mouse drag to zoom/unzoom on the graph. 				
	 Right-click menu: There is a menu available by right-clicking any axis that has three selections: 				
	- Tracking Enabled: Enables/disables tracking.				
	 Update Resume Values: Store the axis scale for the Tracking Enabled. The next time Tracking Enabled is engaged, the tracking restores the axis to the stored scale instead the initial scale. Zoom to Fit: Activates a function that sizes the graph to fit the selected 				
	display area.				
Unit name	Displays the name of the SVI FF unit.				
Setpoint	Displays the setpoint.				
Actual Up	Shows the distance up for valve position.				
Actual Down	Shows the distance down for valve position.				
Show Position over time	Toggles the graph to the right to show AP versus Time instead of AP versus Setpoint.				
Show Position Over Time					
Show Grid	Toggles the grid on for all three graph areas.				
Show Grid					
Setpoint vs. Error graph	Displays a graph of the setpoint versus the calculated error.				
AP (Actual Position) vs. Setpoint or Time graph	 Displays a graph of the valve position versus the setpoint or versus time. Left axis displays a scale for the counts. Bottom axis displays time. The red line represents the current test setpoint. The brown line represents the current AP up position. The orange line represents the current test setpoint. The blue line represents the current test setpoint. The green line represents the saved test AP up position. The orange line represents the saved test AP up position. 				
Save	Click to save the results. You can load back the result in the selection <i>Show Saved Result</i> in <i>Graph/Numeric</i> tabs.				
Export	Exports the results as a .csv file. See <i>Export Step Test Results</i> for instructions.				

Export

Zoom Out - Zoom Out -	Toggles the view out according to preset values to two times.
Zoom In + Zoom In +	Toggles the view in according to preset values to 50%.
Show Saved Results	Use the pulldown to select a results file and the graph is populated. See <i>Diagnostics Start Step Test</i> for instructions on how to create these files.

Save Ramp Test Results

Save

Click

and the test data is saved in a proprietary format.

Export Ramp Test Results

1. Click **Export** and the Save As dialog appears.

The software adds a default file name (*Export Test Results*) in .csv format.

🚰 Save As		×
Savejn:	🗈 Documents 🔹 🐨 📴 🖽	
Recent Places Pesktop Desktop Libraries Computer Network	Name Cage Machine Stuff LabVIEW Data Cage Machine Stuff LabVIEW Data Correct Solutional Instruments Svi2FFDTM Video Mask Projects	Date modified 4/14/2012 7:24 3/26/2013 4:56 5/2/2012 12:12 5/16/2012 5:02 6/2/2013 10:25 4/27/2012 9:52 //2/2013 9:52

Figure 104 – Export Test Results

2. Edit the file name, if required, navigate to a directory and click Save

Diagnostics Ramp Test Numeric Results

Use this tab to view log results.



Figure 105 – Diagnostics Ramp Test Numeric Results

See Save Ramp Test Results and Export Ramp Test Results.

Buttons and Fields

Currents Ramp Displays the results from a current step test. These results can be saved or exported. *Test Log*

Saved RampDisplays the results from an historical step test accessed using the Show SavedTest LogResults pulldown.

Save

Click to save the results. You can load back the result in the selection *Show Saved Result* in *Graph/Numeric* tabs.

Save



Exports the results as a .csv file. See *Export Step Test Results* for instructions.

Export

Show SavedUse the pulldown to select a results file and the graph is populated. See DiagnosticsResultsStart Step Test for instructions on how to create these files.

Diagnostics Start Signature Test

Use this tab to configure and run a Signature Test.

Use the *Diagnostics Start Signature Test* tab to perform diagnostic tests, and displays test results in the *Graph Results* tab. Additionally, valve parameters including, *Position* and *Pressure* appear for reference in a graph on the run tab.

The *Standard Actuator Signature* test is a response time test that measures the time for the valve to go from full closed to full open and the time for the valve to go from full open to full closed. For an FF this test measures the friction, spring range and response time.

During the *Standard Actuator Signature* test the positioner is slowly moved from the starting position to the ending position and back and the two curves (up and down) are measured and displayed in the *Graph Results* graph.

Measures and saves control valve static characteristic data. The input measuring parameter is output pressure (*MEAS_PRESS_AIR*); and the output parameter is the feedback signal (*FINAL_POSITION_VALUE.Value*).

This procedure moves the valve. This results in loss of process control.

Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.



This procedure moves the valve. This results in loss of process control.

CAUTION

Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

Note: During both Open and Closed Loop tests the actual valve range of motion will be somewhat greater than the configured test range.



Figure 106 – Diagnostics Start Signature Test

Buttons and Fields

Signature Type

Open Loop	Use the open loop signature to ramp the pressure smoothly, at a constant rate and measure position and pressure while the valve position moves from the start to the end of the test. During this movement, the position and actuator pressure is measured frequently and saved in the positioner. This data is then read from the device and plotted to show a valve signature.
Closed Loop	Use the closed loop to change the position (setpoint) at a fixed rate from the starting position to the ending position. During this movement, the position and actuator pressure is measured frequently and saved in the positioner. This data is then read from the device and plotted to show a valve signature.
	Direction
One Way	Click to conduct the test only from the Start Position to the End Position.
Both Ways	Click to conduct the test only from the <i>Start Position</i> to the <i>End Position</i> and back to the <i>Start Position</i> . The values of the <i>Start Position</i> and the <i>End Position</i> determine the direction of the valve stem movement. When the value of the <i>Start Position</i> is more than that of the <i>End Position</i> , the valve steps down in one way trip, then steps up at return trip, if <i>Both Ways</i> is used.

Number of Points	 Use the pulldown to select the number of data points to gather during the test: <i>Maximum;</i> The test is run and the software gathers a all sampling data. <i>500:</i> The DTM gathers one data point per every two sampling points. <i>300:</i> The DTM gathers one data point per every three sampling points. <i>100:</i> The DTM gathers one data point per every ten sampling points.
Start Position	Enter the position for the valve positioning before the test start.
End Position	Enter the final position for the valve positioning during the test.
Ramp Time	Enter the time for the ramp to run.
Ramp Rate	Enter the rate at which upward setpoint changes are acted on in Man mode, in PV units per second. If the ramp rate is set to zero, then the setpoint is used immediately. For control blocks, rate limiting applies in Auto, Cas and RCas modes.
	The Setpoint from another function block or remote application can also be limited to change at a configurable ramp rate.
Signature Test Log	Displays progress message, values and error messages as the test proceeds.
<i>Signature Test</i> Graph	Displays graphical results as the test proceeds. The test status appears above the graph.
Start	Click to start the test. Updates appear in the Signature Test Log.
Save	Click to save the results. You can load back the result in the selection <i>Show Saved Result</i> in <i>Graph/Numeric</i> tabs. See <i>Save Signature Test Results</i> .
Export	Click and a dialog appears to export the results to an Excel file. See <i>Export Signature Test Results.</i>

Run Loop Test



Procedures (e.g. Find Stops, Auto Tune, Step Test, Ramp Test, Signature) should **NOT** be invoked if the ValVue sequencer is running.

- 1.Ensure the system is in manual mode.
- 2. Click Open or Closed Loop.



Figure 107 – Diagnostics Start Closed Loop Test

- 3. Click One Way or Both Ways.
- 4. Use the pulldown to select the number of points to gather.

5. Enter values for *Start Position, End Position, Ramp Time, Ramp Rate* and click

The Estimated Time appears and the Signature Test Log begins displaying test data.

nature Test (Configuration			Signature Test Log	
Signature Ty	pe			20:58:35: Signature 1: Start Point 5.00%, End Point 95.00%	
-				20:58:35: Supply pressure extremes cleared	
() Open Loop	Closed Loop		21:01:05: Max Supply Pressure Observed: 37.27 psi	
				21:01:05: Min Supply Pressure Observed: 35.09 psi	
				21:01:05: Max Actuator A Pressure Observed: 33.36 ps 21:01:05: Min Actuator A Pressure Observed: -2.07 ps	
Direction				21:01:06: Max IP Current Observed: 64.90 %	
	0.000			21:01:06: Min IP Current Observed: 43.55 %	
	O One way	O Both Ways		21:01:06: Supply pressure extremes restored 21:01:06: IP current extremes restored	
				21:03:41: Uploading Data - Completed	
		Market Street Street		Interval: 60ms	
	Number of Points:	Maximum		Number of Points in second direction: 846	
				Number of Points: 1692	
	Initial Time:	5 sec		Signature Test completed	
				Signature rest completed	
	Start Position	5.00		***************************************	
	Start Postobili.				
		05.00		Signature Test: Completed	
	End Position:	95.00 %			_
				Position: %	
Dama Tima	45.00	Pamp Pate: 2.00	96.10	 Actuator Pressure: psi 	
Ramp time:	sec sec	Kump Kute.	1413		
				100 -	40.0
					10.0
					20.0
				» / · · · ·	
					0.0
				0	
					-20.0
				50 100 150 200 250 200	

Figure 108 – Diagnostics Signature Test Complete: Closed Loop Both Ways

You can now Save Signature Test Results or Export Signature Test Results.

6. When finished, ensure the Transducer block is returned to Auto.



If the Transducer block is switched to Auto, it then follows the setpoint received from the AO block (if scheduled). If you fail to switch the Transducer block to Auto, then the valve will not be in control.

Diagnostics Signature Test Graph Results

Use this tab to view the graphical results.



Figure 109 – Diagnostics Signature Test Graph Results

Buttons and Fields

General Graph functionality

All graphs have some common functionality, including:

- Click-and-hold on any axis' legend to drag along the axis.
- Press the CTRL button and mouse drag to zoom/unzoom on the graph.
- Right-click menu: There is a menu available by right-clicking any axis that has three selections:
 - Tracking Enabled: Enables/disables tracking.
 - Update Resume Values: Store the axis scale for the *Tracking Enabled*. The next time *Tracking Enabled* is engaged, the tracking restores the axis to the stored scale instead the initial scale.
 - Zoom to Fit: Activates a function that sizes the graph to fit the selected display area.

Show Grid	Toggles the grid on for all three graph areas.
Show Grid	
Actual Up	Shows the distance up for valve position.
Actual Down	Shows the distance down for valve position.
Actual Position vs Friction (kPa)	Displays a graph of actual position versus friction.
Slope vs. Pressure	Displays a graph of the slope of the pressure curve versus pressure.
AP (Actual Position) vs. Setpoint or Time graph	 Displays a graph of the valve position versus the setpoint or versus time. Left axis displays a scale for the counts. Bottom axis displays time. The red line represents the current test setpoint. The brown line represents the current AP up position. The orange line represents the current test setpoint. The blue line represents the current test setpoint. The green line represents the saved test AP up position. The orange line represents saved test AP down position.
Save Save	Click to save the results. You can load back the result in the selection <i>Show Saved Result</i> in <i>Graph/Numeric</i> tabs.
Export Export	Exports the results as a .csv file. See <i>Export Step Test Results</i> for instructions.
Zoom Out - Zoom Out -	Toggles the view out according to preset values to two times.
Zoom In+ Zoom In +	Toggles the view in according to preset values to 50%.
Load From DTM Storage	Use the pulldown to select a results file and the graph is populated. See <i>Diagnostics Start Step Test</i> for instructions on how to create these files.

Save and Store In Device

Save and Sto	ore In Device		
€ Baseline	C Custom	C Current	Save

Radio buttons

Click one of the radio buttons to select the type:

- *Baseline*: Saves the result as a baseline curve in the device. You can load a saved signature test from device to the UI and compare to the current test.
- *Custom*: Saves the result as a custom curve in the device. This can be accessed for use at a later time.
- Current: Saves the result as the current curve for use by the device. Save Current is only available for SVI FF REV02/REV01 device.
 SVI FF REV03 device can automatically save the results as current curve, so no Save Current radio button for REV03 device.

Once selected, click Save

The file is saved in the data storage location as set using the *Saved Data Settings* fields in *Log Configuration*.

Load From Device

Load From Device							
€ Baseline	C Custom	C Current	Load				

Radio buttons

Click one of the radio buttons to select the type:

- Baseline: Opens a dialog to select an existing baseline curve.
- Custom: Opens a dialog to select an existing custom curve.
- Current: Opens a dialog to select an existing current curve for use by the device.

Once selected, click Save

The file is saved in the data storage location as set using the *Saved Data Settings* fields in *Log Configuration*.

Save Signature Test Results

See Save Signature Test Results.

Export Signature Test Results

1. Click and the Save As dialog appears. The software adds a default file name (*Export Test Results*) in .csv format.



Figure 110 – Export Test Results

2. Edit the file name, if required, navigate to a directory and click Save .

Diagnostics Signature Test Numeric Results

Use this tab to view log results.

rrent Signature Test Log	Saved Signature Test Log
ate Executed: Oct 29 2013 Started: 10:59:11 AM (r: 50207432 Location: Unknown evice Tag: 0047450008 0332031 evice ID: 0047450008 0332031 gnature Tests tarting Settopint: 0.37% tarting Settopint: 0.37% tarting Settopint: 0.37% tarting Position: 0.18% umber of Points: 669 meperature: 37.29 °C taximum Friction: 12.88% verage Friction:	Date Executed: Oct 11 2013 Started: 11:59:00 AM By: 502077432 Location: Unknown Device Tag: 0047450008 03323031 Device ID: 0047450008 03323031 Signature Tests Starting Repoint: 0.37% Starting Position: 0.18% Number of Points: 669 Temperature: 37.28 °C Maximum Friction: 12.88% Average Friction: 12.88% Upper Spring Range: 7.94 psi Start Point 5.00%, End Point 95.00% Maximum Supply Pressure: 49.40 psi Maximum Supply Pressure: 49.40 psi Maximum Actuator A Pressure: 4.50 psi

Figure 111 – Diagnostics Signature Test Numeric Results

See Save Signature Test Results and Export Signature Test Results.

Buttons and Fields

Currents Ramp Test Log	Displays the results from a current step test. These results can be saved or exported.
Savee Ramp Test Log	Displays the results from an historical step test accessed using the Show Saved Results pulldown.
Save Save	Click to save the results. You can load back the result in the selection <i>Show Saved Result</i> in <i>Graph/Numeric</i> tabs.
Export	Exports the results as a .csv file. See <i>Export Signature Test Results</i> for instructions.
Export	
Show Saved Results	Use the pulldown to select a results file and the graph is populated. See <i>Signature Test</i> for instructions on how to create these files.
Position Histogram

There are two tabs available in this area:

- Position Histogram
- Position Error Histogram

Position Histogram

Use this tab to see a position histogram, see how many cycles are spent in each 5% position increment and to see and reset total operating time for the histogram.



Figure 112 – Diagnostics Position Histogram: Position Histogram Tab

Buttons and Fields

Position Histogram (%)	Display a trace of the position histogram.
Closed - 5%95% Open	Displays how many macro cycles the valve was in different position segments. The counters increase only if the device is under control - the transducer block is in AUTO mode and the quality of the set point is GOOD.
Operating Time Threshold	Enter a time in hours which the software waits before presenting the histogram. In process control applications, the valve follows the relatively slow change of the process setpoint. The positioner collects information all the time. In some cases data is collected when the valve is in transition from one position to another (e.g. during start up or shut down). The small amount of collected data may not be representative of the actual valve/positioner performance and may confuse the interpretation of the results. In order to receive an adequate picture of the valve performance, define an <i>Operating</i> <i>Time Threshold</i> . For a continuously operating valve, an <i>Operating Time Threshold</i> of several hours may be recommended.
Total Operating Time	Displays the running operating time for the positioner since the last reset or start of operations.
Reset percentage of Position Histogram	Click this button to reset the data collection. This can be used, for example, if the valve has been serviced.

Position Error Histogram

Use this tab to see the *Position Error* histogram, which shows the valve position error in different segments.



Figure 113 – Diagnostics Position Histogram: Position Error Histogram Tab

Buttons and Fields

Position Histogram (%)	Display a trace of the position error histogram.
Closed - 5%95% Open	Displays how many macro cycles the valve was in different position segments. The counters increase only if the device is under control - the transducer block is in AUTO mode and the quality of the set point is GOOD.
Operating Time Threshold	Enter a time in hours which the software waits before presenting the histogram. In process control applications, the valve follows the relatively slow change of the process setpoint. The positioner collects information all the time. In some cases data is collected when the valve is in transition from one position to another (e.g. during start up or shut down). The small amount of collected data may not be representative of the actual valve/positioner performance and may confuse the interpretation of the results. In order to receive an adequate picture of the valve performance, define an <i>Operating</i> <i>Time Threshold</i> . For a continuously operating valve, an <i>Operating Time Threshold</i> of several hours may be recommended.
Total Operating Time	Displays the running operating time for the positioner since the last reset or start of operations.
Reset percentage of Position Error Histogram	Click this button to reset the data collection. This can be used, for example, if the valve has been serviced.

Trends Information Presentation

Use this area, comprised of four tabs:

- Two to view travel trends (Travel Accumulation Trend A and B).
- Two to view cycle trends (Cycle Counter Trend A and B).

Travel Accumulation Trend A and B

Use these two tabs to track valve travel trends.



Figure 114 – Diagnostics Trend Information Presentation: Travel Accumulation Trend A Tab

Buttons and Fields

Yearly Travel Accumulation Trend (%)	Displays the travel accumulation for the previous full year period. The value increments when the magnitude of the change exceeds the <i>Dead Band</i> . Below the graph is a total for the last four periods previous to the one on the graph.
Monthly Travel Accumulation Trend (%)	Displays the travel accumulation for the previous full month period. Below the graph is a total for the last four periods previous to the one on the graph.
Weekly Travel	Displays the travel accumulation for the previous full week period.
Accumulation Trend (%)	Below the graph is a total for the last four periods previous to the one on the graph.
Daily Travel	Displays the travel accumulation for the previous full day period.
Accumulation Trend (%)	Below the graph is a total for the last four periods previous to the one on the graph.
Alert Bar	Displays the current state of the accumulated travel alert. See <i>Travel Alarms</i> for information on how to clear alarms.
Remaining Years/ Expected Day	Display that indicates when the travel accumulation is expected to go into alert.
Remaining Months/ Expected Day	Display that indicates when the travel accumulation is expected to go into alert.
Remaining Weeks⁄ Expected Day	Display that indicates when the travel accumulation is expected to go into alert.
Remaining Days/ Expected Day	Display that indicates when the travel accumulation is expected to go into alert.

Cycle Counter Trend A and B

Use these two tabs to track valve cycle trends.



Figure 115 – Diagnostics Trend Information Presentation: Cycle Counter Trend A Tab

Buttons and Fields

Yearly Cycle Counter (Counts)	Displays the cycle counter for the previous full year period. The value increments when the magnitude of the change exceeds the <i>Dead Band</i> .
	Below the graph is a total for the last four periods previous to the one on the graph.
Monthly Cycle	Displays the cycle counter for the previous full month period.
Counter (Counts)	Below the graph is a total for the last four periods previous to the one on the graph.
Weekly Cycle	Displays the cycle counter for the previous full week period.
Counter (Counts)	Below the graph is a total for the last four periods previous to the one on the graph.

Daily Cycle Counter (Counts)	Displays the cycle counter for the previous full day period. Below the graph is a total for the last four periods previous to the one on the graph.
Alert Bar	Displays the current state of the cycle counter alert. See <i>Cycle Counter A and B Alerts Tab</i> for information on how to reset.
Remaining Years/ Expected Day	Display that indicate when the cycle counter is expected to go into alert.
Remaining Months/ Expected Day	Display that indicate when the cycle counter is expected to go into alert.
Remaining Weeks/ Expected Day	Display that indicate when the cycle counter is expected to go into alert.
Remaining Days/ Expected Day	Display that indicate when the cycle counter is expected to go into alert.

11. PST and Data Collection

Partial Stroke Tests

Introduction

The Partial Stroke Test (PST) is initially introduced for emergency shutdown valves. It is used to evaluate the valve capability to open or close after a long period of service.

Recently the Partial Stroke test applications are also done in control valves. This document describes the implementation of the Partial Stroke Test in SVI FF positioner. Partial Stroke Test (PST) attempts to move the valve by applying a pattern of setpoint changes to a setpoint captured at start of the process. While the setpoint is set, PST runs data collection in the positioner.

PST variables

PST contains several pre-configured variables. Below is the introduction of each variables

PST Trigger

PST Triggers	Description
Trigger on Demand	PST can be manually triggered when the trigger is enabled
Trigger by DI Switch	PST can be triggered by asserting the physical DI switch
	Disable: Disable the trigger
	 Switch open: PST will be triggered by switch on
	Switch closed: PST will be triggered by switch closed
Trigger by AI Input	PST can be triggered by asserting the physical AI input
	Disable: Disable the trigger
	 Trigger on below threshold: PST will be triggered when AI input value is less than AI trigger input threshold
	 Trigger on above threshold: PST will be triggered when AI input value is more than AI trigger input threshold
Physical AI Trigger Input	Threshold for AI trigger. Initial value is 12 mA

PST Variables

PST Variables	Valid Range	Description
PST Pattern		The predefined sequences of up/down strokes of the PST: • Down-Pause-Up • Down-Pause-Up-Pause-Down • Down-Pause-Up-Pause-Down-Pause-Up • Up-Pause-Down • Up-Pause-Down-Pause-Up • Up-Pause-Down-Pause-Up-Pause-Down
Travel	(0.1%, 30%)	Magnitude of partial stroke
Setpoint Rate (%/s)	(0.19%/s,199.99%/s)	Rate of setpoint change in a partial stroke
Setpoint change threshold (%)	(0.01 %, 10.01%)	If process setpoint changes more than threshold, PST is aborted
PST Leadtime	(0s,60s)	Time before the first stroke
PST PAUSE (Dwell Time) (s)	(2s,60s)	The Steady time at the end of the ramp. PST spends this pause time between consecutive strokes
Pilot Pressure change threshold (PSI)	(0 PSI, 150 PSI)	If pilot pressure changes more than threshold, at the end of lead time, PST is aborted
Actuator Pressure change threshold (PSI)	(0 PSI, 150 PSI)	If actuator pressure changes more than threshold, at the end of lead time, PST is aborted
Max time of PST Completion(s)	(5s,300s)	If running time exceeds this Max time, PST is aborted
Freeze options		When PST is running, it is managing the setpoint and valve position
Parameters to Collect	8 variables	Specifies which variables are collected during PST Working Position Main Pressure Pilot Pressure Supply Pressure Actuator Pressure B Working Setpoint I/P Current Analog Input

PST Execution

Configuration for PST

Before starting a PST on SVI FF device, several configurations need to be done:

• Set PST Shape that includes PST pattern, PST travel, Setpoint Rate, Pause time and PST Lead time on PST tab



• Set PST threshold, Max time of PST completion and Parameters to Collect on PST Configuration tab

Masonailan	SWITT POSITIONER		MASONEILAN PRODUK	CIS	
a Baker Hughes business	Tag: SM Man. ID: 0x445644	(2110061 Type: IID: 8	Device ID: 4456440000 Device Rev: 03 DD	02110081 0: 01 SW: 3.1.0.0 CSC92303	
a 🕸 🥸 🕸 😫 🗛 🖬 🗖	E RE-AUTO AUTO	0.05 TE-MAN AUTO MAN	005 🔺 🔮 🝠 🕱 0	hetsermo	
- 🧬 Quick Start Configuration ≘- 🖉 Device States	1	PST Graph Results Scatt	er Plot Results PST Configuration		
Positioner State		PST Trigger		*ST Configuration	
- J Device State		Trigger on Demand	O mable C Dauble	Setpoint change threshold(%)	\$.00
🖞 🚜 Control Configuration E 🦛 Position		Physical AI Trigger Input	12.00	Plot pressure change threshold(on)	13.00
Restion Alerts		Trigger by DI Switch	Disable v	Actuator pressure change threshold(psi)	13.00
🙀 Fauk State		English By AL Input	Stable 6	Max time of PST completion(s)	300
🚓 Software Switches	1			Procee oppons	Subject range from a re-
A Pressure Range Pressure Alerts Temperature A IP Output				-manual to Collect	(wayad heapsile

- Turn on PST trigger
 - For PST is run by demand, please set "Trigger on Demand" as Enable

Massasilan	SVELL POSITIONER		MASONE ILAN 1990	NUMBER	
a Baker Hugher business	Tag. 8VI Man. ID: 0x445644	02110061 Type: ID: 8 CS TBMAN AUTO MAN C	Device ID. 4456440 Device Rev: 03	00802110061 DD: 01 SW: 3.1 0.0 C9002303	
Cuick Start Configuration	1	PST Graph Results Scatter	Mot Results - PST Configuration	PGT Configuration	
Serve State		Trigger on Demand	Danabia O Davabia	Setoont change threshold(36)	5.00
Control Configuration		Physical At Frager Leput.	32.00	Plot pressure change threshold(pst)	13.50
Peakion Alarta		Trigger By DI Switch	Dendriu 🗠	Accustor pressure drange threshold(ps)	12.00
Dauff friate		Trigger By AT toput	news.	Hun time of PDT completion (a)	300
Software Switcher				Presas valions	Setaorit range fre
Pressure Range				Parenaters to Collect	Working position,

- For PST is auto triggered by physical DI switch, please set PST trigger as "Switch Open" or "Switch Closed"

Masonoilan	SVI FF POSITIONE	R	MASONEILAN PR	ODUCTS	
a Baker Hughes business	Tag: SV Man. ID: 0x445644	02110061 Type. ID: 8	Device ID: 445644 Device Rev: 03	000802110061 DD: 01 SW: 3.1.0.0 CSC92303	
។ជ្រល់វិធី 🖓 - 🗖	REAUTO AUTO	ODS TEAUTO AUTO MAN COS	🔺 🔮 🔮 📖	Connected	
- Quick Start Configuration		PST Graph Results Scatter Plot Re	subs PST Configuration		
Positioner State		PST Trigger		PST Configuration	
Trend and Position Setup	8	Trigger on Demand O Enable	: O Disable	Setpoint change threshold(%)	5.00
configuration ⊖ -∰ Control Configuration ↓ ∰ Position		Physical AI Trigger Input 12.	00	Plot pressure change threshold(ps)	12.40
Contiguration Resition Alerts Iravel Alerts		Trigger By QE Switch Swit	ch Open 💛	Actuator pressure change threshold(psi)	12.40
		Trigger By AL Input	ch Closed	Max time of PST completion(s)	30
- Configuration - Software Switches	κ.			Proces options	Schoolet nanço fra
Pressure Range				Parameters to Colloct	Worlding position,
Temperature					
X Extended RB Configuratio	n 10				

- For PST is auto triggered by physical AI Input, please set a threshold for "Physical AI Tigger Input" and enable "Tigger on below threshold" or "Tigger on above threshold".

Annoilan	SVI FF POSITIONER		MAS	ONEILAN PRO	DUCTS		
viusonenun	Tag: SVI	02110061	Devi	e ID: 44564400	0.0	02110061	
a Eaker Hughes business	Man. ID: 0x445644	Type. ID: 8	Devi	ee Rev. 03	DD: 01	SW: 3 1.0.0 CSC92303	
1 🖻 🖳 🖳 🖳 🖳	🗖 RB-AUTO AUTO O	DS TBAUTO AUTO MAN	005 🖾 🛃	22 😤 🐻	Not Connec	ted	
🖃 🍰 Discrete 🍰 Configuration		PST Graph Results Sca	tter Plot Results P	ST Configuration			
🚔 Software Switches E 🚓 Pressure		PST Ingger				PST Configuration	
Pressure Range		Trigger on Demand	O Enable	Olicable		Setpoint change threshold(%)	5.00
IP Output Extended RB Configuration	'n	Physical AI Trigger Input	12.00			Pilot pressure change threshold(psi)	12.00
K Extended TB Configuratio Diagnostic Alerts Alerts	n	Enigger By DI Switch	Disable	~		Actuator pressure change threshold(psi)	12.00
🚓 FD Alerta L 🚓 LCD Display		Trapper By Al Input	Trigger On Br	elow Thr 🗸 🖉		Max time of PST completion(s)	300
Calibration			Trigger On N Trigger On N	low Thresh www.Thresh		Freese options	Setpont nance fre v
Cuick Weard						Parameters to Collect	Working position,
Diagnostics							
Ramp Test							
Histograms							
PST and Data Collection							

Run PST on demand

Go to PST tab-> Click "Start PST" button to start a PST process.



Starting PST will also trigger a data collect process in the device. The data collection can capture total 8 variables during PST running. User can use SVI FF DTM to load the collected data from the device and check whole PST process.



- Area 1: To display the value of device variables. The variable with " $\sqrt{}$ " sign indicates that this variable will be captured by the device during PST process
- Area 2: shows the trend for each device variable during PST process, and the status of PST process
- Area 3: Green bar shows currently how many data has been collected in the device Blue bar shows how many data has been uploaded to the DTM
- Area 4: Stop button to cancel PST process Save button to save the PST data in local after the test completed

NOTE: Running PST on demand requests TB mode is in manual or auto mode

PST is auto triggered by physical DI switch

When the state of DI switch changes, SVI FF device will automatically trigger a PST procedure and collect the PST data in the device data buffer.

PST is auto triggered by physical AI Input

When Analog Input value is less than the threshold or more than the threshold, SVI FF device will automatically run a PST process and collect the PST data in the device data buffer.

NOTE: To start PST from a physical input (DI or AI), the signal must be

- De-asserted for at least 1 s
- Asserted for at least 10 s
- TB mode is in Auto mode

Auto load PST data to DTM

SVI FF device may have run PST automatically or from other PC applications before connecting DTM to it. When the DTM connects to the device, PST page will pop up to let user upload new PST data.

ST Shape		- Sepoint - Actuator Pressure 8 - Supply Pressure	
ST pattern Down-Pause-	Up Pause Oown Pause Up	Actual Position P Current Analog Input Main Pressure Plot Pressure	
ravel	30.00	10.0	- 30.0
tpoint Rate (%/s)	2.50		
use (Dweil Time) (s)	10		- 20.0
T Lead Time (s)	20		
	New PST data to be uploade		- 10.0
T Parameters	The connected de	rice has new PST data to be uploaded.	
Setport	Click Yes to proce	d to upload, click No to ignore.	-0.0
Actual Position Main Pressure		Tes No. 3.00 4.00 5.00 6.00 7.00 8.00 9.00	E.
Actuator Pressure B	34 33 pe 64 81 %	Partial Stroke Test is Starting.	
Plot Pressure	7.68 psi	0 Points Collected	
Supply Pressure	38.93 pei	0 Print Unbacked	
C Analog Input	3.09 mn	or own optioned	

Click Yes - to proceed uploading

Click No - to ignore the new PST data

PST Result

DTM uses Graph Result and Scatter Plot Result to present the PST data after all the data is loaded to the DTM. For detail, please refer to PST and Data Collection Results.

Data Collection

Introduction

Valve diagnostics and predictive diagnostics depends on real-time data, which is too slow and intermittent while polling. So, there is a need in buffering high-speed data in the device and retrieving the buffer. Real-time data collection can be used on demand, on some internal or external trigger.

Data collection doesn't change any process variables. It just collects pre-specified device variables in a buffer until max specified number samples are collected or the buffer becomes full.

Data Collection Configuration

Data Collection contains several pre-configured variables. Below is an introduction of each of the components

Data Triggers	Description
Trigger on Demand	Data Collection can be manually triggered when the trigger is enabled
Trigger by TB Alert	Data Collection can be triggered by TB alerts
Trigger by DI Switch	 Data Collection can be triggered by asserting the physical DI switch Disable: Disable the trigger Switch open Switch closed
Trigger by Al Input	 Data Collection can be triggered by asserting the physical AI input Trigger on below threshold Trigger on above threshold Trigger on between threshold
Tigger by Position Deviation	Data Collection can be triggered by position deviation
Tigger by Pressure Deviation	Data Collection can be triggered by pressure deviation
Tigger by Setpoint Deviation	Data Collection can be triggered by setpoint deviation

Data Collection Trigger Configuration

Data Collection Configuration

Data Collection Configuration	Valid Range	Description
Base Rate	15ms and 60ms	Period of sampling
Skip Count	(0,65536)	Number of samples skipped between recorded samples
Max Samples	(0, 65535)	Max number of samples to collect. 0 means unlimited by the buffer capacity
Number of Pre-Samples	(0, 65535)	Samples before trigger to include in total samples. For temporary configuration it is ignored
Parameters to Collect	8 variables	Specifies which variables are collected: • Working Position • Main Pressure • Pilot Pressure • Supply Pressure • Actuator Pressure B • Working Setpoint • I/P Current • Analog Input
Al Low Threshold (mA)	(0,23.1)	Physical AI threshold below which data sampling is activated
Al High Threshold (mA)	(0,23.1)	Physical AI threshold above which data sampling is activated
Position Deviation Threshold (%)	(0.01,100.01)	Position Deviation threshold above which data sampling is activated
Pressure Deviation Threshold (PSI)	(0,150)	Pressure Deviation threshold above which data sampling is activated
SP Deviation Threshold (%)	(0.01,100.01)	Set point Deviation threshold above which data sampling is activated
Average Coefficient	(0.01, 30.01)	Average work Coefficient

Run Data Collection

Data collection can be triggered either on demand or automatically.

Data Collection triggered on demand

• Enable Manual trigger on Data Collection Configuration tab before running Data Collection

Collection 1	igger				
Enabling Op	tion		AI Low T	hreshold(mA)	10
	M	anual	AI High T	hreshold(mA)	11.5
			Pos Devi-	ation Threshold(%)	0.50
			Pressure	Deviation Threshold(psi)	5.00
			SP Devia	tion Threshold(%)	60
			Averagin	g Coef.(psi)	6

• SVI FF DTM provides four types of tests to run Data Collection

Solenoid Test:

Runs a test where user can test using a very brief pulse the action of an installed solenoid without removing the valve from the control loop. High frequency (105 ms per point) - limited time sequence \sim three minutes

Signature Test:

Runs a standard diagnostics test. Lower frequency (1 point per second) with a longer time sequence.

Predefined Test:

Select a radio button to run a test where you can configure the setpoint and/or the actual position as well as selecting from four predetermined test cycles:

0.1 sec - 3 Mins Data:	Collects data every 0.1 seconds for three minutes.
1 Sec - 30 Mins Data:	Collects data once every a second for 30 minutes.
1 Min - 30 Hours Data:	Collects data once every minute for 30 hours.
30 Mins - 30 Days Data:	Collects data once every 30 minutes for 30 days.

In each case, the left-hand number represents the time interval at which data points are collected and the right-hand number is the overall test duration.

Custom Test:

Select this radio button to run a test where you can configure the setpoint and/or the actual position and set the Data Collection Period.

Run a Solenoid Test

• The solenoid is used to force the valve to an open/close position. It stops the air flow from the positioner and releases air into the atmosphere. Following Diagram: Solenoid Test Setup shows a general configuration for a solenoid test.



Solenoid Test Setup

On DTM Data Collect Tab:

- 1. Click the Solenoid Test radio button.
- 2. Click Start Data Collection . The data in the graph begins updating. Data collection captures the data with following configuration.

Base Rate	Skip Count	Max Samples	Parameters to Collect
15 ms	0	0	Working Position Working Setpoint



Parameter Collection	To display the value of device variables. The variable with " $\sqrt[4]{}$ sign indicates that this variable will be captured by the device
Parameter Trend	Shows the trend for each device variable during the data collection, and the status of data collection process
Progress bar	Green bar shows currently how many data has been collected in the device Blue bar shows how many data has been uploaded to the DTM
Stop/Save button	Stop button to cancel data collection Save button to save the collected data in local

Run a Signature Test

Use Signature test to ensure that the pressure/position relationship is consistent.

On DTM Data Collect Tab:

1. Click the Signature Test radio button

Start Data Collection . The data in the graph begins updating. 2. Click Data collection captures the data with following configuration.

Base Rate	Skip Count	Max Samples	Parameters to Collect
15 ms	0	0	Working Position Main Pressure Supply Pressure Actuator Pressure B

Data Collection Graph Results Scatter Plot Results Data Collection Configuration Trend and Position



Parameter Collection	To display the value of device variables. The variable with " $\sqrt[4]{}$ " sign indicates that this variable will be captured by the device
Parameter Trend	Shows the trend for each device variable during the data collection, and the status of data collection process
Progress bar	Green bar shows currently how many data has been collected in the device Blue bar shows how many data has been uploaded to the DTM
Stop/Save button	Stop button to cancel data collection Save button to save the collected data in local

Run a Predefined Test

Use Predefined Test to analyze valve performance for longer period. For example

- Range of travel for a day, week, month.
- Setpoint/position error during a day as caused by temperature or other factors.

On DTM Data Collect Tab:

- 1. Click the Predefined Test radio button.
- 2. Click Start Data Collection . The data in the graph begins updating. Data collection captures the data with following configuration.

Collection Period	Base Rate	Skip Count	Max Samples	Parameters to Collect
0.1 sec - 3 Mins Data	15 ms	6	1800	Working Position Main Pressure Pilot Pressure Supply Pressure
1 Sec - 30 Mins	15 ms	66	1800	Working Position Main Pressure Pilot Pressure Supply Pressure
1 Min - 30 Hours	60 ms	999	1800	Working Position Main Pressure Pilot Pressure Supply Pressure Actuator Pressure B Working Setpoint I/P Current Analog Input
30 Mins - 30 Days	60 ms	29999	1440	Working Position Main Pressure Pilot Pressure Supply Pressure Actuator Pressure B Working Setpoint I/P Current Analog Input



Parameter Collection	To display the value of device variables. The variable with " $$ " sign indicates that this variable will be captured by the device
Parameter Trend	Shows the trend for each device variable during the data collection, and the status of data collection process
Progress bar	Green bar shows currently how many data has been collected in the device Blue bar shows how many data has been uploaded to the DTM
Stop/Save button	Stop button to cancel data collection Save button to save the collected data in local

Run Custom Test

Use Custom Test to detect Fast variations in setpoint and actual position, Cycling and Tuning issues.

- 1. Set configuration in "Configuration for On Demand Data Collection" area on tab
- 2. Click the Custom Test radio button on Data Collection Tab
- 3. Click Start Data Collection . The data in the graph begins updating.



Parameter Collection	To display the value of device variables. The variable with " $\sqrt[4]{}$ sign indicates that this variable will be captured by the device
Parameter Trend	Shows the trend for each device variable during the data collection, and the status of data collection process
Progress bar	Green bar shows currently how many data has been collected in the device Blue bar shows how many data has been uploaded to the DTM
Stop/Save button	Stop button to cancel data collection Save button to save the collected data in local

NOTE: Running Data Collection on demand requests TB mode is in manual or auto mode

Stop Data Collection

When Data Collection is started, user can stop the process by clicking Stop button. A Cancel message window will pop up for user to confirm this action.



Choose No: Data Collection process will be stopped, and the collected data will be discarded *Choose Yes:* Data Collection process will not be stopped, DTM will run the process in background *Choose Cancel:* Cancel stopping Data Collection, continue the process on current page

Run Data Collection in background

When Data Collection is started, user can leave Data Collection page and run the process in the background. A message pops up "Data Collection is running in background. You can upload rest of data when the next comeback." when the user switches to other page.



Auto Data Collection

There are several events that can trigger Data collection in SVI FF device. Before auto Data Collection works, user needs to turn on auto triggers, set the threshold and configure the data collection settings.

Enable data collection triggers

Open Data Collection Configuration page-> Enable the trigger for auto data collection

REAUTO RESAUTO RE	AUTO OOS TB/MAN AUTO Data Collection Grap Outo Collection Grap	MAN OOS A 🏠 🏠 🕃 🗊 💭	Connected tion Configuration Trend and Position	
	Enabling Option	Manual, On TB Alerts, Pos Devia 🗸	AE Low Threshold (mA)	4.00
Extended NS Configuration Extended TB Configuration Diagnostic Alerts		Manual On TB Alorts Pos Deviation	AC High Threshold(mA)	20.00
- Alerts - Alerts - Alerts - Alerts		Pres Deviation Pres Deviation Pres	Pos Deviation Threshold(%)	0.90
X Calibration		DE dosed	Pressure Deviation Threshold(psi)	5.00
- X Auto Tune - X Quick Wizard		ALSHI AEbtam	SP Deviation Threshold(psi)	0.50
Orignostics			Averaging Coof. (psi)	0

• Trigger by TB Alerts

A Data collection process can be triggered by a TB alert.

On DTM Alarms and Alerts page user needs to configure how the TB alert triggers Data Collection process. The Data collection can be triggered when an alert becomes active or inactive or when the alert state changes.

Maconoilan SVI FF POSITIONE	R	MASONEI	LAN PR	ODUCTS		-	
	02110061	Device ID	445544	0000	62110061		
a Boks' Hughes business Man. ID: 0x445644	Type. ID: 3	Device Re	w. 03	DD: 01	SW. 3.1.0.0 C9C22	303	
🔉 🖄 🏂 🍊 - 🚍 🚍 RBAUTO AUTO	OOS TENAN AUTO MAN OOS	지 뿐 운	* =	Connected			
Quick Start Configuration Device States	Alams and Alaris						
- Positioner State - Positioner Alert Log	O Yup to RB C Report in TB	() Report per M	090				
Jornal and Position Setup Device State	Net type	NOT REPORTED		NORNING DATA		O DEVEL FAILURE	Data Collection Trigger
Configuration	1 Jeviation Alert	C.		C	G		Intel hanger
Li M Poston	2 Position Hit 1 Alert	C		C	с		Becomer Amice
Configuration	3 Position Hi Alant	C		0	0		Becomes Inaction
- Position Akata	4 Position to Akat	C		0	C	æ	Tate Datger
Travel Alerts	3 Pesition LeLo Alert	C		C	C		Becomes Active
🚜 Laut State	5 Set Foint Timeout Alert	C		C	C	۲	Secones Active
Discrete	7 New Clone Alert	C		C	C		Recomes Active
Configuration	5 Travel Accumulation A Alert	C		0	C		Becomes Active
Li A Preciate	9 Toyol Accumulation B Alus	0		C	C		Bocomics Asterio
	10 Cycle Counter A Alert	C		C	C		Becomes Active
	11 Cycle Counter 8 Alert	C		C	C		Secones Active
🖓 Temperature	12 Operating Time Alert	C		C	C		Jecomes Artue
- 🖓 IP Output	13 Supply Pressure Hi Alert	C		0	0		Seconses Active
- XC Extended KB Configuration	14 Supply Pressore Le Alert	C		0	C		Becomes Active
2 Degradur Alerts	15 Supply Pressure Loco Alert	C		C	C		Becomes Active
- / Alerts	16 Temperature Hi Alert	C		0	C		Secomes Active
FD Alerte	17 Jemperature Lo Alert	C		0	C		Lennmer Artue
🚓 LCD Display	16 P Drive Current H. Alert	18		C	C	Ċ	Becomer Artice
Calibration	10 P Drive Current Le Alert			0	C	C	Becomes Astire
- X Find Stops	20 Sensor Fuillanc Alex	C		0	C		Becomes Active
V Curch Waard	21 Processor Alert	C		C	C		Second Addre
X full Writers	12 Valve Control Alert	C		C	C		Seconer Artue
Disgnostics	2) Commissioning Aiest	C		C	C		Second Artiste
Stup Test	24 Air Supply Alart	C		C	C		Becomes Antire
G flamp Ten	25 Supporting Hardware Areat	r.		0	C		Boundar Antire

• Trigger on Position Deviation

A Data collection process can be triggered when the distance between setpoint and valve position is more than the threshold.

Trigger on Pressure Deviation

A Data collection process can be triggered when the pressure deviation is more than the threshold.

• Trigger on Setpoint Deviation

A Data collection process can be triggered when the distance between setpoint and valve position is more than the threshold.

• Trigger on DI Open

A Data collection process can be triggered by switch open.

• Trigger on DI Close

A Data collection process can be triggered by switch close

• Trigger on AI < LO

A Data Collection process can be triggered when Analog input value is less than low threshold

• Trigger on AI > HI

A Data Collection process can be triggered when Analog input value is bigger than high threshold.

• Trigger on AI Between

A Data Collection process can be triggered when Analog input value is between low and high threshold.

Threshold for auto trigger

Open Data Collection Configuration page-> Set a value for:

- · AI Low Threshold
- AI HIGH Threshold
- Pos Deviation Threshold
- Pressure Deviation Threshold
- SP Deviation Threshold



Configuration for Auto Data Collection

Open Data Collection Configuration page-> Configure the settings below for Auto Data Collection.

- · Base Rate: The period of the sampling
- Skip Count: Number of samples skipped between recorded samples
- · Max Samples: Max number of samples to record
- Number of Pre-samples: Samples before trigger to include in total samples
- · Parameters to collect: The variables are collected

Quick Start Configuration	Data Collection Graph Resu	its Scatter Plot Results Data Collectio	n Configuration Trend and Position		
Device States					
- Positioner State	Data Collection Tigger				
- Positioner Alert Log	and the second second second		At Low Threshold(nA)	10.00	
Trend and Position Setup	Enabling Option				
J Denne State	90	enta V			
Configuration			AL High Threshold (inA)	20.00	
A Control Configuration					
🗄 🚜 Position			These Discounters Threadershill N	1.000	
Configuration			Per Deversor michaelogay	100.00	_
- Position Alerts					
- Travel Alerts			Pressure Deviation Threshold(psr)	5.00	
- A Fault State					- 3
1 A Discrete			SE Deviation Thresholding)	60.00	
- Configuration					-9
- A Softward Switches					
E Pressure			Averaging Coet. (pd)	6	
A Pressure Range					
- A Pressure Alerts					
- 🚜 Temperature	Configuration for Auto triggs	red Data Collection	Configuration for On Demand Data	Collection	
P Output					
X Extended BB Configuration					
-X Extended TB Configuration	Date rate	come 🗸	Date rate	50ms	~
- Diagnostic Alerts					
- Alerts			They many		
ED Merts	Skip count	0	and cours	0	_
A LCD Display			the second se		
Calibration	Max Samples	0	Man Samples	0	
- Find Stops		· · · · · · · · · · · · · · · · · · ·			_
X Auto June	The state of the s	1007			_
Cuick Winard	number of pre-surples	1	Parameters to concer.	Working position	\sim
36 Full Wisserd					
Diagonatics	Parameters to Collect	Working position, Main n			
Stan Test		training prostoring to an proc. V			
A larre last					
Sinnature Test					
Histomans					
Fa Trends					
PS Land Data Collection					
Dartial Storke Text . PST					

NOTE: To start PST from a physical input (DI or AI), the signal must be:

- De-asserted for at least 1 s
- Asserted for at least 10 s
- TB mode is in Auto mode

Data Merge

Data collection process may have automatically started in the device or be running in the background. When opening Data collection page, DTM will compare the local data with the data that is collected in the device. If the local data is different than the device data, a dialog as below will pop up to confirm with the user.

Choose Yes: Upload and merge the data to the DTM

Choose No: Discard the data

ombined Test							
Solenoid Test Sig	nature Test	Setpoint Actual Pos Main Press	ition are	Actuator	Pressure D it sure	 Supply Pressure Analog Input 	
Predefined Test		75.0 -					
O 0.1 Sec - 3 Mins Data 01	Sec - 30 Mins Data						- 160
1 Min - 30 Hours Data 3	0 Mins - 30 Days Data	- 70.0					- 140 -
		2					- <u>-</u>
Custom Test(Data Collection Cont	Iguna New collected data	to be uploaded		× .	-		- 120
Custom Test(Data Collection Cont	Igura New collected data	to be uploaded		×			- 120
Custom Test(Data Collection Cont	nguna New collected data	to be uploaded	d data to be uploaded	× land	-		- 120 emseard
Custom Test(Data Collection Cont	ngura New collected data	to be uploaded	d data to be uploaded	× Iand			- 120 enge
Custom Test(Data Collection Cont arameter Collection	Igura New collected data	to be uploaded ected device has new collecte to proceed to upload, click No	d data to be uploaded	and			- 120 - 120 - 120 - 120
Custom Test(Data Collection Cont	Igura New collected data	to be uploaded ected device has new collecte to proceed to upload, click N	d deta to be uploaded o	X	1. • 1.		- 120 - 120 - 100 - 100 - 100
Custom Test(Data Collection Conf arameter Collection Setpoint Actual Position	Igura New collected data	to be uploaded ected device has new collecte to proceed to upload, click N	d data to be uploaded	Fand	0.0 50.0 e (Sec)	60.0 70.0	- 120 - 100 - 80
Custom Test(Data Collection Cent arameter Collection	Igura New collected data	to be uploaded	d data to be uploaded o to ignore.	and A	0.0 50.0 e (Sec)	60.0 70.0	- 120 - 100 - 80
Custom Test(Data Collection Cont arameter Collection Stepont Actual Position Main Pressure Actuator Pressure B	New collected data	to be uploaded	d data to be uploaded o to ignore. Yes	and A	0.0 50.0 e (Sec)	50.0 70.0	- 120 - 120 - 500 - 80
Custom Test[Data Collection Cont arameter Collection Catual Position Main Pressure Actuator Pressure B Custom	New collected data	to be uploaded	d data to be uploaded o to ignore. Yes	X and A	0.0 50.0 e (Sec)	so.o 70.0	- 120 - 120
Custom Test(Data Collection Cont arameter Collection Batpoint Actual Postion Actuator Pressure Actuator Pressure B IP Cummt Plot Pressure	ypura New collected data (7) The con Merga. Click Ves (64.54 % 8.27) psi	to be uploaded	d data to be uploaded . o to ignore. Yes	Land A	10.0 50.0 e (Sec)	60.0 70.0	- 120 - 120
Custom Test(Data Collection Cont anameter Collection Steppont Actual Position Main Pressure Main Pressure Cotuator Pressure Plot Pressure Supply Pressure	yura New collected data The con Merga. Click Yes 0.00.03 pm 0.4.54 % 0.22 ps 3.0.90 psi	to be uploaded exted device has new collecte to proceed to upload, click N	d data to be uploaded o to ignore. Yes	No No	0.0 50.0 (Sec) 50.0 1179 Pulnis Collected	60.0 70.0	- 120 - 200 - 80

Data Collection demonstration using Trend and Position

User can use Trend and Position to move valve and then Start Data collection to verify data collection result.

- · Go to Trend and Position Page to move valve. Refer to Trend and Position Setup
- Switch to Data Collection Tab to start Data Collection
- When Data Collection completes, use Graph Results and Scatter Plot Result to verify

PST and Data Collection Results

DTM presents the Data Collection Result and PST by UI of Graph Result and Scatter Plot Result after measurement data is uploaded.

Graph Results



Buttons and Fields

General Graph	All graphs have some common functionality, including:						
functionality	 Click-and-hold on any axis' legend to drag along the axis. 						
	 Press the CTRL button and mouse drag to zoom/unzoom on the graph. 						
	 Right-click menu: There is a menu available by right-clicking any axis that has three selections: 						
	- Tracking Enabled: Enables/disables tracking.						
	 Update Resume Values: Store the axis scale for the Tracking Enabled. The next time Tracking Enabled is engaged, the tracking restores the axis to the stored scale instead the initial scale. 						
	 Zoom to Fit: Activates a function that sizes the graph to fit the selected display area. 						
Curve checkboxes	Use the color-designated checkboxes to add/ remove traces from the graphs. This does not impact data collection.						
Position vs. Time (sec) vs. Pressure/ Current/Analog	There are two of these graphs: The top graph represents the running or just completed test. The bottom is a saved test that you can display using the Show Saved Results pulldown list for comparison.						
Input graph	 Left axis displays a scale for the percentage of position. 						
	• Bottom axis displays time.						
	• Right axis displays pressure in psi.						
	Use the checkboxes above the graph activate/deactivate the following traces:						
	 The red line represents the current supply pressure. 						
	 The purple line represents the current Actuator A pressure. 						
	 The yellow line represents the current Actuator B pressure (box grayed out if no double-acting). 						
	 The navy-blue line represents a saved test setpoint. 						
	 The green line represents the Actual Position. 						
	The light blue line represents the IP Current.						
	The brown line represents the Pilot Pressure.						
	 The back line represents the Analog Input. 						
Save	Click to save the results. You can load back the result in the selection Show Saved Result.						
Export	Exports the results as a .csv file.						
Zoom Out -	Toggles the view in according to preset values to 50%.						
Zoom In +	Toggles the view out according to preset values to two times.						
Show Saved	Use the pulldown to select a results file and the graph is populated.						

Results

e pi graph is pop

Scatter Plot Results



Buttons and Fields

General Graph	All graphs have some common functionality, including:
functionality	 Click-and-hold on any axis' legend to drag along the axis.
	 Press the CTRL button and mouse drag to zoom/unzoom on the graph.
	 Right-click menu: There is a menu available by right-clicking any axis that has three selections:
	- Tracking Enabled: Enables/disables tracking.
	 Update Resume Values: Store the axis scale for the Tracking Enabled. The next time Tracking Enabled is engaged, the tracking restores the axis to the stored scale instead the initial scale.
	 Zoom to Fit: Activates a function that sizes the graph to fit the selected display area.
Curve checkboxes	Use the color-designated checkboxes to add/ remove traces from the graphs. This does not impact data collection.
Position vs. Time (sec) vs. Pressure graph	There are two of these graphs: The top graph represents the running or just completed test, or a test previously completed that is stored on the system (accessed using the Show Results pulldown). The bottom is a saved test that you can display using the Show Saved Results pulldown list for comparison. • Left axis displays a scale for the percentage of position. • Bottom axis displays scale for
	The yellow line represents the current Actuator B pressure (box grayed out if no double-acting).The green line represents the Actual Position.
Save	Click to save the results. You can load back the result in the selection Show Saved Result.
Export	Exports the results as a .csv file.
Zoom Out -	Toggles the view in according to preset values to 50%.
Zoom In +	Toggles the view out according to preset values to two times.
Show Saved Results	Use the pulldown to select a results file and the graph is populated.

12. Reports

There are four reports that relate directly to the SVI FF unit:

- Configuration Report: Accessed by choosing from the *Print* icon on the SVI FF toolbar and selecting **Configuration Report** or from the topology pane right-click menu Additional *Functions*.
- *Test Report*: Accessed by choosing from the *Print* icon on the SVI FF toolbar and selecting **Test Report**.
- *Diagnostic Report*: Accessed by choosing from the *Print* icon on the SVI FF toolbar and selecting **Diagnostic Report**.

Configuration Report

Use this screen to view a report of general positioner parameters, Resource and Transducer block settings and Network configuration details. Once created the report is opened in your default internet browser and is saved in HTML format in the directory indicated at the top. It can be printed to your default printer from the internet browser. If you have a pdf print driver installed, you can create a pdf of the report.

To open the report:

• Right-click the FF device in the *Project* pane and select **Additional functions** > **Report** and *Configuration Report* appears or click the print icon in the toolbar and select **Configuration Report**.

Masc a Bake Device Tag: Device ID: Version:	Pheilan er Hughes business SVI FF REV3_1 4456440008 2.0.0.0	SVI FI 07310202	E Configur Smart Value Date and Time: Author:	Pation Report <i>ve Interface Test Results</i> Oct 19, 2021, 10:42:05 AM 204059780
		Genera	l Information	
Positioner			Actuator	
Manufacturer ID	0x445644 - 0)x445644	Manufacturer ID	
Device Type	0x0008 - SV	I FF	Model Number	
Device Revision	03		Serial Number	
Min DD Revision	n 01		Style	Single Acting
Firmware Revisio	on 3.1.0.0 CSC	90378	Fail Action	Valve Closed - Self-closing (air to open)
Device Address	18		Туре	Spring-diaphragm
	·		Size	6
Model Numb	er		Rotary Moment	n/a
Manufacturer ID			Effective Area	60
Pneumatic Train			Max Supply Pr.	100.00 psi
Pneumatics Relay	/ Туре		Pr. Control High	13.20 psi
Display			Pr. Control Low	3.57 psi
Housing			Message	
Communications			Date Info	01012012
Options			Spec Sheet	

Figure 116 – Configuration Report

Test Report

Use this screen to view a report of general positioner parameters, diagnostic test results with graphs and Tuning settings. Once created the report is opened in your default internet browser and is saved in HTML format in the directory indicated at the top. It can be printed to your default printer from the internet browser. If you have a pdf print driver installed, you can create a pdf of the report.

Note: The data that appears in the diagnostic tests report is dictated by whether the unit purchased has Standard or Advanced Diagnostics. If you own a Standard Diagnostics unit, the Advanced Diagnostics fields will show NA.

To open the report:

• Click the print icon 🗿 in the toolbar and select **Test Report** and *Test Report* appears.

a Ba Device Tag:	ker Hughes business SVI FF REV3_1		Smart Val Date and Time:	Ve Interface Test Results Oct 19, 2021, 10:45:22 AM
Device ID: Version:	4456440008 2.0.0.0	07310202	Author:	204059780
		Genera	l Information	
Positioner			Actuator	
Manufacturer I	D 0x445644	- 0x445644	Manufacturer ID	
Device Type	0x0008 -	SVI FF	Model Number	
Device Revisio	n 03		Serial Number	
Min DD Revisi	on 01		Style	Single Acting
Firmware Revis	sion 3.1.0.0 CS	C90378	Fail Action	Valve Closed - Self-closing (air to open)
Device Address	5 18		Туре	Spring-diaphragm
			Size	6
Model Num	ber		Rotary Moment	n/a
Manufacturer I	D		Effective Area	60
Pneumatic Trai	n		Max Supply Pr.	100.00 psi
Pneumatics Rel	lay Type		Pr. Control High	13.20 psi
Display			Pr. Control Low	3.57 psi
Housing			Message	
Communication	ıs		Date Info	01012012
Ontions			Spec Sheet	

Figure 117 – Test Report

Diagnostic Report

Use this screen to view a report of general positioner parameters and positioner state, which is comprised of associated variable and active alerts. Once created the report is opened in your default internet browser and is saved in HTML format in the directory indicated at the top. It can be printed to your default printer from the internet browser. If you have a pdf print driver installed, you can create a pdf of the report.

To open the report:

• Click the print icon in the toolbar and select **Test Report** and *Diagnostic Report* appears.



Average Test Resu	lts
Dead Time Td	0.09 s
Time Constant T63	0.43 s
Double TC T86	0.60 s
Overshoot	1.93 %
Error	0.75 %
Stroke Time (incr.)	0.77 s
Stroke Time (decr.)	
Velocity (incr.)	129.29 %/s
Velocity (decr.)	

Minimum Test Results		Maximum Test Results			
Dead Time Td	0.09 s	Dead Time Td	0.09 s		
Time Constant T63	0.43 s	Time Constant T63	0.43 s		
Double TC T86	0.60 s	Double TC T86	0.60 s		
Overshoot	1.93 %	Overshoot	1.93 %		
Error	0.75 %	Error	0.75 %		
Stroke Time (incr.)	0.77 s	Stroke Time (incr.)	0.77 s		
Stroke Time (decr.)		Stroke Time (decr.)			

Figure 118 – Test Report

Positioner State							
		Dynamic Variab	les				
	1	Setpoint		80.00	% Good		
		Actual Position		80.05	% Good	7	
	Setpoint from AO Block 8		80.00	% Good			
On/Off SP from DO Block 0		0%0	iood				
Discrete SP from DO Block 0 %		0%0	iood				
Characterized Setpoint 80.0		80.00	% Good				
	ļ	Characterized Positio	n	80.05	% Good		
		Supply Pressure		29.28	psi Good		
		Actuator Pressure A		12.94	psi Good	_	
		Actuator Pressure B		N/A		_	
		Temperature		19.13	degC Good	_	
	l	IP Output		51.43	% Good		
T					Desider Alexandra I. Assisted	1	
Hardware Alerts: 0 Acti	ve Ale	rts			Position Alerts: 1 Active A	llerts	
Sensor Failure	Goo	đ	0		Setpoint Deviation	Good	60
Valve Control	Goo	4	49		Setpoint Timeout	Maintenance Required	29
Air Supply	Goo	đ	133		Position Hi Hi	Good	3
Processor	Goo	a	1		Position Hi	Good	3
Commissioning	Goo	4	6	Position Lo		Good	2
Supporting Hardware	Goo	đ	4	Position Lo Lo		Good	2
Temperature/Current A	lerts: () Active Alerts			Travel Accumulation A	Good	0
Temperature Hi Alert	Goo	4	0		Travel Accumulation B	Good	0
Temperature Lo Alert	Goo	4	0	_	Cycle Counter A	Good	0
IP Drive Current Hi Alert	Goo	4	31		Cycle Counter B	Good	0
IP Drive Current Lo Alert	Goo	4	0		Near Closed	Good	0
					Working Time	Good	0

Diagnostic Report

This page intentionally left blank.

13. Control Configuration

Control Configuration

Use this group of tabs to configure Resource and Transducer block for control. The Control configuration is designed for initial configuration of the positioner. It allows access to position, discrete, pressure, temperature and IP current settings in the positioner.

Position

Use *Position* configuration to set up the position control related parameters. *Position* is comprised of:

- Configuration
- Position Alarms
- Travel Alarms
- Fault State Tab

Configuration

Configuration is comprised of:

- Control Tab
- Position Limits Tab
- Position Control Tab
- Characterization Tab

Control Tab

Use this tab to configure the AO block source configuration. These settings configure where the AO block gets it FINAL_VALUE and FINAL_POSITION_VALUE, where it sources its position feedback from, where it sends these values and how long Rcas and Rout mode holds without communication before it sheds.

SVI FF REV3_1 - Online Parameter ×	NEW (SVI3REV2) - Online Parameter	x			
Massasilan	SVI FF POSITIONER		MASONEILAN PRODUCTS		Contra to
a Baker Hughes business	Tag: SVIFFREV3_1 Man.ID: 0x445644 Type.ID: 8	3	Device ID: 4456440008 Device Rev: 03 DD:		
🖬 🕸 🕸 🕸 🥵 🖉 🖬 🖬	RB:AUTO AUTO OOS TB:MAN	AUTO MAN OOS) 🛃 😤 😤 🌉 🛛 Conne	ected	
Quick Start Configuration	Control Position Limits Position Control	Control Characterization Setpoint Source	e Configuration		
All Position Alerts All Travel Alerts All Fault State Signature Si	AO Block	%(Good) Final Value Ch %(Good) Final Position Value	Setpoint Source = 1	1	
Software Switches	DG Int DG Int Stratucy_D 4-88%	(Good) — e- Final Value Dint (Good) — Final Position Valu	Setpoint Source = 3 - 0	Positioner Setpoint	
- Superstance Alerts - Superstance - Superst	DO Bool	N(Good) - III- Final Value D	Setpoint Source = 2 sinnel 2	rts = 2.	
Extended TB Configuration Diagnostic Alerts Alerts En Alerts	Kadbur D OPD	V[Good] - Final Position Value	0		
LCD Display	Saturiat Source	10	Pertart Ontion	Ouick Defaults	
Calibration	Sequincource	MU	Kestart Opton	Quer belone	
-X Auto Tune -X Quick Wizard -X Full Wizard	Source of Position Feedback	Final Position Value	u	Restart Device	
 Oiagnostics Step Test Ramp Test 	Shed From RCas	20000	mSec Travel Range	100.00	
- Signature Test - Histograms - Trends - St and Date Collection	Shed From Rout	20000	mSec Travel Units	% ~	
PST and Data Collection					

Figure 119 – Control Configuration Position: Control Tab
Setpoint Source

Use the pulldown to select the setpoint source. Once a choice is made a graphic appears indicating how the FINAL_VALUE and the FINAL_POSITION_VALUE:

• AO: Sets the AO block as the source for FINAL_VALUE and FINAL_POSITION_ VALUE as per the drawing:



Figure 120 – Setpoint Source Configuration: AO

• *DO* - *Open/Close*: Sets the DO block open/close integer output OUT_D and READ-BACK_D as the setpoint source FINAL_VALUE and FINAL_POSITION_VALUE as per the drawing:



Figure 121 – Setpoint Source Configuration: DO Open/Close

• *DO - Analog*: Sets the DO block open/close boolean OUT_D and READBACK_D as the setpoint source FINAL_VALUE and FINAL_POSITION_VALUE as per the drawing:

	Setpoint Source Configuration
	88.12%(Good) Final Value Channel 1 Channel 1 Setpoint Source = 1
Out_D DO Int Readback D	B85(Good) Pinal Value Dint Setpoint Source = 3 Positioner Setpoint Channel 3 B85(Good) Final Position Value Dint Setpoint Source = 3 Actual Position
Out_D	OPEN(Good) Final Value D Channel 2
Readback_D	OPEN(Good) Final Position Value D

Figure 122 – Setpoint Source Configuration: DO Analog

Buttons and Fields

Source of Position Feedback	Use the pulldown to select whether the source of the position feedback to the resource block is the:
	 Final Position Value: Uses the final position value, which depends on the setpoint source configuration, for the FINAL_POSITION_VALUE.
	 Working Position Value: Uses the present position value in use as feedback for the FINAL_POSITION_VALUE.
Shed from Rcas	Enter the time (mSec) for the <i>Rcas</i> to hold without communication before is sheds control.
Shed from Rout	Enter the time (mSec) for the <i>Rout</i> to hold without communication before is sheds control.
Restart Option	Use the pulldown list to select an option for use when clicking Restart Device :
	 Run: Passive state of the parameter - No special processing
	 Restart resource: Restart resource as though power fail had occurred using NVM values
	• Restart with defaults: Resets all blocks are restored to their FF specified initial values.
	 Restart processor: Performs a processor reset and restart.
	• <i>Restart with factory defaults</i> : Set the TB mode to OOS. This restores the TB block to factory defaults. Then FF then reports calibration error amend you must run Find Stops to clear the error. If the restore fails, the TB block error reports <i>Maintenance Needed</i> .
	• <i>Quick Default:</i> Init some block parameters to sensible default values. Requires RB in OOS mode
<i>Restart Device</i> button	Click to restart the device according to the selection in <i>Restart Option</i> .
Travel Range	Enter a range of travel in the units selected in <i>Travel Range</i> . This is used to calculate the Working Setpoint.
Travel Units	Use the pulldown to select the Travel Range units: %, Inch, cm, mm, deg or Rad.

Configure Setpoint Source Configuration

- 1. Use the Setpoint Source pulldown to select a setpoint source.
- 2. Use the Source of Position Feedback pulldown to select where a feedback source.
- 3. Enter a value (s) in Shed from Rcas and/or Shed from Rout.

Position Limits Tab

Use this tab to activate and configure the valve position limits.

Use the *Position Limits* parameters to limit the valve, force the valve to close tightly or open fully at specified positions, and to set the trip points of the limit switches (DI block). You can also activate a deviation warning.

The graph at the top shows the current position alert settings using different colored text and bars relative to 0 and 100%. The graphics on the tab show relative positions in both cases. Once the alert is set, a red exclamation point (!) appears. The colors of the text and bars match the colors for *Device Failure*, *Maintenance Required* and *Warning Data* from the *Diagnostic Alerts* tab:

- DEVICE FAILURE RED
- MAINTENANCE REQUIRED ORANGE
- WARNING DATA BROWN
- Current measurement value GREEN
- Informational BLACK

In general, for LO, the limits established must be below LO and LO LO alert limits and for the HI, the limits established must be above HI and HI HI alert limits.

CAUTION

Position Limit parameters are powerful tools to alter the valve performance to be non-linear. Use them with caution and only when the process requires special performance.

When Tight Shutoff below is configured to a positive value, small flows are not controllable.

Control Position Limits	Position Contro	Characterizat	tion			
Describes the first						
Position Limits	: 1				1 :	
Lo Lo Aler	+					Hi Hi Δlert
						Hi Alert
Fault State						TH AICH
Taun State						
light Shutoff Below	v					Full Open Above
Limit Low	V					Limit High
	. 0 %				100 %	
Position Limits				Cut-Offs		
Position Limits Prot	ected					
Position Limit HI En	abled	\checkmark	/	Full Open Above Enabled		
		-			100.00	
Position Limit HI	100.0	00	%	Full Open Above	100.00	%
Position Limit LO En	abled			Tight Shutoff Enabled		1
Posidon Linic EO En	labieu			nght ondorr Endored		·
Position Limit LO	-1.00		%/	Tight Shutoff Below	2	%/
Setpoint Rate Limits						
Sequenciate clinits						
Rate HI Enabled		Rate LO Enabled		Position Setpoint Rate Limit	100.10	%/s

Figure 123 – Control Configuration Position: Position Limits Tab

	Position Limits Parameters in this group configure set point limits.
Position Limits Protected	Enables/disables access to the other parameters below.
Position Limit HI Enabled	Use this checkbox to enable the HI field. Both this and <i>Full Open Above Enabled</i> are exclusive of each other, as it might lead to a conflict with the value configured for the other parameter's field.
Position Limit HI	Enter a value (%) for the position HI limit.
Position Limit LO Enabled	Use this checkbox to enable the LO field. Both this and <i>Full Open Above Enabled</i> are exclusive of each other, as it might lead to a conflict with the value configured for the other parameter's field
Position Limit LO	Enter a value (%) for the position LO limit.

Cut-Offs Parameters in this group configure the point, after which the valve is fully energized or de-energized.

Full Open	Use this checkbox to enable the Full Open Above field. Both this and Position High
Above Enabled	<i>Enabled</i> are exclusive of each other, as it might lead to a conflict with the value con- figured for the other parameter's field
Full Open Above	Enter a <i>Full Open Above</i> value (%).
Tight Shutoff Enabled	Use this pulldown to enable the <i>Tight Shutoff Below</i> field. Both this and <i>Position LO Enabled</i> are exclusive of each other, as it might lead to a conflict with the value configured for the other parameter's field
Tight Shutoff Below	Enter a Enter a <i>Full Open Above</i> value (%).
	Setpoint Point Rate Limits
Rate HI Enabled	Use this pulldown to enable the rate HI limit when the setpoint is higher.
Rate LO Enabled	Use this pulldown to enable the rate LO limit when the setpoint is lower.
Position Setpoint Rate Limit	Enter a Enter a <i>Position Setpoint Rate Limit</i> value (%).

Configure Position Limits

- 1. Set the *Position Limits* configuration by:
 - a. Using the associated checkbox to enable Position Limit HI and/or Position Limit LO.
 - b. Entering a value in the field associated with *Position Limit HI* and/or *Position Limit LO*.
- 2. Set the *Cut-Offs* configuration by:
 - a. Using the associated checkbox to enable Full Open Above and/or Tight Shutoff Enabled.
 - b. Entering a value in the field associated with Full Open Above and/or Tight Shutoff Enabled.
- 3. Set the *Position Setpoint Rate Limits* configuration by:
 - a. Using the associated checkbox to enable Full Open Above and/or Tight Shutoff Enabled.
 - b. Entering a value in the field associated with Full Open Above and/or Tight Shutoff Enabled.

Position Control Tab

Use this tab to configure the valve control tuning (control sets).

The position controller is a type of non-linear PID control algorithm with six standard parameters listed below, as well as *Auto Tune* and *Custom*. There are an additional eight servo tuning parameters.

Control	Position Lin	nits Position Contro	Characterizatio	on			
		 Show contr for single a 	ol tuning options cting	0	Show control tunin for double acting	g options	
0	Fastest (Smallest)	⊖ Fast (Small)		⊖ Slow (Big)	O Slowest (Biggest)	 Auto Tune 	⊖ Custom
a	ustom Control S	et			Active Control Set		
1	Ρ	288	%		Ρ	288	%
;	I	116	(1/10s)		I	116	(1/10s)
1	D	12	mSec		D	12	mSec
1	P adjust	-186	%		P adjust	-186	%
1	Beta	-2			Beta	-2	
	Position Compensation	13			Position Compensation	13	
1	DeadZone	0.00	%		DeadZone	0.00	%
1	Non Linear	3			Non Linear	3	

Figure 124 – Control Configuration Position: Position Control Tab

Show control tuning options for single acting/ Show control tuning options for double acting	Click a radio button to select type: <i>Single Acting</i> or <i>Double Acting</i> . The options below in this area become restricted to appropriate choices
Fastest (Smallest) Fast (Small) Medium Slow (Big) Slowest (Biggest) Auto Tune Custom	Click a radio button to select the tuning profile from <i>Fastest</i> for a very small valve to <i>Slowest</i> for a very large valve. Additionally, the preferred method of <i>Auto Tune</i> , which automatically tunes the valve. <i>Custom</i> requires manually entering values and is only for experts and under special circumstances. A <i>Custom</i> control set with invalid PID parameters is rejected by the system.
Ρ	Enter the proportional gain in %. Common values for the controller are 50 for small valves up to 4000 for large valves.
	Proportional gain P is the ratio of change of output due to proportional control action to the change in position error. Common values for the positioner are 50 for small actuators and up to 5000 for large actuators. The larger the gain the faster the valve responds with increasing tendency to overshoot. If the gain is too low friction can cause limit cycles. Air supply pressure affects this value. The position controller must be re-tuned in case of air supply pressure changes. The default value of 120 is normally changed by Auto Tune.
I	Enter an integral time or reset time in 1/10th sec, is the time constant of integral control. Higher values of I cause less integral action, however a value of 0 gives no integral action. Common values are 10 to 200.
	Integral time or reset time, is the time constant of integral control. Higher values of <i>I</i> cause less integral control action and increase loop stability. However, higher values of <i>I</i> increase the time to eliminate a steady- state position error. <i>0</i> turns off integral action and results in a steady-state position error. Sustained deviation can result in failsafe action if T2 is set. Therefore, <i>0</i> must be avoided for use in most applications. The default value of 15 seconds is normally changed by Auto Tune.
D	Enter a derivative time or rate time (msec) is the time constant of derivative control.
	Common values are 10 to 100.
	Derivative time or rate time is the time constant of derivative control. Larger derivative time causes more derivative control action. <i>0</i> disables derivative action.
Padj	Enter a proportional gain.
	Valves often have significantly different response when filling verses exhausting. The proportional gain is adjusted by adding Padj (%) to P when the valve is exhausting.

Beta	Enter beta, which is a nonlinear gain factor, ranging from -9 to 9. When beta is 0, the controller gain is linear. Otherwise the gain is the function of error. The larger the beta, the smaller the gain for small error. Typical beta value for a valve position controller is 7 or 8.
PosComp	Enter a position compensation coefficient. The response of the valve is different when the valve is nearly closed than when the valve is nearly open. The position compensation coefficient, which is a number between 0 and 20, make adjustments to try to equalize the valve response. The normal value is 6. For springless actuators the value is 15.
DeadZone	Enter a dead zone value. When the valve position is within the setpoint +/- the dead zone, no additional position control is performed. This value is normally 0%, however for high friction valves (e.g. valves with graphite packing) a higher dead zone (%) helps avoid limit cycling due to the stick/slip action of the valve. In these cases the dead zone chosen might be 0.5% to 1%.
	When the valve position is within its Set Point +/- the dead zone, no additional position control is performed. This value is normally 0%, however for high friction valves (e.g. valves with graphite packing) a higher dead zone helps avoid limit cycling due to the stick/slip action of the valve. In these cases the dead zone can be set at 0.1% to 5%
NonLin	Enter a non-linearity value, which compensates for the pneumatic dead band. Values between 0 and 20.

Characterization Tab

Use this tab to configure of the characterization related parameters and review the selected characterization curve on the tab. The graphical display is immediately updated to present the new characterization curve selected after any parameter change in this group.

The selected characterization curve is bold when selected.

If a standard curve is selected after the custom curve has been selected, a dialog warns the that the custom points will be overwritten with the points of the standard curve. The warning dialog does not appear if the switch is between standard curves.

When a custom curve is selected, you can modify the number of characterization points. The minimum number of points is two and that makes all points non-changeable. The maximum number of points is twenty-one and there are nineteen changeable points. Non-changeable point are grayed out and their values are set to (100, 100). To change the horizontal position of the point by dragging or entering values in *Input Signal*.



Figure 125 – Control Configuration Position: Characterization Tab

Graph Displays the characterization curve.

- Number ofUse the pulldown to select a number of points. A custom characterization definesPointsthe relationship between the input signal and the output position of the valve.
The characterization may contain up to nine XY pairs and the position is linearly
interpolated between the pairs. The first position is always 0, 0 and the last position is
always 100, 100. Both first and last positions indicate 0 and 100 percent and are not
counted as any of the points allowed.
- Signal % Enter on the top line the percent of the signal for each characterization point.
- Position % Enter on the bottom line the percent of the position for each characterization point.

Create a Custom Characterization

To create a custom characterization:

- 1. Use the *Number of Points* pulldown to select a number of points and that many fields are activated below.
- 2. Enter values in the *Setpoint (%)/Position (%)* fields from lowest to highest. If there is too drastic a slope change a red asterisk (!) appears in the navigation tree. Adjust values accordingly.

Position Alerts

Use the Position Alerts tab group to set up the position Alerts related parameters.

If the position limits are enabled, a warning occurs if entering a HI or LO Alerts outside of the position limits.

The relative configuration of the Alarms with respect of position limits, cutoffs, etc. appears in the graph at the top of each tab. If Cut-Off values are disabled, they don't appear. Color coding for the current selection for Alarm actions is as follows:

- DEVICE FAILURE RED
- MAINTENANCE REQUIRED ORANGE
- WARNING DATA BROWN
- Current measurement value GREEN
- Informational BLACK

Deviation Alerts Tab

Use this tab to enable and configure deviation alerts.



Figure 126 – Control Configuration Position Alert: Deviation Alerts Tab

Buttons and Fields

Enabled	Click to enable the deviation alerts.
Deviation Value	Enter the value (%).
Position Error (Alert Point)	Enter a position error (%). If the <i>Deviation Value</i> is above this value for the seconds in <i>Time</i> , the alert is set
Deadband	Enter the percentage below the <i>Position Error</i> that is an allowable deadband above which an alert is set and below which it is cleared.
Time	Enter the time (secs) that a deviation can occur before an alert is set.

Alert An active red LED indicates an unacknowledged alert,

Historic Alert An active red LED indicates all active alerts are cleared, but that all alerts (including historical) have not been cleared.

Configure Deviation Alerts

- 1. Click the appropriate *Enabled* checkbox.
- 2. Enter the required *Deviation Value*.
- 3. Enter a Position Error.
- 4. Enter a *Deadband*.
- 5. Enter a deviation *Time*.

HI and HIHI Alerts Tab

Use this tab to enable and configure the HI and HI HI alerts.

The graph at the top shows the current position alert settings using different colored text and bars relative to 0 and 100%. The graphics on the tab show relative positions in both cases. Once the alert is set, a red exclamation point (!) appears. The colors of the text and bars match the colors for *Device Failure*, *Maintenance Required* and *Warning Data* from the *Alarms and Alerts* tab:

- DEVICE FAILURE RED
- MAINTENANCE REQUIRED ORANGE
- WARNING DATA BROWN
- Current measurement value GREEN
- Informational BLACK

In general, for LO, the limits established must be below LO and LO LO alert limits and for the HI, the limits established must be above HI and HI HI alert limits.



Figure 127 – Control Configuration Position Alert: HI and HIHI Alerts Tab

HI Alert and HI HI Alert

Enabled	Click to enable the <i>HI Alert</i> and activate the fields below.
Position	Displays the current valve position.
Alert Point	Enter a position (%) above which the alert is set. This value must be above <i>Low Alert Setpoint</i> (<i>LO and LOLO Alerts Tab</i>).
Deadband	Enter the percentage below the <i>Alert Point</i> that is an allowable deadband above which an alert is set and below which it is cleared.
Alert	An active red LED indicates an unacknowledged alert,
Historic Alert	An active red LED indicates all active alerts are cleared, but that all alerts (including historical) have not been cleared.

Configure HI and HIHI Alerts

- 1. Click the appropriate *Enabled* checkbox.
- 2. Enter the required *Position* value.
- 3. Enter an Alert Point.
- 4. Enter a *Deadband*.

LO and LOLO Alerts Tab

Use this tab to enable and configure the LO and LO LO alerts.

The graph at the top shows the current position alert settings using different colored text and bars relative to 0 and 100%. Once the alert is set, a red exclamation point (!) appears. The colors of the text and bars match the colors for *Device Failure*, *Maintenance Required* and *Warning Data* from the *Alarms and Alerts* tab:

- DEVICE FAILURE RED
- MAINTENANCE REQUIRED ORANGE
- WARNING DATA BROWN
- Current measurement value GREEN
- Informational BLACK



Figure 128 – Control Configuration Position Alert: LO and LOLO Alerts Tab

LO Alert and LOLO Alert

Enabled	Click to enable the LO Alert and activate the fields below.
Position	Displays the current valve position.
Alert Point	Enter a position (%) above which the alert is set. This value must be below <i>High Alert Setpoint (HI and HIHI Alert Tab)</i>
Deadband	Enter the percentage below the <i>Position Alert Point</i> that is an allowable deadband below which an alert is set and above which it is cleared.
Alert	An active red LED indicates an unacknowledged alert.
Historic Alert	An active red LED indicates all active alerts are cleared, but that all alerts (including historical) have not been cleared.

Configure LO and LOLO Alerts

- 1. Click the appropriate *Enabled* checkbox.
- 2. Enter the required *Position* value.
- 3. Enter an Alert Point.
- 4. Enter a *Deadband*.

Near Closed Alerts Tab

Use this tab to enable and configure the *Near Closed* alerts.

HI and HIHI Alerts	LO and LOLO Alerts	Near Closed Alert	Setpoint Timeout Alert
ert			
Closed provides time in lert will be set when th	seconds the valve spend e Near Closed is greater	ds in near closed positi than the value specifie	ion under control. ed in Alert Point parameter.
ed			
on Closed	0.00		
Closed	372	h	
Point	2000	h	
	•		
ic Alert	0		
	HI and HIHI Alerts ert Closed provides time in lert will be set when th ed on Closed Closed Point	HI and HIHI Alerts LO and LOLO Alerts ert Image: Closed provides time in seconds the valve spender will be set when the Near Closed is greater ed Image: Closed is greater on Closed 0.00 Closed 372 point 2000	HI and HIHI Alerts LO and LOLO Alerts Near Closed Alert ert Closed provides time in seconds the valve spends in near closed positilert will be set when the Near Closed is greater than the value specifie ed

Figure 129 – Control Configuration Position Alert: Near Closed Alerts Tab

Buttons and Fields

Enabled	Click to enable the Near Closed Alert and activate the fields below.
Position Closed	Enter the valve for which the valve is considered closed.
Near Closed	Displays the number of hours that the valve has spent below the <i>Position Closed</i> value.
Alert Point	Enter a number of hours above which the alert is set.
Alert	An active red LED indicates an unacknowledged alert.
Historic Alert	An active red LED indicates all active alerts are cleared, but that all alerts (including historical) have not been cleared.

Configure Near Closed Alerts

- 1. Click the *Enabled* checkbox.
- 2. Enter the required Position Closed value.
- 3. Enter an Alert Point.

Setpoint Timeout Alert Tab

Use this tab to enable and configure the *SetPoint Timeout Alert* alerts. The *SetPoint Timeout* alert is reported when the valve setpoint has not been updated by the AO or DO block for more than *ALERT POINT* time.



Figure 130 – Control Configuration Position Alert: Setpoint Timeout Alert Tab

Buttons and Fields

Last Update

Enabled Click to enable the *SetPoint Timeout Alert* and activate the fields below.

Time Since Displays the number of seconds since the last setpoint update.

Alert Point	Enter a number of seconds since the last setpoint update, above which the alert is set. This value must be at least two times the macro cycle. The macro cycle is the time for the AO block to update the setpoint.
Maximal Detect Time	Displays the maximum time detected before the setpoint was updated. This can be used as a guide in configuring the <i>Alert Point</i> .
Alert	An active red LED indicates an unacknowledged alert.
Historic Alert	An active red LED indicates all active alerts are cleared, but that all alerts (including historical) have not been cleared.

Configure SetPoint Timeout Alert

- 1. Click the *Enabled* checkbox.
- 2. Enter an *Alert Point*.
- 3. Enter a *Maximal Detect Time* value.

Travel Alarms

Use this tab group to set up the travel alarm related parameters.

Travel Accumulation A and B Alert Tab

Use this tab to enable and configure the *Travel Accumulation Alert* alerts. This function keeps you aware of excessive travel patterns.



Figure 131 – Control Configuration Travel Alert: Travel Accumulation A and B Alert Tab

Buttons and Fields

Travel Accumulation A Alert and Travel Accumulation B Alert

Enabled	Click to enable the <i>Travel Accumulation A Alert</i> and <i>Travel Accumulation B Alert</i> and activate the fields below.
Travel Accumulation	Displays the total percent change in travel since travel accumulation was last cleared. This value increases only when the <i>Deadband</i> is exceeded.

Alert Point	Enter a position (%) below which the alert is set.
Deadband	Enter the percentage above which the percentage travel is accumulated towards the <i>Travel Accumulation</i> total.
Alert	An active red LED indicates an unacknowledged alert.
Historic Alert	An active red LED indicates all active alerts are cleared, but that all alerts (including historical) have not been cleared.
Reset Travel Accumulation and Trends	Click to reset Travel Accumulation and its Trend
Reset button	

Configure Travel Accumulation Alert

- 1. Click the appropriate *Enabled* checkbox.
- 2. Enter an *Alert Point*.
- 3. Enter a *Deadband*.

Cycle Counter A and B Alerts Tab

Use this tab to enable and configure the *Cycle Counter Alert* alerts. This function keeps you aware of excessive cycle patterns.

avel Accumulation A and B Alerts	Cycle Counter A and B Alerts	Operating Time Alert		
Cycle Counter A and B Alerts				
Indicate Number of times the valv In order to filter small oscilations a the deadband.	e change direction. aroud the controled position, the ch	ange has to be bigger than	Cycle Counter A Alert	Cycle Counter B Alert
1		Enabled		
Final Position Value		Cycle Counter	0	0
Deadband		 Alert Point	10000	10000
Alert Point B	+1	Deadband	1.00 %	1.00 %
Alert Point A +1	+1 Travel Accumula	tion Alert	۲	•
		Time Historic Alert	0	0
			Reset Cycle Cou	unter and Trend

Figure 132 – Control Configuration Travel Alert: Cycle Counter A and B Alert Tab

Buttons and Fields

Cycle Counter A Alert and Cycle Counter B Alert

Enabled	Click to enable the Cycle Counter A Alert and Cycle Counter B Alert and activate the fields below.
Cycle Counter	Displays the total number of cycles. This value increases only when the <i>Deadband</i> is exceeded.
Alert Point	Enter a cycle count above which the alert is set.
Deadband	Enter the percentage of movement above which the Cycle Counter is accumulated.
Alert	An active red LED indicates an unacknowledged alert.

Historic Alert An active red LED indicates all active alerts are cleared, but that all alerts (including historical) have not been cleared.

Reset Cycle Counter and Trend Click to reset the total number of Cycle Counter and its Trend

Reset button

Configure Cycle Counter A and B Alerts

- 1. Click the appropriate *Enabled* checkbox.
- 2. Enter an Alert Point.
- 3. Enter a *Deadband*.

Operating Time Alert Tab

Use this tab to enable and configure the *Operating Time Alert* alerts. This function keeps you aware of excessive operating time.

Travel Accumulation A and B Alerts	Cycle Counter A and B	B Alerts Operating Time Alert
Operating Time Alert		
Operating Time provides total w The Alert will be set when the To	orking time since manufacurir tal Time is greater than the v	ring or reset in hours. • value specified in Alert Point parameter.
Enabled	V	
Total Operating Time 58	59	h
Alert Point 87	60	h
Alert	۲	
Historic Alert	\bigcirc	
R	eset Total Operating Time	

Figure 133 – Control Configuration Travel Alert: Operating Time Alert Tab

Buttons and Fields

Operating Time Alert

Enabled	Click to enable the Operating Time Alert and activate the fields below.
Total Operating Time	Displays the total operating time.
Alert Point	Enter a time in hours above which the alert is set.
Alert	An active red LED indicates an unacknowledged alert.
Historic Alert	An active red LED indicates all active alerts are cleared, but that all alerts (including
Reset Travel Accumulation and Trends Reset button	Click to reset Total Operating Time

Configure Operating Time Alert

- 1. Click the appropriate *Enabled* checkbox.
- 2. Enter an *Alert Point*.

Fault State Tab

Use this tab to set a configuration in case of a transducer failure. Selected options are only valid if the valve is controllable. Detecting a critical fault, that does not allow valve control, de-energizes the actuator.

The graph at the top shows the current alert settings using different colored text and bars relative to 0 and 100%. Once the alert is set, a red exclamation point (!) appears. The colors of the text and bars match the colors for *Device Failure*, *Maintenance Required* and *Warning Data* from the *Alarms and Alerts* tab:

- DEVICE FAILURE RED
- MAINTENANCE REQUIRED ORANGE
- WARNING DATA BROWN
- Current measurement value GREEN
- Informational BLACK



Figure 134 – Control Configuration Position: Fault State Tab

Use the pulldown to select source for the fault state configuration:
Analog output block/Discrete Outputs: Configures the outputs from the AO block or the discrete outputs from the DO block.
Independent Configuration; Activates the Fault State Options field.
Use the pulldown to configure an action to take for a transducer fault:
Hold Last Value: Sets to hold the last value.
Fail Closed: Sets to have the valve fail to closed.
Fail Open: Sets to have the valve fail to open.
<i>XD_FSTATE_VAL</i> : Sets to have the system use this value, which is entered in <i>Fault State Value</i> .
Enter a value for the setpoint when a transducer fault occurs. <i>XD_FSTATE_VAL</i> must be selected in <i>Fault State Options</i> to use this field.
Enter a value to hold the current position before the Fault State Value is used. <i>XD_F-STATE_VAL</i> must be selected in <i>Fault State Options</i> to use this field.
Request from DO with CHANNEL=CH_DO_FAULT or from user
Request from FB controlling FINAL_VALUE_x per setpoint source
Time in s until activation of Failed State if requested by FB

Configure Fault State

- 1. Use the Fault State Configuration pulldown to set the configuration source.
- 2. Use the Fault State Options pulldown to select the action to take on a transducer fault.
- 3. Enter a Fault State Value to use if XD_FSTATE_VAL is the Fault State Options choice.
- 4. Enter a *Fault State Time* to use if *XD_FSTATE_VAL* is the *Fault State Options* choice.

Discrete

Use this tab group to configure the Resource and Transducer blocks relationship with the DI and DO blocks.

Control Tab

See Control Tab.

Software Switches

Use this tab to view discrete switch status and set when the switch is considered on or off. The last values, updated from the device, appear if available

Current State Discrete Switch 1 State Configuration Normally Open Normally Closed Function Disabled Current State	Discrete Switch 1	Virtual Switch 2
Discrete Switch 1 State	Current State	Current State
Configuration Configuration Normally Open Normally Closed Normally Open Normally Closed Function Disabled	Discrete Switch 1 State	Virtual Switch 2 State
Function Disabled	Configuration Normally Open Normally Closed 	Configuration Normally Open Normally Closed
	Function Disabled	Function Disabled

Figure 135 – Control Configuration Discrete: Software Switches Tab

Buttons and Fields

Discrete Switch 1 State Current State /Virtual Switch State 2 Current State	Displays the status of the respective whether the switch is open or clo	ctive switch: <i>On</i> or <i>Off</i> . The graphic also displays osed.
Discrete Switch 1 Configuration/ Virtual Switch2 Configuration	Click the radio button to configu	re the switch as <i>Normally Open</i> or <i>Normally Closed</i> .
Discrete Switch 1 Normal Function/	Use the associated pulldown to	set the switch operational trigger:
Virtual Switch 2	• Disabled	Travel Deviation Alert
Function	• DO block	Position HI Alert
	• Fault State	Position LO Alert
	• Not in Normal	• Always Active
	 Maintenance Required 	• Always Inactive
	• Warning Data	Rest Occurred
	Air Supply Alert	Tight cutoff

Pressure

Use this tab group to configure the pressure range and pressure alerts related information.

Pressure Range

Use this tab to set the actuator supply pressure range and units.

SVI FF REV3_1 - Online Parameter × NEW	(SVI3REV2) - Online Parameter ×				
Maconoilan SVIFF PC	SITIONER	MASONEIL	AN PRODUCTS		
a Baker Hughes business Man. ID:	FF REV3_1 0x445644 Type. ID: 8	Device ID: Device Rev	4456440008 : 03 DD: 01	07310202 SW: 3.1.0.0 CSC90378	65
al 와 🧐 와 🤮 🧐 • 🗖 🗖 🖪	AUTO AUTO OOS TB:MAN AUTO M	AN OOS 🔺 🛃 👔	😵 🏬 🛛 Connected	6	
Quick Start Configuration Device States Configuration	Pressure Range				
Control Configuration Configuration Configuration Configuration	Engineering Unit 100	150.00	psi		
Travel Alerts	Engineering Unit 0	0.00	psi		
Discrete Software Switches	Units	psi ~			
Pressure Pressure Range Pressure Alerts Pressure	Decimal	3 *			
-X Extended RB Configuration					

Figure 136 – Control Configuration Pressure: Pressure Range Tab

Buttons and Fields

EU_100	Enter the upper range pressure.
--------	---------------------------------

EU_0 Enter the lower range pressure.

Units

Use the Units pulldown to select:

- kPa
- psi
- bar

Change the pressure units and the recalculate the pressure related settings.



Changing the pressure units requires a reboot of NI Configurator for conversion to take effect.

Decimal Use the pulldown to select the number of decimal places. For this release only 3.

Pressure Alarms

Use this set of tabs to configure the alarm settings for the supply pressure. This is comprised of three tabs:

- Supply Pressure HI Alert Tab
- •Supply Pressure LO Alert Tab
- •Supply Pressure LOLO Alert Tab

Supply Pressure HI Alert Tab

Use this tab to enable and configure the supply pressure HI alert.

The graph at the top shows the current pressure alert settings using different colored text and bars relative to 0 and 100%. Once the alert is set, a red exclamation point (!) appears. The colors of the text and bars match the colors for *Device Failure*, *Maintenance Required* and *Warning Data* from the *Alarms and Alerts* tab:

- DEVICE FAILURE RED
- MAINTENANCE REQUIRED ORANGE
- WARNING DATA BROWN
- Current measurement value GREEN
- Informational BLACK



Figure 137 – Control Configuration Pressure: Supply Pressure HI Alert Tab

Supply Pressure HI Alert

Enabled	Click to enable the Supply Pressure HI Alert and activate the fields below.
Pressure	Displays the current supply pressure.
Alert Point	Enter a supply pressure above which the alert is set.
Deadband	Enter the deadband around the target supply pressure that once passed clears the alert.
Alert	An active red LED indicates an unacknowledged alert.
Historic Alert	An active red LED indicates all active alerts are cleared, but that all alerts (including historical) have not been cleared.

Configure Supply Pressure HI Alert

- 1. Click the appropriate *Enabled* checkbox.
- 2. Enter an Alert Point.
- 3. Enter a *Deadband*.

Supply Pressure LO Alert Tab

Use this tab to enable and configure the supply pressure LO alert.

The graph at the top shows the current pressure alert settings using different colored text and bars relative to 0 and 100%. Once the alert is set, a red exclamation point (!) appears. The colors of the text and bars match the colors for *Device Failure*, *Maintenance Required* and *Warning Data* from the *Alarms and Alerts* tab:

- DEVICE FAILURE RED
- MAINTENANCE REQUIRED ORANGE
- WARNING DATA BROWN
- Current measurement value GREEN
- Informational BLACK





Buttons and Fields

Supply Pressure LO Alert

Enabled Click to enable the Supply Pressure LO Alert and activate the fields below

Pressure Displays the current supply pressure.

Alert Point	Enter a supply pressure below which the alert is set.
Deadband	Enter the deadband around the current supply pressure that once passed clears the alert.
Alert	An active red LED indicates an unacknowledged alert.
Historic Alert	An active red LED indicates all active alerts are cleared, but that all alerts (including historical) have not been cleared.

Configure Supply Pressure LO Alert

- 1. Click the appropriate *Enabled* checkbox.
- 2. Enter an *Alert Point*.
- 3. Enter a *Deadband*.

Supply Pressure LOLO Alert Tab

Use this tab to enable and configure the supply pressure LOLO alert.

The graph at the top shows the current pressure alert settings using different colored text and bars relative to 0 and 100%. Once the alert is set, a red exclamation point (!) appears. The colors of the text and bars match the colors for *Device Failure*, *Maintenance Required* and *Warning Data* from the *Alarms and Alerts* tab:

- DEVICE FAILURE RED
- MAINTENANCE REQUIRED ORANGE
- WARNING DATA BROWN
- Current measurement value GREEN
- Informational BLACK



Figure 139 – Control Configuration Pressure: Supply Pressure LOLO Alert Tab

Buttons and Fields

Supply Pressure LOLO Alert

Enabled Click to enable the *Supply Pressure LOLO Alert* and activate the fields below.

Pressure Displays the current supply pressure.

Alert Point	Enter a supply pressure below which the alert is set.
Deadband	Enter the deadband around the current supply pressure that once passed clears the alert.
Alert	An active red LED indicates an unacknowledged alert.
Historic Alert	An active red LED indicates all active alerts are cleared, but that all alerts (including historical) have not been cleared.

Configure Supply Pressure LOLO Alert

- 1. Click the appropriate *Enabled* checkbox.
- 2. Enter an Alert Point.
- 3. Enter a *Deadband*.

Temperature

Use this tab group to configure the temperature alert settings.

This comprises:

- Temperature HI Alert Tab
- Temperature LO Alert Tab

Temperature HI Alert Tab

Use this tab to enable and configure the temperature HI alert.

The graph at the top shows the current temperature alert settings using different colored text and bars relative to 0 and 100%. Once the alert is set, a red exclamation point (!) appears. The colors of the text and bars match the colors for *Device Failure*, *Maintenance Required* and *Warning Data* from the *Alarms and Alerts* tab:

- DEVICE FAILURE RED
- MAINTENANCE REQUIRED ORANGE
- WARNING DATA BROWN
- Current measurement value GREEN
- Informational BLACK



Figure 140 – Control Configuration Temperature: Temperature HI Alert Tab

Buttons and Fields

Temperature HI Alert

Enabled Click to enable the *Temperature HI Alert* and activate the fields below.

Temperature Displays the current temperature.
Alert Point	Enter a temperature above which the alert is set.
Deadband	Enter the deadband around the current temperature that once passed clears the alert.
Alert	An active red LED indicates an unacknowledged alert.
Historic Alert	An active red LED indicates all active alerts are cleared, but that all alerts (including historical) have not been cleared.

Configure Temperature HI Alert

- 1. Click the appropriate *Enabled* checkbox.
- 2. Enter an *Alert Point*.
- 3. Enter a *Deadband*.

Temperature LO Alert Tab

Use this tab to enable and configure the temperature LO alert.

The graph at the top shows the current temperature alert settings using different colored text and bars relative to 0 and 100%. Once the alert is set, a red exclamation point (!) appears. The colors of the text and bars match the colors for *Device Failure*, *Maintenance Required* and *Warning Data* from the *Alarms and Alerts* tab:

- DEVICE FAILURE RED
- MAINTENANCE REQUIRED ORANGE
- WARNING DATA BROWN
- Current measurement value GREEN
- Informational BLACK



Figure 141 – Control Configuration Temperature: Temperature LO Alert Tab

Buttons and Fields

Temperature LO Alert

Enabled Click to enable the Temperature LO Alert and activate the fields below.

Temperature Displays the current temperature.

Alert Point	Enter a temperature above which the alert is set.
Deadband	Enter the deadband around the current temperature that once passed clears the alert.
Alert	An active red LED indicates an unacknowledged alert.
Historic Alert	An active red LED indicates all active alerts are cleared, but that all alerts (including historical) have not been cleared.

Configure Temperature LO Alert

- 1. Click the appropriate *Enabled* checkbox.
- 2. Enter an Alert Point.
- 3. Enter a *Deadband*.

IP Output

Use this tab group to set the alerts related to the current/pressure converter. This comprises:

- •IP Output HI Alert Tab
- •IP Output LO Alert Tab

IP Output HI Alert Tab

Use this tab to enable and configure the IP output HI alert.

The graphic shows the current IP alert settings using different colored text and bars relative to 0 and 100%. Once the alert is set, a red exclamation point (!) appears. The colors of the text and bars match the colors for *Device Failure*, *Maintenance Required* and *Warning Data* from the *Alarms and Alerts* tab:

- DEVICE FAILURE RED
- MAINTENANCE REQUIRED ORANGE
- WARNING DATA BROWN
- Current measurement value GREEN
- Informational BLACK



Figure 142 – Control Configuration IP Output: IP Output HI Alert Tab

Buttons and Fields

IP Output HI Alert

Enabled	Click to enable the IP Output HI Alert and activate the fields below.
Current Output	Displays the current IP percentage.
Alert Point	Enter an IP percent above which the alert is set.
Deadband	Enter the deadband (%) around the output that once passed clears the alert.
Alert	An active red LED indicates an unacknowledged alert.
Historic Alert	An active red LED indicates all active alerts are cleared, but that all alerts (including historical) have not been cleared.

Configure IP Output HI Alert

- 1. Click the appropriate *Enabled* checkbox.
- 2. Enter an Alert Point.
- 3. Enter a *Deadband*.

IP Output LO Alert Tab

Use this tab to enable and configure the IP output LO alert.

The graphic shows the current IP alert settings using different colored text and bars relative to 0 and 100%. Once the alert is set, a red exclamation point (!) appears. The colors of the text and bars match the colors for *Device Failure*, *Maintenance Required* and *Warning Data* from the *Alarms and Alerts* tab:

- DEVICE FAILURE RED
- MAINTENANCE REQUIRED ORANGE
- WARNING DATA BROWN
- Current measurement value GREEN
- Informational BLACK



Figure 143 – Control Configuration IP Output: IP Output LO Alert Tab

Buttons and Fields

IP Output HI Alert

Enabled

Click to enable the IP Output HI Alert and activate the fields below.

Current Output	Displays the current IP percentage.
Alert Point	Enter an IP percent above which the alert is set.
Deadband	Enter the deadband (%) around the output that once passed clears the alert.
Alert	An active red LED indicates an unacknowledged alert.
Historic Alert	An active red LED indicates all active alerts are cleared, but that all alerts (including historical) have not been cleared.

Configure IP Output LO Alert

- 1. Click the appropriate *Enabled* checkbox.
- 2. Enter an Alert Point.
- 3. Enter a *Deadband*.

Extend RB Configuration

Use this tab to configure writeable Resource block parameters.

Igoopoilan	SVI FF POSITIONEF	2		MASONEILAN PROD	OUCTS				1
asonelian	Tag: SVI FF REV3_1			Device ID: 44564400	800	07	3102	02	
a Baker Hughes business	Man. ID: 0x445644	т	rpe.ID: 8	Device Rev: 03	DD:	01 SW:	3.1.0	0 CSC90378	
9 19 9 19 /4 · 🗖		005	TB:MAN AUTO MAN OOS	A 🔮 😵 🕵 🌉	Conne	cted			
PQuick Start Configuration	^	Denidar	DD Crafferenting				_		
P Device States		Extended	r KB Conliguration						
Configuration			how Different	Current Settings				Default Settings	
a Sontrol Configuration			NOW Direction			<<		Detault Setungs	
e 📸 Position			Theck All Unequal Items						
- 🏟 Configuration									
- 📫 Position Alerts									
					Th	e unea	แมล	l sign calls attentio	on to
- Sault State		0, 1	Block Header			motoh	ad	noromotoro	
🖶 📸 Discrete			Divel Tax	01 88 4456440008	0731020	matche	eu	DIRR 0047450008 [SN-11ch]	
- Configuration			Block Tag	01_110_44004000	/ 1020			onth_bootraboodo_tore-ritarj	
Software Switches		2.	Tan Description	-		=/=		Tag Description	
Pressure			ing browping						
- Pressure Range		3, 5	Strategy	0				0	
Pressure Alerts									
Temperature		4, 1	Alert Key	1				1	
- P Output									
-X Extended RB Configuration	on	5,1	Block Mode						
Extended TB Configuration	n		*	Auto Mada				Auto Mode	
Diagnostic Alerts			rarget	Auto Mode				Auto mode	
Alerts			Permitted	Auto Mode, Out of Service	Mode			Auto Mode, Out of Service Mode	
- D Alerts			(on the o						
CD Display			Normal	Auto Mode		~		Auto Mode	
Calibration									
- Find Stops		14,	Grant Deny						
Auto Tune									
Quick Wizard			Grant			č.,			
Full Wizard			2						
Chagnostics			Deny			1			
Pamo Tart		18	Feature Selection	Reports Faultstate Soft V	VLoc	*		Reports, Faultstate, Soft W Lock, Har	
Signature Test		10,		. reports, resistants, son r			-		
Histograms		26,	Shed Remote Cascade	20000				20000	mSec
Trends									
PST and Data Collection		27,	Shed Remote Out	20000				20000	mSec
Partial Stroke Test - PST		122		0.00				OFF	
Data Collection		29,	Set Fault State	OFF 140		~		UFF	
Identification		-	Clear Enult State	04				Off	
Positioner		30,	Crear Fault State	UII					
Valve		32	Limit Notify	40		;/	0	5	
Network Settings			and the second se			-			
Contact and Order		33.	Confirm Time	20000				20000	mSec
Defaults									
0		34,	Write Lock	Not Locked		4		Not Locked	

Figure 144 – Control Configuration: Extend RB Configuration Tab

Buttons and Fields

Show Different	Filters the tab to show only parameters that are different between the left and right columns.
Check All Unequal Items	Places a check in next to all items with an unequal sign (🧚) between the two columns.
Current Settings	This column displays the current parameter setting. This column is active for edits.
Saved Settings/ Default Settings	Use the pulldown to select the settings to view in the right column: • <i>Saved Settings</i> : The last saved settings for the DTM. • <i>Default Settings</i> : The initial default settings.

<<	
>>	1

Click to copy the right column settings to left (Current Settings).

Click this to write settings to the connected device based on the selection in the pulldown to the right (*Default Settings* or *Saved Settings*).

0. Block Header

Block Tag Enter the tag name of up to 32 characters. Special characters not allowed: V:*<>!"



Do not change the device tagname or the node address of a device in an operating Foundation Fieldbus segment. Control linkages are lost. Do not use a leading space in a device tag name, this causes the device to become non-operational. Block tags are not used for control linkages. They can be changed without losing control linkages. However, some applications require restarting if another application changes a block tag.

- 2. Tag Description Enter a description of the block of up to 32 characters.
- 3. Strategy Enter a description of the grouping of blocks of up to 32 characters.
- 4. Alert Key Enter the identification of the plant unit.
- 5. Mode Block

TargetUse the pulldown to select the target mode: Auto Mode or Out of Service Mode.This is the mode that the block uses as its fallback on failure. Choices limited by
Permitted field.

Permitted Use the pulldown to select the permitted mode for the block: *Auto Mode* and/or *Out of Service Mode*. If both are unchecked then there are no modes available in *Target*.

- *Normal* Use the pulldown to configure the normal operating mode: *Auto Mode* or *Out of Service Mode.* Choices limited by *Permitted* field.
- 14. Grant Deny

Grant

Use the pulldown to grant access to:

- *Program:* Pertains to overall program operation. Host may change mode, set-point, or output of block.
- Tune: Pertains to tuning operations.
- Alert: Pertains to alert configuration.
- Local: Pertains to local interface (LED) operations.
- Operate: Pertains to the ability to use operating parameters.
- Service: Pertains to the ability to use service parameters.
- *Diagnostic:* Pertains to the ability to use diagnostic parameters.

Deny

Use the pulldown to deny access to:

- Program
- Tune
- Alert
- Local
- Operate
- Service
- Diagnostic

18. Feature Sel Use the pulldown to access a picklist with checkboxes to enable/disable the following functionalities:

- Unicode: User defined octet strings to be stored as Unicode strings.
- *Reports*: Device can produce alert and trend reports.
- Faultstate: Faultstate action is allowed.
- Soft Write Lock: Soft Write Lock is allowed.
- Hard Write Lock: Hard Write Lock is allowed.
- Output Readback: Output Readback is allowed.
- Direct Write: Direct Write to output hardware is allowed
- Change Bypass in Auto: Change of BYPASS in an AUTO mode.
- *MVC Reports*: Configuration tools need to check for MVC support in subscribers and hosts as well as publisher and reporting devices before using this feature to optimize communications across the network.
- MVC Publ/Subscr: Configuration tools need to check for MVC support in subscribers and hosts as well as publisher and reporting devices before using this feature to optimize communications across the network.
- *Mbit Alarm*: If multi-bit alarms are not supported, then Block Alarms are not considered to be multi-bit alarms, and they are treated as simple alarms.
- 26. Shed FromEnter a value to set the time limit for loss of communication from a remote device. 0Rcasdisables. Initial value of 20 sec.
- 27. Shed FromEnter a value to set the time limit for loss of communication from a remote device. 0Routdisables. Initial value of 20 sec.
- 29. Set FState Use the pulldown to set Off or Set. Set causes all output function blocks to go imme-
- *30. Clear FState* Use the pulldown to set *Off* or *Clear*. *Clear* causes the device fault state to clear if the field condition has been corrected.
- 32. Lim Notify Enter a number lower than or equal to MAX_NOTIFY, to control alert flooding. See

DCS vendor recommendations for guidance with the value for this field.

The MAX_NOTIFY parameter value is the maximum number of alert reports that this resource can have sent without getting a confirmation, corresponding to the amount of buffer space available for alert messages

33. Confirm Time Enter the time for the block to wait for confirmation that a transmitted value is received before retrying. See DCS vendor recommendations for guidance with the value for this field.

34. Write Lock	Use the pulldown to engage/disengage.
	The <i>Write Lock</i> parameter, if set, prevents any external change to the block's static or nonvolatile database. Block connections and calculation results proceed nor-mally, but the configuration is locked.
	When <i>Hard Write lock</i> is <i>not supported</i> (disabled using <i>Feature Sel</i>), then <i>Write Lock</i> can be set and cleared by writing to the <i>Write Lock</i> parameter when soft write lock is enabled in <i>Feature Sel</i> . Clearing <i>Write Lock</i> generates the discrete alert WRITE_ALM, at the <i>Write Priority</i> . Setting <i>Write Lock</i> will clear the alert, if it exists. When the soft write lock bit is not true in the features bit strings, writes to the parameter <i>Write Lock</i> is rejected by the device.
	 For devices that support hard write lock and have the associated <i>Feature Sel</i> attri-bute enabled, the parameter <i>Write Lock</i> is only an indicator of the state of write-locking. Writes to <i>Write Lock</i> will be rejected by the device. To activate write-locking, the write-lock jumper must be in the correct position, as determined by the manufacturer, and the <i>Hard Write</i> set in <i>Feature Sel</i>. When this is detected by the device, <i>Write Lock</i> is set to 2. All writes to static and non-volatile parameters are rejected by the device during this state. The configured value of <i>Soft Write</i> lock has no impact on device operation when <i>Hard Write</i> lock is enabled in <i>Feature Sel</i>. To deactivate write locking, since <i>Feature Sel</i> is not writeable during write locking, the jumper must be changed. Once the device detects the changed jumper position write-locking is disabled and <i>Write Lock</i> is set to 1. The detection of the jumper is dependent on the manufacturer. Some manufacturers may require that the device be restarted in order to detect the jumper, while others may detect the jumper during normal device operation.
37. Alarm Sum	
Alarm Sum	Displays the current alert status, unacknowledged states, unreported states, and disabled states of the alerts associated with the function block. The zero (0) state indicates alert clear, acknowledged, reported, enabled.
Disabled	Use the pulldown list to click a checkbox, which disables the alert type: • <i>Discrete Alarm Writes have been enabled</i> • <i>High high Alarm</i> • <i>High Alarm</i> • <i>Low low Alarm</i> • <i>Low low Alarm</i> • <i>Deviation high Alarm</i> • <i>Deviation low Alarm</i> • <i>Block Alarm</i> • <i>Fail Alarm</i> • <i>Off Spec Alarm</i> • <i>Maintenance Alarm</i> • <i>Check Alarm</i>

38. ACK Option	Use the pulldown to click a checkbox, which enables that alerts associated with the block are automatically acknowledged.		
	 Discrete Alarm Writes have been enabled High high Alarm High Alarm Low low Alarm Low Alarm Deviation high Alarm 	 Deviation low Alarm Block Alarm Fail Alarm Off Spec Alarm Maintenance Alarm Check Alarm 	
39. Write Priority	Enter a value for the priority of the alert of	generated by clearing the write lock [0, 15].	
47. Failed Map	This parameter maps conditions to be de	etected as active for Failed alarm category.	
48. Off Specification Map	This parameter maps conditions to be de category.	etected as active for Off Specification alarm	
49. Maintenance Map	This parameter maps conditions to be de category.	etected as active for Maintenance alarm	
50. Check Function Map	This parameter maps conditions to be de category.	etected as active for Check Function alarm	
51. Failed Mask	This parameter allows the user to suppre- are active, in Failed category, from being parameter. A bit equal to '1' will mask i.e. bit equal to '0' will unmask i.e., allow bro	ess any single or multiple conditions that g broadcast to the host through the alarm ., inhibit the broadcast of a condition, and a adcast of a condition.	
52. Off Specification Mask	This parameter allows the user to suppre- active, in Off Specification category, from alarm parameter. A bit equal to '1' will ma and a bit equal to '0' will unmask i.e., allo	ess any single or multiple conditions that are n being broadcast to the host through the ask i.e., inhibit the broadcast of a condition, ow broadcast of a condition.	
53. Maintenance Mask	This parameter allows the user to suppre- active, in Maintenance category, from be parameter. A bit equal to '1' will mask i.e. bit equal to '0' will unmask i.e., allow bro	ess any single or multiple conditions that are sing broadcast to the host through the alarm ., inhibit the broadcast of a condition, and a adcast of a condition.	
54. Check Function Mask	This parameter allows the user to suppre- active, in this category, from being broad A bit equal to '1' will mask i.e., inhibit the '0' will unmask i.e., allow broadcast of a	ess any single or multiple conditions that are lcast to the host through the alarm parameter. broadcast of a condition, and a bit equal to condition.	
59. Failed Priority	This parameter allows the user to specify	y the priority of Failed alarm category.	
60. Off Specification Priority	This parameter allows the user to specify category.	y the priority of Off Specification alarm	
61. Maintenance Priority	This parameter allows the user to specify	y the priority of Maintenance alarm category.	
62. Check Function Priority	This parameter allows the user to specify category.	y the priority of Check Function alarm	
63. Field Diagnostics Simulate Enable/ Disable	This parameter allows the conditions to lenabled. When simulation is disabled bo diagnostic value track the actual condition	be manually supplied when simulation is the diagnostic simulate value and the ons.	

Extend TB Configuration

Use this tab to configure writeable transducer block parameters.

Aconoilan SVIFF POSITIO	ONER	MASONEILAN PRODUCTS			
Tag: SVIFFR	EV3_1	Device ID: 4456440008	0731	0202	Colored and
a Baker Hughes business Man. ID: 0x44	15644 Type. ID: 8	Device Rev: 03 DD: 01	SW: 3.1	1.0.0 CSC90378	
😥 🗐 🖳 🧐 🚰 • 🗖 🧰 RB.AUTO	AUTO OOS TBMAN AUTO MAN OOS	A) 🛃 😰 😭 🌉 Connected			
P Quick Start Configuration	Extended TB Configuration				
Device States					
Configuration	Show Different	Current Settings	<<	Default Settings	
Peritien	Check All Unequal Items				
Configuration					
Position Alerts					
Travel Alerts					
- Sault State	0, Block Header				
😑 📣 Discrete		lana 1	4		
- 🎒 Configuration	Block Tag	TDDIXK	7		
Software Switches	2. Tag Description	XXXX	*	n.	
😑 🚳 Pressure	a, ray beaution		-		
Pressure Range	3, Strategy	0		0	
Temperature	and the second se			G.	
M IP Output	4, Alert Key	1		1	
-X Extended RB Configuration	5, Block Mode				
Extended 18 Configuration Diagnostic Alerts	Target	Manual Mode ~	≯ :	Auto Mode	
- 🚳 Alerts - 🚳 FD Alerts	Permitted	Auto Mode, Manual Mode, Out ~		Auto Mode, Manual Mode, Out of S	ie .
LCD Display	Normal	Auto Mode		Auto Mode	
X Calibration	Normai	AND MODE		Pate mode	
-X Find Stops	14, Postion Limits				
Auto Tune					
Quick Wizard	Limits Protected	Disabled v		Disabled	
Disconstice	Eastle W	Dirabled		Disabled	
Step Test	Ciable H				
- 🚱 Ramp Test	Enable Lo	Disabled v		Disabled	
- Signature Test				(
- 🗐 Histograms	Limit HI	100.00		100.00	%
	LimitLO	0.00		0.00	16
PST and Data Collection	Linto				
Partial Stroke Test - PST	Enable Rate Hi	Disabled ~		Disabled	
Data Collection				(m) 11.4	
Positioner	Enable Rate Lo	Disabled		Usabled	
Valve	Setopint Limit Rate	100.10		100.10	16/5
Network Settings					10760
- 🙆 Contact and Order	15, Final Value Cutoff HI				
Defaults		har second s		in the second se	
B Security	Enable	Disabled ~		Usabled	
- Device Access	Threshold Point %	100.00		100.00	4
- Parameters Channe Arress		Lister I.		Licente	1.0
Connected	Planning Engineer				

Figure 145 – Control Configuration: Extend TB Configuration Tab

Buttons and Fields

Show Different	Filters the tab to show only parameters that are different between the left and right columns.
Check All Unequal Items	Places a check in next to all items with an unequal sign (🧚) between the two columns.
Current Settings	This column displays the current parameter setting. This column is active for edits.
Saved Settings/ Default Settings	Use the pulldown to select the settings to view in the right column: • <i>Saved Settings</i> : The last saved settings for the DTM. • <i>Default Settings</i> : The initial default settings.



Click to copy the right column settings to left (Current Settings).

Click this to write settings to the connected device based on the selection in the pulldown to the right (*Default Settings* or *Saved Settings*).

0. Block Header

Block Tag

Enter the tag name of up to 32 characters. Special characters not allowed: V:*<>!"



Do not change the device tagname or the node address of a device in an operating Foundation Fieldbus segment. Control linkages are lost. Do not use a leading space in a device tag name, this causes the device to become non-operational. Block tags are not used for control linkages. They can be changed without losing control linkages. However, some applications require restarting if another application changes a block tag.

- 2. Tag Description Enter a description of the block of up to 32 characters.
- 3. Strategy Enter a description of the grouping of blocks of up to 32 characters.
- 4. Alert Key Enter the identification of the plant unit.
- 5. Mode Block
- TargetUse the pulldown to select the target mode: Auto Mode, Manual Mode and/or Out of
Service Mode. This is the mode that the block uses as its fallback on failure. Choices
limited by Permitted field.
- Permitted Use the pulldown to select the permitted mode for the block: Auto Mode, Manual Mode or and/or Out of Service Mode. If both are unchecked then there are no modes available in Target.
- Normal Use the pulldown to configure the normal operating mode: Auto Mode, Manual Mode and/or Out of Service Mode. Choices limited by Permitted field.
- 14. Position Limits
- HI Enabled Use the pulldown to enable/disable the Limit HI field
- LO Enabled Enabled Use the pulldown to enable/disable the Limit LO field.
- *Limit HI* Enter a value for *Limit HI* field. Same parameters as the *Position Limit* tab.
- Limit LO Enter a value for Limit LO field. Same parameters as the Position Limit tab.
- Rate HI Use the pulldown to enable/disable the Rate HI field.
- Rate LO Use the pulldown to enable/disable the Rate HI field.
- Limit Rate Enter a value for the Position Limit Rate point

Enabled

Enabled

15, Final Value Cut Off HI

Enabled	Use the pulldown to enable/disable the position limit for the Full Open Above field.
Point HI	Enter a value for the position limit <i>Full Open Above</i> point.

16. Final Value Cut Off LO

Enabled	Use the pulldown to enable/disable the position limit for the <i>Tight Shutoff</i> field.
Point LO	Enter a value for the position limit Tight Shutoff point
18. Activate Control Set	Use the pulldown to select the default control set for the block: Single Acting + Fastest (Smallest)
	• Single Acting + Fast (Small)
	Single Acting + Medium

- Single Acting + Slow (Big)
- Single Acting + Slowest (Biggest)
- Custom
- Double Acting + Fast (Small)
- Double Acting + Slow (Big)
- Do Nothing
- See Position Control Tab.

20. Custom Control Set

Ρ	Enter a value for <i>P</i> . See <i>Control Tab</i> for a full explanation of this value.
Ι	Enter a value for <i>I</i> . See <i>Control Tab</i> for a full explanation of this value.
D	Enter a value for <i>D</i> . See <i>Control Tab</i> for a full explanation of this value.
Padj	Enter a value for <i>Padj</i> . See <i>Control Tab</i> for a full explanation of this value.
Beta	Enter a value for <i>Beta</i> . See <i>Control Tab</i> for a full explanation of this value.
Position Compensation	Enter a value for <i>PosComp</i> . See <i>Control Tab</i> for a full explanation of this value.
Dead Zone	Enter a value for <i>Dead Zone</i> . See <i>Control Tab</i> for a full explanation of this value
Non Linear	Enter a value for NonLin. See Control Tab for a full explanation of this value.

22. Travel Calibration

Cal Location	Enter a notation for where the last calibration was done.
Cal Date	Click the calendar and enter the date of the last calibration
Cal Who	Enter a notation for who did the last calibration.

23. Travel

Range Enter a value of full range for the range of travel.

Units Index	Use the pulldown to select the units for <i>Range</i> :	
	 Inch cm mm deg Rad % 	
26. Deviation Alert		
Alert Point	Enter an value for the alert to occur. See <i>Deviation Alerts Tab</i> for a full explanation of fields.	
Dead Band	Enter a dead band range. See <i>Deviation Alerts Tab</i> for a full explanation of fields.	
Time	Enter a time before an alert is set. See <i>Deviation Alerts Tab</i> for a full explanation of fields.	
Enabled	Use the pulldown to enable/disable this alert. See <i>Deviation Alerts Tab</i> for a full explanation of fields.	
27. Position HIHI Ale	ert	
Alert Point	Enter an value for the alert to occur. See <i>HI and HIHI Alerts Tab</i> for a full explanation of fields.	
Dead Band	Enter a dead band range. See <i>HI and HIHI Alerts Tab</i> for a full explanation of fields.	
Enabled	Use the pulldown to enable/disable this alert. See <i>HI and HIHI Alerts Tab</i> for a full explanation of fields.	
28. Position HI Alert		
Alert Point	Enter an value for the alert to occur. See <i>HI and HIHI Alerts Tab</i> for a full explanation of fields.	
Dead Band	Enter a dead band range. See <i>HI and HIHI Alerts Tab</i> for a full explanation of fields.	
Enabled	Use the pulldown to enable/disable this alert. See <i>HI and HIHI Alerts Tab</i> for a full explanation of fields.	
29. Position LO Aler	t	
Alert Point	Enter an value for the alert to occur. See <i>LO and LOLO Alerts Tab</i> for a full explanation of fields.	
Dead Band	Enter a dead band range. See LO and LOLO Alerts Tab for a full explanation of fields.	
Enabled	Use the pulldown to enable/disable this alert. See <i>LO and LOLO Alerts Tab</i> for a full explanation of fields.	
30. Position LOLO Alert		
Alert Point	Enter an value for the alert to occur. See <i>LO and LOLO Alerts Tab</i> for a full explanation of fields.	
Dead Band	Enter a dead band range. See LO and LOLO Alerts Tab for a full explanation of fields.	

Enabled	Use the pulldown to enable/disable this alert. See <i>LO and LOLO Alerts Tab</i> for a full explanation of fields.
31. Travel Accum	lation A Alert
Alert Point	Enter an value for the alert to occur. See <i>Travel Accumulation A and B Alert Tab</i> for a full explanation of fields.
Dead Band	Enter a dead band range. See <i>Travel Accumulation A and B Alert Tab</i> for a full explanation of fields.
Time	Enter a time before an alert is set. See <i>Deviation Alerts Tab</i> for a full explanation of fields.
Enabled	Use the pulldown to enable/disable this alert. See <i>Travel Accumulation A and B Alert Tab</i> for a full explanation of fields.
32. Travel Accumi	llation B Alert
Alert Point	Enter an value for the alert to occur. See <i>Travel Accumulation A and B Alert Tab</i> for a full explanation of fields.
Dead Band	Enter a dead band range. See <i>Travel Accumulation A and B Alert Tab</i> for a full explanation of fields.
Enabled	Use the pulldown to enable/disable this alert. See <i>Travel Accumulation A and B Alert Tab</i> for a full explanation of fields.
34. Cycle Counter	A Alert
Alert Point	Enter an value for the alert to occur. See Cycle Counter A and B Alerts Tab for a full explanation of fields.
Dead Band	Enter a dead band range. See <i>Cycle Counter A and B Alerts Tab</i> for a full explanation of fields.
Enabled	Use the pulldown to enable/disable this alert. See Cycle Counter A and B Alerts Tab for a full explanation of fields.
35. Cycle Counter	BAlert
Alert Point	Enter an value for the alert to occur. See Cycle Counter A and B Alerts Tab for a full explanation of fields.
Dead Band	Enter an value for the alert to occur. See <i>Cycle Counter A and B Alerts Tab</i> for a full explanation of fields.
Enabled	Use the pulldown to enable/disable this alert. See <i>Cycle Counter A and B Alerts Tab</i> for a full explanation of fields.
39. Near Closed A	lert
Position Closed	Enter an value for the alert to occur. See <i>Near Closed Alerts Tab</i> for a full explanation of fields.
Alert Point	Enter an value for the alert to occur. See <i>Near Closed Alerts Tab</i> for a full explanation of fields.
Enabled	Use the pulldown to enable/disable this alert. See Near Closed Alerts Tab for a full

41. Setpoint Timeout Alert

Alert Point	Enter an value for the alert to occur. See <i>Setpoint Timeout Alert Tab</i> for a full explanation of fields.
Enabled	Use the pulldown to enable/disable this alert. See <i>Setpoint Timeout Alert Tab</i> for a full explanation of fields.
42. Fault State	
Configuration	Use the pulldown to select the configuration type. See <i>Fault State Tab</i> for a full explanation of fields.
Options	Use the pulldown to select the configuration type. See <i>Fault State Tab</i> for a full explanation of fields.
Value	Enter a <i>Fault State Value</i> . See <i>Fault State Tab</i> for a full explanation of fields.
Time	Enter a <i>Fault State Time</i> . See <i>Fault State Tab</i> for a full explanation of fields.

43. Characterization Selection

Type Use the pulldown to select a characterization type. See *Characterization Tab* for a full explanation of fields.

45. Custom Characterization

Number ofUse the pulldown to select a number of points for a Custom characterization type.PointsSee Characterization Tab for a full explanation of fields.

46. Custom Characterization Points
Click the button to access a dialog for entering Custom characterization points
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See *Characterization Tab* for a full explanation of fields.

- 47. *Readback* Use the pulldown to select a readback type. See *Characterization Tab* for a full explanation of fields.
- 51. Pressure Range

Units Index	Use the pulldown to select the pressures units. See <i>Pressure Range</i> for a full explanation of fields.
Decimal	Use the pulldown to select the decimal places. See <i>Pressure Range</i> for a full explanation of fields.

- 52. Supply Pressure HI Alert
- Alert PointEnter an value for the alert to occur. See Supply Pressure HI Alert Tab for a full
explanation of fields.Dead BandEnter an value for the alert to occur. See Supply Pressure HI Alert Tab for a full
explanation of fields.

Enabled	Use the pulldown to enable/disable this alert. See Supply Pressure HI Alert Tab for a
	full explanation of fields.

53. Supply Pressure LO Alert

Alert Point	Enter an value for the alert to occur. See <i>Supply Pressure LO Alert Tab</i> for a full
	explanation of fields.

Dead Band Enter an value for the alert to occur. See *Supply Pressure LO Alert Tab* for a full explanation of fields.

Enabled Use the pulldown to enable/disable this alert. See *Supply Pressure LO Alert Tab* for a full explanation of fields.

54. Supply Pressure LOLO Alert

- *Alert Point* Enter an value for the alert to occur. See *Supply Pressure LOLO Alert Tab* for a full explanation of fields.
- *Dead Band* Enter an value for the alert to occur. See *Supply Pressure LOLO Alert Tab* for a full explanation of fields.
- *Enabled* Use the pulldown to enable/disable this alert. See *Supply Pressure LOLO Alert Tab* for a full explanation of fields.

62. Temperature HI Alert

Alert Point	Enter an value for the alert to occur. See <i>Temperature HI Alert Tab</i> for a full explanation of fields.
Dead Band	Enter an value for the alert to occur. See <i>Temperature HI Alert Tab</i> for a full explanation of fields.

Enabled Use the pulldown to enable/disable this alert. See *Temperature HI Alert Tab* for a full explanation of fields.

63. Temperature LO Alert

Alert Point	Enter an value for the alert to occur. See <i>Temperature LO Alert Tab</i> for a full explanation of fields.
Dead Band	Enter an value for the alert to occur. See <i>Temperature LO Alert Tab</i> for a full explanation of fields.
Enabled	Use the pulldown to enable/disable this alert. See <i>Temperature LO Alert Tab</i> for a full explanation of fields.
65. IP HI Alert	
Alert Point	Enter an value for the alert to occur. See <i>IP Output HI Alert Tab</i> for a full explanation of fields.
Dead Band	Enter an value for the alert to occur. See <i>IP Output HI Alert Tab</i> for a full explanation of fields.
Time	Enter an IP HI Alert Time. See IP Output HI Alert Tab for a full explanation of fields.
Enabled	Use the pulldown to enable/disable this alert. See <i>Near Closed Alerts Tab</i> for a full explanation of fields.

66. IP LO Alert	
Alert Point	Enter an value for the alert to occur. See <i>IP Output LO Alert Tab</i> for a full explanation of fields.
Dead Band	Enter an value for the alert to occur. See <i>IP Output LO Alert Tab</i> for a full explanation of fields.
Time	Enter an IP LO Alert Time. See IP Output LO Alert Tab for a full explanation of fields.
Enabled	Use the pulldown to enable/disable this alert. See <i>IP Output LO Alert Tab</i> for a full explanation of fields.

73. UI Custom Configuration

Custom 1	Use the pulldown to select a value for one of the custom fields. See LCD Display for a
Configuration/	full explanation of fields.
Custom 2	
Configuration	

82. Discrete Switch 1

Direction Use the pulldown to select the state that the switch trips to based on the *Function* field: *Normal Open* or *Normal Close*. This sets the default conditions. These are same parameters as on the *Switches* tab.

Function

Use the pulldown list to select the condition that trips the switch:

- Disabled
- DO Block
- Fault State
- Not in Normal
- Maintenance Required
- Warning Data
- Air Supply Alert
- Travel Deviation Alert
- Position HI Alert
- Position LO Alert
- Always Active
- Always Inactive
- Reset Occurred
- Tight cutoff

83. Discrete Switch 2

Direction

Use the pulldown to select the normal state: Normal Open or Normal Close.

Function

Use the pulldown list to select the condition that trips the switch:

- Disabled
- DO Block
- Fault State
- Not in Normal
- Maintenance Required
- Warning Data
- Air Supply Alert
- Travel Deviation Alert
- Position HI Alert
- Position LO Alert
- Always Active
- Always Inactive
- Reset Occurred
- Tight cutoff

84. UI Access Control

Lock Level	Use the pulldown to select the <i>Local Buttons Lock Level</i> access. See <i>Parameters Change Access</i> for a full explanation of fields.
85. UI Language	Use the pulldown to select the UI Language: • English • French • Spanish • Portuguese • Japanese • Italian • German
89. Open Stop Adjustment	Enter a value for the Open Stop Adjustment value. See Find Stops for a full explanation.
90. Open Stop Adjustment	Use the pulldown to select the <i>Setpoint Source</i> access. See <i>Control Tab</i> for a full explanation of fields.
94. Alert Action	
Map to RB	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.
Deviation Alert	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.
Position HIHI Alert	Use the plldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.
Position HI Alert	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.
Position LO Alert	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.

Position LOLO Alert	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.	
Setpoint Timeout Alert	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.	
Near Close Alert	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.	
Travel Accumulation A Alert	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.	
Travel Accumulation B Alert	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.	
Cycle Counter A Alert	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.	
Cycle Counter B Alert	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.	
Operating Time Alert	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.	
Supply Pressure HI Alert	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.	
Supply Pressure LO Alert	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.	
Supply Pressure LOLO Alert	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.	
Temperature HI Alert	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.	
Temperature LO Alert	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.	
IP Drive Current Alert HI	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.	
IP Drive Current Alert LO	Use the pulldown to set this option, See <i>Alarms and Alerts</i> for a full explanation of fields.	
99. Operating Time Alert		

Alert Point Enter an value for the alert to occur. See *Alarms and Alerts* for a full explanation of fields.

Enabled	Use the pulldown to enable/disable this alert. See <i>Alarms and Alerts</i> for a full explanation of fields.
102. Actuator 1	
Actuator Manufacturer	Enter the name of the manufacturer.
Actuator Model Number	Enter the model number.
Actuator Serial Number	Enter the serial number.
103. Actuator 2	
Actuator Type	Enter the actuator type.
Actuator Size	Enter the actuator size.
Actuator Rotary Moment ARM	Enter the Actuator Rotary Moment ARM.
Actuator Effective Area	Enter the effective area.
104. Actuator 3	
Shutoff DP	Enter vendor or installation specific data.
Handwheel	Enter vendor or installation specific data.
Air Action	Use the pulldown to select the Air Action.
Relay Type	 Use the pulldown to select the type (see vendor specific documentation): Standard Rely: Double or Single Acting High Capacity: Single Acting Relay C - Special App: Single Direct Relay B - Special App: Single Reverse Lo Bleed - Relay A or C: Double or Single Direct Lo Bleed - Relay B: Single Reverse Lo Bleed - Relay C: Single Direct Lo Bleed - Relay C: Single Direct Lo Bleed - Relay B - Special App: Single Reverse
Maximum Supply Pressure	Enter the maximum actuator supply pressure. See <i>EU_100</i> on <i>Pressure Range</i> tab.
Maximum Control Supply	Enter the maximum value for the actuator pressure in control. See <i>Pressure</i> on <i>Supply Pressure HI Alert Tab</i> tab.

Minimum Control	Enter the minimum value for the actuator pressure in control.
Supply Pressure	See Pressure on Supply Pressure LO Alert Tab tab.

105. Actuator Information

Descriptor	Enter a descriptor. See <i>Descriptor</i> on <i>Valve</i> tab.
Message	Enter a message related to the actuator. See <i>Message</i> on <i>Valve</i> tab.
Date	Enter a date for when information was input. See <i>Date</i> on <i>Valve</i> tab.
Specification Sheet	Enter a name from the specification sheet. See <i>Specification Sheet</i> on <i>Valve</i> tab.

106. Valve Identification

Valve Manufacturer Identification	Enter the valve manufacturer ID. See Valve Manufacturer ID on Valve tab.
Valve Model Number	Enter the valve model number. See Valve Model Number on Valve tab.
Valve Serial Number	Enter the valve serial number. See Valve Serial Number on Valve tab.
107. Valve Service	
Service	Enter the valve service type. See Valve Service on Valve tab.
PID Number	Enter the valve PID number. See Valve PID Number on Valve tab.
108. Valve Body 1	
Valve Type	Use the pulldown to select the Valve Type. See Valve Type on Valve tab.
Body Size	Enter the Body Size. See Body Size on Valve tab.
Packing	Enter a description of the <i>Packing</i> . See <i>Packing</i> on <i>Valve</i> tab.
Plug Type	Enter a description of the <i>Plug Type</i> . See <i>Plug Type</i> on <i>Valve</i> tab.
Seat Ring Type	Enter a description of the Seat Ring Type. See Seat Ring Type on Valve tab.
109. Valve Body 2	
Characteristic	Enter valve service information (32 characters),
Leakage Class	Enter valve service information (32 characters),
110. Valve Body 3	
Flow Action	Enter valve service information (32 characters),
Rated ADJ CV	Enter valve service information (32 characters),
111. Valve Informatio	on

Same As Actuator Use the pulldown to choose to set the fields to the same as the actuator.

Descriptor	Enter a descriptor. See <i>Descriptor</i> on <i>Valve</i> tab.	
Message	Enter a message related to the valve. See <i>Message</i> on <i>Valve</i> tab.	
Date	Enter a date for when information was input. See <i>Date</i> on <i>Valve</i> tab.	
Spec Sheet	Enter a name from the specification sheet. See <i>Specification Sheet</i> on <i>Valve</i> tab.	
112. Booster		
Manufacturer	Enter the manufacturer.	
Model	Enter the model number.	
Qty	Enter the number of boosters (32 maximum).	
113. Accessory		
Solenoid	Enter the solenoid data.	
Remote Sensor	Use the pulldown to select Internal or Remote as the default sensor type.	
120. Partial Stroke Test Trigger		
Trigger on Demand	PST can be manually triggered when the trigger is enabled.	
Trigger by DI Switch	PST can be triggered by asserting the physical DI switch.	
Trigger by AI Input	PST can be triggered by asserting the physical AI input.	
Physical Al trigger Input	Threshold for AI trigger. Initial value is 12 mA.	
121. Partial Stroke 1	Test (
PST Setpoint Change Threshold	If process setpoint changes more than threshold, PST is aborted.	
Travel	Magnitude of partial stroke.	
Setpoint Rate	Rate of setpoint change in a partial stroke.	
PST Pilot Pressure Change Threshold	If pilot pressure changes more than threshold from end of lead time, PST is aborted.	
PST Actuator Pressure Change Threshold	If actuator pressure changes more than threshold at end of lead time, PST is aborted.	
Pause (Dwell Time). s	The Steady time at the end of the ramp. PST spends this pause time between consecutive strokes.	
PST Lead Time. s	Time before the first stroke.	
Max Time of PST Completion. s:	If running time exceeds this Max time, PST is aborted.	
Parameter to collect:	Specifies which variables are collected during PST.	
Free Option	When PST is running, it is managing the setpoint and valve position.	
PST Stroke Pattern	The predefined sequences of up/down strokes of the PST.	

122. Data Collection Config Perm

Base Rate	Period of sampling.
Skip Count	Number of samples skipped between recorded samples.
Parameter to Collect	Specifies which variables are collected during Data Collection.
Max Samples	Max number of samples to collect. 0 means unlimited by the buffer capacity.
Number of pre-samples	Samples before trigger to include in total samples.
123. Data Collection	Trigger
Enable Option	Turn on Data Collection triggers.
Al Low Threshold	A Data Collection process can be triggered when Analog input value is less than low threshold.
Al High Threshold	A Data Collection process can be triggered when Analog input value is bigger than high threshold.
Pos Deviation Threshold	A Data collection process can be triggered when the distance between setpoint and valve position is more than the threshold.
Pressure Deviation Threshold	A Data collection process can be triggered when the pressure deviation is more than the threshold
SP Deviation Threshold	A Data collection process can be triggered when the setpoint deviation is more than the threshold.
Average Coefficient	Average work Coefficient

126. Data Collection Temp

Base Rate	Period of sampling.
Skip Count	Number of samples skipped between recorded samples.
Parameter to Collect	Enter a date for when information was input. See <i>Date</i> on <i>Valve</i> tab.
Max Samples	Max number of samples to collect. 0 means unlimited by the buffer capacity

Diagnostic Alerts

Alerts

Use this tab to:

- Select whether the Resource or Transducer block report alerts and alerts.
- Configure the severity of an *Alert Type* by assigning it a level, which include:
 - Device Failure: The device has failed and needs immediate attention.
 - *Maintenance Required*: The device is still working but requires immediate attention. The device will continue to operate and will not proceed to failed state.
 - Warning Data: Device data indicates an operational problem.
 - Not Reported: The alert is not reported to the block for use.



Figure 146 – Diagnostics Alert Configuration

Buttons and Fields

Deviation Alert	Difference between working setpoint and working position. TRUE if DEVIATION VALUE is bigger than DEVIATION_ALERT_POINT for DEVIATION_TIME. FALSE if DEVIATION_VALUE is s maller than (DEVIATION_ALERT+DEVIATION_DEADBAND).
Position HIHI Alert	True if position is above ALERT_POINT and is not below (ALERT_POINT- DEADBAND).
Position HI Alert	True if the position value is above the HI Alert Point. Must be set above POSITION_ LO_ALERT.ALERT_POINT.
Position LO Alert	True if the position value is above the HI Alert Point. Must be set above POSITION_ LO_ALERT.ALERT_POINT.
Position LOLO Alert	True if the position value is below the LOLOL Alert Point. Must be set below POSTION_LO_ALERT.ALERT_POINT.
Set Point Timeout Alert	True if TIME_SINCE_UPDATE is above Alert Point. The setpoint update alert is reported only if the valve setpoint has not been updated by the AO or DO block for more than ALERT_POINT time.
Near Closed Alert	True if NEAR_CLOSED is above Alert Point. The near closed alert is reported only if the valve had been working with a valid set point and in auto mode for at least 1000 macro cycles (the sum of all counters in POSITION_HISTOGRAM.TOTAL will be more than 1000). Only enable if the tight shut off is not enabled.
Travel Accumulation A Alert/Travel Accumulation B Alert	True if the TRAVEL_ACCUMULATION is above Alert Point. Totalized change in travel in %, since the TRAVEL_ACCUMULATION was cleared. The value increments when the magnitude of the change exceeds the DEADBAND.
Cycle Counter A Alert/Cycle Counter B Alert	True if the CYCLE_COUNTER is above Alert Point. Number of times the travel changes the direction.
Supply Pressure HI Alert	True if the SUPPLY_PRESSURE is below the Alert Point. True if the SUPPLY_PRESSURE is above ALERT_POINT and not below (ALERT_POINT-DEADBAND).
Supply Pressure LO Alert	True is the SUPPLY_PRESSURE is below the Alert Point. True if the SUPPLY_PRESSURE is below ALERT_POINT and not above (ALERT_POINT+DEADBAND).
Supply Pressure LOLO Alert	True if the SUPPLY_PRESSURE is below the Alert Point. True if the SUPPLY_PRESSURE is below ALERT_POINT and not above (ALERT_POINT+DEADBAND).
Temperature HI Alert	True if TEMPERATURE is above the Alert Point. True if the TEMPERATURE is above ALERT_POINT and not below (ALERT_POINT-DEADBAND).

Temperature LO Alert	True if TEMPERATURE is below the Alert Point.
	True if the TEMPERATURE is below ALERT_POINT and not above (ALERT_POINT+DEADBAND).
IP Drive Current HI Alert	True when CURRENT is above the Alert Point.
IP Drive Current LO Alert	True when CURRENT is below the Alert Point.
Sensor Failure Alert	True for any sensor failure.
Processor Alert	True for any processor alert.
Valve Control Alert	True for any valve control alert.
Commissioning Alert	True if Find Stops fails.
Air Supply Alert	True if there is a low air supply alert.
Supporting Hardware Alert	True if any hardware alert is set.

Configure Alerts

- 1. Choose Map to RB, Report in TB or Report per FF890 which is for SVI FF REV03 device.
- 2. Click a radio button in each alert line to assign the alert level.

Field Diagnostic Alert

Use this tab to simulate/monitor/configure field diagnostic alert (FD_ALERT)

FD AIG(Alarm States	FD_FAIL		FD_OFFSF	FD_OFFSPEC		FD_MAINT		FD_CHECK	
	FD_ALM Unacknowledge Alarm State Timestamp FD_Priority	Adknowledged Active-Reported		Unacknowledged Active-Reported		Unacknowledged Active-Reported		Unacknowledged Clear-Reported		
Set to Default										
		12/29/2	02:48:43	12/30/21 03:31:27		12/29/21 02:48:44		12/30/21 09:02:27		
		15		12		11		10	1	
Simulation Option		Map	Suppress	Mag	Suppress	Marc	Suppress	Map	Suppress	
	Simulation Value			Pap	Suppress	Prop	Solda con			
🗹 Internal Bus Erro	<u>or</u>									
Device Needs M	aintenance Now									
Lost NV Data										
🗹 Lost Static Data	L		3							
Memory Failure										
Output Failure D	Detected									
Device Needs M	aintenance Soon									
Block Configurat	tion Error									
Other									7 🗹	
Faults reported in I	Detected_Faults only									
Deviation Alert										
Position Large Exc.	irsion									
Position Excursion										
Setpoint Timeout A	lert									
Near Close Alert										
Travel A Alert										
Travel 8 Alert										
Working time Alert										
Supply Pressure Ex	cursion									
Supply Pressure Lo	Lo Alert									
Temperature Excur	sion									
IP Drive Current Ex	cursion									
IP Drive Current E	cursion									
Environment										
Hardware										
Valve Control Alert										
	t daar aat wast ananade									

Figure 146.1 – FD Alert Monitor and Configuration

• Enable Simulation option

The FD_SIMULATE parameter is provided for simulating of diagnostic conditions. When Simulation Option is enabled, diagnostic conditions may be simulated by setting the corresponding bit in FD Alert Parameters.

When Simulation Option is disabled, the FD Alert Parameters show actual alert status. A FD_Alert is active if its Check box is checked.

NOTE: Simulation Option is visible only when the device is in simulation mode. User can make device into simulation mode through local UI.

· Simulate a diagnostic condition

Check or uncheck alert parameters to turn on/off FD_Alert active status.

- Map: To configure how to report an active FD_Alert. An active alarm can be reported into four alarm categories, based on the impact of the condition to the health of the device:
 - Failure (FD_FAIL): The field device provides a non-valid output signal due to device malfunction.
 - Out of Specification (FD_OFFSPEC): The field device operates out of the specification.
 - *Maintenance Required (FD_MAINT):* The field device is still able to provide a valid output signal but is about to lose functionality.
 - Check Function (FD_CHECK): The field device is temporarily non-valid due to some type of maintenance activity.
- · Suppress the conditions

Suppress configuration allows user to suppress any single or multiple active alert , in current category:

- Turning on Suppress- Mask active alert condition, not allow alert to report to Host system
- Turning off Suppress- Unmask the alert condition, allow broadcast of an active alert
- Specify the priority for current alarm category. Valid range of priority is 0-15.
- Alarm States

This area displays the change of FD_FAILED_ALARM, FD_MAINT_ALARM, FD_OFFSPEC_ALARM, and FD_CHECK_ALARM

	FD_FAILED_ ALARM	FD_MAINT_ ALARM	FD_OFFSPEC_ ALARM	FD_CHECK_ ALARM		
ALM_Unacknowledge	Presents wheth occurs	er the alarm is a	cknowledged by use	er when a new alarm		
Alarm State	Presents wheth	er an alarm is ac	tive or whether it ha	s been reported		
Time stamp	The time when a change in alarm was detected. The time stamp will stay same constant until the alarm confirmation has been received					

Set to Default

When Set to Default button is clicked, the FD_Alert user interface will be set to default setting. The use "Download Selected Tabs" or "Download All Parameters to Device" to write default setting to device.

RB:AUTO AUTO OOS	S TBAUTO AUTO MA	N OOS	A) 🛃 💈	3 🕷	Connected					
FD Alert	Alert Alarm States		FD_FAIL		FD_OFFSPEC		FD_MAINT		FD_CHECK	
Set to Default	FD_ALM Unacknowledge Alarm State	Advnow	edged	Unackno	wiedged	Unacknowledged Active-Reported 12/29/21 02:48:44		Clear-Reported 12/30/21 09:02:27		
		Active-F	Reported	Active-R	eported					
	Timestamp	12/29/2	1 02:48:43	12/30/21	03:31:27					
	FD_Priority	15		12		11		10		
Simulation Option	Enabled Disabled	Мар	Suppress	Map	Suppress	Мар	Suppress	Мар	Suppress	
[]] [] [] [] [] [] [] [] [] [] [] [] []	Simulation Value	10	A D	_	_	-	_		_	
	<u>or</u>		•							
Device Needs M	aintenance Now						>			
Lost NV Data										
✓ Lost Static Data	L				8					
Memory Failure										
Output Failure E	Petected									
Device Needs M	aintenance Soon						□			
Block Configura	tion Error		8							
Other									7	
Faults reported in I	Detected_Faults only									
Deviation Alert										
Position Large Excu	ursion									
Position Excursion										
Setpoint Timeout A	lert									
Near Close Alert										
Travel A Alert										
Travel B Alert										
Working time Alert										
Supply Pressure Ex	cursion									
Supply Pressure Lo	Lo Alert									
Temperature Excu	rsion									
IP Drive Current E	cursion									
Environment										
IP Drive Current E	cursion	ū								
Environment										
Hardware										
Valve Control Alert										
Transducer Blog	k does not work property									
- There are a line	a de la contra property			-				Last.		

LCD Display

Use this tab to set the LCD language and to customize the LCD to display one or two additional values.

SVI FF POSIT	IONER	MASONEIL	MASONEILAN PRODUCTS			
a Baker Hughes business Man. ID: 0x	REV3_1 445644 Type. ID: 8	Device ID: Device Rev	Device ID: 4456440008 Device Rev: 03 DD: 01		07310202 SW: 3.1.0.0 CSC90378	6E
📓 💁 💁 🧕 🧐 🍊 • 🧰 🥅 RB.AUTO	DAUTO OOS TB:MAN AUTO M	AN OOS 🔺 🛃 😰	⅔ 😹	Connected		
Quick Start Configuration Device States Configuration Extended RB Configuration Extended TB Configuration Extended TB Configuration Diagnostic Alerts Calibration Collisplay	LCD Display LCD Language Custom 1 Configuration Custom 2 Configuration	English WORK_SP WORK_POS	y y			



Buttons and Fields

LCD Language Use the pulldown to select a language:

- English
- French
- Spanish
- Portuguese
- Japanese
- Italian
- German

Custom 1 Configuration/ Custom 2 Configuration Use the pulldown to select a value to display on the LCD.

Configure LCD Display

- 1. Use the LCD Language pulldown to select a language.
- 2. Use either or both of the *Custom Configuration* pulldown lists to set a value for LCD display.

14. Security

Security

The DTM has default security settings as follows:

- Maintenance and Planning Engineer levels have full access to configure and write parameters.
- Operator and Observer levels have read access to the parameters.
- Administrators can configure these security settings and save the settings to *.sec file.

Use these tabs (available to administrator level users only), Administrative Privileges only, to set up:

- Access to the device from the local UI (LCD Display) or from the FF (Write Access) (Device Access)
- Access to change parameters (Parameters Change Access)
- Access to download parameters (Parameters Download Access)
- Access to the user interfaces (User Interface Access)
- Access to the procedures and methods (Procedures and Methods)
- System-wide configuration for the security (System Security Settings)
- Log Configuration (Log Configuration)
- DTM Licensing (*License*)

Device Access

Use this tab to control access to:

- The buttons on the FF device
- FF write privilege
- FF device diagnostic level



Figure 148 – Security: Device Access Tab
Buttons and Fields

Lock Button Lock Level	The SVI FF comes with an optional local display and buttons for data entry. These buttons can be used to perform basic SVI FF setup without the need for DTM soft-ware or a handheld. It may, however, be desirable after initial setup to lock the but-tons so that the SVI FF parameters cannot be inadvertently changed from the buttons. Several levels of locks are provided:					
	• Enable Local Display Buttons: Buttons on the SVI FF are enabled.					
	 Disable Local Methods Execution.: You can use the buttons to perform operations in Normal mode and Manual mode, however they will not function in Configure or Calibrate mode. 					
	 Disable Local Methods and Clear Error: You can examine variables in Normal mode but cannot put the valve in Manual mode (and therefore cannot go to Calibrate or Configure modes). 					
	Disable Local Display Buttons: The buttons are disabled.					
	A WARNING					
	Changing the Application to Normal mode may switch the TB to MAN or AUTO mode and move the valve. It may be dangerous if someone is still working with the valve.					
FF Write Lock	Locks/unlocks any changes to the permanent database. Write access selection restricts the access to the device from the FF, from the local LCD UI and the using the DD.					
Device Access	Click a radio button to select the device access level:					
Configuration	 Standard: Leaves only Key 13 active for use. 					
buttons	 Advanced: Leaves only Key 13 active for use. 					
	Custom: Leaves all keys active for use.					
	You can input any value for Key 1 to 12 and the key generator tool automatically creates the 13th key.					
Key 1 Key 14	Enter the hex code for each active <i>Key</i> field.					

Parameters Change Access

Use this tab to assign change privileges to the four pre-defined operational levels:

- Observer: You can only observe the current process.
- *Operator*: You can observe and manage the current process. You can check the current status of the device, modify set values and check if the device is functioning, perform a complete diagno-sis, watch the actual status and parameter set as well as the current process variables.
- *Maintenance*: You can perform all necessary maintenance operations including device exchange, calibration, adjustment, download verified parameter sets, modify a subset of parameters online or offline, perform device-specific online operations and upload the complete parameter set.
- Planning Engineer: You are a fully authorized user.

SVI FF REV3_1 - Online Parameter × NEW (SVI3F	REV2) - Online Parameter X				
Macapailan SVI FF POSITION	NER	MASONEILAN P	RODUCTS		100 B
Tag: SVI FF REV	/3_1	Device ID: 4456	440008	07310202	
a Baker Hughes business Man. ID: 0x445	644 Type. ID: 8	Device Rev: 03	3 DD: 01	SW: 3.1.0.0 CSC90378	
🛃 💁 🧐 🎥 🧏 🍊 - 🗖 🧮 RB:AUTO A	UTO OOS TB:MAN AUTO MAN OOS	🔺 🔮 😤 📲	Connected		
Quick Start Configuration Configuration Configuration Configuration Control Configuration	Parameters Change Access				^
Extended RB Configuration Section Extended TB Configuration Section	Quick Start	Observer	Operator	Maintenance	Planning Engineer
- 🍪 Alerts - 🚳 FD Alerts	Control				
CD Display	Position Limits			V	
Originosics Originosics Originosics Originosics Originosics Originosics Originosics Originosics	Position Control				
Security	Deviation Alert				
Parameters Change Access	HI And HIHI Alerts				
User Interface Access Procedures and Methods	LO And LOLO Alerts				
🕄 System Security Setting 	Near Closed Alert			V	
🕄 License	Setpoint Timeout Alert			\checkmark	
	Travel Accumulation A And B Alert			Y	
	Cycle Counter A And B Alert			Y	
	Operating Time Alert			\checkmark	
	Fault State			2	
	Discrete - Control				X
	Discrete - Software Switches				¥ *
🚱 Connected	Planning Engineer				

Figure 149 – Security: Parameter Change Access Tab

Note: If the same parameter is appears on more than one tab, its settings will be the same on each tab. When the parameter is configured to be read only, you cannot modify that parameter in Offline or in Online mode.

Buttons and Fields

Quick Start	See Quick Start Configuration for field explanations.
Control	See Control Tab for field explanations.
Position Limits	See <i>Position Limits Tab</i> for field explanations.
Position Control	See <i>Position Alarms</i> for field explanations.
Characterization	See Characterization Tab for field explanations.
Deviation Alert	See <i>Deviation Alerts Tab</i> for field explanations.
HI and HIHI Alerts	See HI and HIHI Alerts Tab for field explanations.
LO and LOLO Alerts	See LO and LOLO Alerts Tab for field explanations.
Near Closed Alert	See Near Closed Alerts Tab for field explanations.
Setpoint Timeout Alert	See Setpoint Timeout Alert Tab for field explanations.
Travel Accumulation A and B	See <i>Travel Accumulation A and B Alert Tab</i> for field explanations.
Cycle Counter A and B Alert	See Cycle Counter A and B Alerts Tab for field explanations. w
Operating Time Alert	See Operating Time Alert Tab for field explanations.
Fault State	See Fault State Tab for field explanations.
Discrete - Control	See <i>Discrete</i> for field explanations.
Discrete - Software Switches	See Software Switches for field explanations.
Pressure Range	See Pressure Range for field explanations.

Supply Pressure HI Alert	See Supply Pressure HI Alert Tab for field explanations.
Supply Pressure LO Alert	See Supply Pressure LO Alert Tab for field explanations.
Supply Pressure LOLO Alert	See Supply Pressure LOLO Alert Tab for field explanations.
Temperature HI Alert	See Temperature HI Alert Tab for field explanations.
Temperature LO Alert	See Temperature LO Alert Tab for field explanations.
IP HI Alert	See IP Output HI Alert Tab for field explanations.
IP LO Alert	See IP Output LO Alert Tab for field explanations.
Alert Action	See Diagnostic Alerts for field explanations.
FD_Alerts	See FD_Alerts for field explanations
LCD Display	See LCD Display for field explanations.
Valve	See Valve for field explanations.
Network Settings	See Network Settings for field explanations.
Extended RB Configuration	See Extend RB Configuration for field explanations.
Extended TB Configuration	See Extend TB Configuration for field explanations.
PST:	See Partial Stroke test - PST for field explanations
Data Collection	See Data Collection for field explanations

Parameters Download Access

Use this tab to assign download access privileges to the four pre-defined operational levels. See *Parameter Download Access* for a listing of cross references to field explanations and for a description of user levels.

Note: If the same parameter is appears on more than one tab, its settings will be the same on each tab.

When a parameter is disabled for download, the download procedure will NOT request to change the parameter in the device.

Maconoilan	SVI FF POSITIONER		MAS	ONEILAN	PRODU	UCTS		
Musonellun	Tag: SVI FF REV3_1		Devi	ce ID: 4	156440000	88	07310202	
a Baker Hughes business	Man. ID: 0x445644 T	ype. ID: 8	Devi	Device Rev: 03 DD: 01		SW: 3.1.0.0 CSC903	378	
1 92 92 92 43 · 🗖	RB:AUTO AUTO OOS	TB:MAN AUTO MAN OC	os 🔺 🛃	8 3		Connected		
Quick Start Configuration	Parameters	Download Access						
Configuration			Observer		Onerato		Maintenance	Dianaina Engineer
Control Configuration	0.110		Observer		operation		Maintenance	Fidining Engineer
-X Extended RB Configurati	Ouick Stan	t.	0				$\mathbf{\nabla}$	\square
Extended TB Configurati Diagnostic Alerts	on Control							
Alerts	Position Lir	nits					Ci	0
FD Alerts			127				2	
← X Calibration	Position Co	ontrol						\square
🥝 Diagnostics	Characteriz	ation						V
PST and Data Collection	Deviation A	lert						-
			·				\mathbb{N}	
Device Access	HI And HIH	I Alerts					Σ	
Parameters Change Acce	LO And LO	LO Alerts					Z	P
User Interface Access	Near Close	d Alast			100			
- Procedures and Method	s		9 1 4				S	2
System Security Setting	Setpoint Tir	meout Alert						
License	Travel Acc	umulation A And B Alert					P	Ø
	Outle Court	tor A And P Alast						
	Cycle Cou						\mathbb{N}	
	Operating 1	lime Alert						
	Fault State				0			
	Director	Control	-				-	200
	Discrete - C	AND			0			2
	Discrete - S	Software Switches						
	Pressure R	lange					R	
N	1							

Figure 150 – Security: Parameter Download Access Tab

User Interface Access

Use this tab to assign user interface access privileges (menu selections) to the four pre-defined operational levels.

Note: Positioner information is not changeable.

Maconoilan	SVI FF POSITIONER		MASONEILAN PRO	DUCTS		
a Baker Hughes business	Tag: SVI FF REV3_1 Man. ID: 0x445644 Type. ID	Device ID: 445644 Device Rev: 03	0008 DD: 01	07310202 SW: 3.1.0.0 CSC90378	65	
	RBAUTO AUTO OOS TB:N	MAN AUTO MAN OOS	A) 🛃 😢 😰 🎆	Connected		
Quick Start Configuration Device States Configuration Extended R8 Configuration Extended R8 Configuration Diagnostic Alerts	on Quick Start Conf	figuration	Observer 2	Operator	Maintenance	Planning Engineer
Alerts FD Alerts LCD Display	Device States		R			
 Calibration Diagnostics PST and Data Collection 	Position	ner State				
Identification Security Device Access	Position	er Alert Log				
Parameters Change Acce Parameters Download Ac User Interface Access	ss cess Device 1	State		N		
Procedures and Methods System Security Setting Log Configuration	Configuration		V	Ø		V
License	Control	Configuration/Position/Configura	tion 🖂	Ŋ	Ø	Ø
	Control	Configuration/Position/Position A	lerts 🖂	R	Ø	Ø
	Control	Configuration/Position/Travel Ale	rts 🗵	Ø	Ø	Ø
	Control	Configuration/Position/Fault State		\square		

Figure 151 – Security: User Interface Access Tab

Buttons and Fields

Quick Start	See Quick Start Configuration for field explanations.
Device States	See Device States for field explanations.
Calibration	See <i>Calibration</i> for field explanations.
Configuration	See Control Configuration for field explanations.
Diagnostics	See <i>Diagnostics</i> for field explanations.
Identification	See Identification for field explanations.

Procedures and Methods

Use this tab to assign procedures and methods access privileges to the four pre-defined operational levels.

Note: If the same procedure/method appears on more than one tab, its settings will be the same on each tab.

Igoopoilan	SVI FF POSITIONER			MASONEILAN PRO	DUCTS		
Musonellun	Tag: SVI FF REV3_1	FF REV3_1			0008	07310202	
a Baker Hughes business	Man. ID: 0x445644	Type. ID: 8		Device Rev: 03	DD: 01	SW: 3.1.0.0 CSC90378	
🖻 🗃 📅 🗃 🖓 • 🛄	RB:AUTO AUTO OOS	TB:MAN AU	TO MAN OOS	▲ 🔮 😤 🛢	Connected		
Quick Start Configuration	Procedu	es and Methods					
Configuration			Observer	Operator	Maintenance	Planning Engineer	
-X Extended RB Configuratio	n FD	T Functions					
Diagnostic Alerts		Save					
LCD Display		Upload			V		
Calibration Diagnostics BST and Data Collection		Download			Y	9	
ldentification		Change Tag				Ø	
Device Access		Change Address					
Parameters Change Acces Parameters Download Acc User Interface Access	s ress	Restart Device					
Procedures and Methods System Security Setting	Pro	ocedures				\boxtimes	
Log Configuration		Find Stops					
		Autotune					
		Signature					
		Ramp Test					
		Step Test			2	Ø	
		Save Signature In Device			${\bf \boxtimes}$		

Figure 152 – Security: Procedures and Methods Tab

Buttons and Fields

FDT Functions See Network Settings for field explanations.

Procedures See *Calibration* for field explanations.

System Security Settings

Use this tab to load or save security settings in binary file (file format is .sec).

Saving a security settings file creates a template for the security settings, which is usable on their devices. An administrator can save the security settings in an encrypted file and load that file in other DTM instances when they are open.

These security settings are independent from the default DTM security settings of the DTM. The default DTM settings are loaded only once during the lifetime of the DTM - when it is created for the first time without any saved data. After that, when the DTM is saved, the default security settings are not applicable.

The user-configured security settings load any time the DTM is created after the initial start.



Figure 153 – Security: System Security Settings Tab

Buttons and Fields

Load Security Settings from FileClick this button to save settings to the SVI FF Data folder.Save Security Settings to FileClick this button to load settings from the SVI FF Data folder.

Load Security Settings

1. Click Load Security Settings from File and a dialog appears.

Generation Load security	settings file				×
Look <u>i</u> n:	\mu Data		•	G 🤌 📂 🛄 -	
(Ha	Name	*		Date modified	Туре
Recent Places	Security.sec			5/23/2013 10:50 AM	SEC File
Desktop					
Libraries					
Computer					
Network	•	III			+
INCLWOIK	File <u>n</u> ame:	*.sec		•	Open
	Files of type:	SVi2FF Security Files (*.sec)		•	Cancel

Figure 154 – Load Security Settings from File

2. Navigate to the correct file and click **Open**.

Save Security Settings

1. Click	Save	e Security Settings	to File	and	a dialog	appears	i.			
	(ፉ Save security s	ettings file							—
		Save in:	퉬 Data				•	G 🦻 📂	▼	
		(Ang	Name		<u>^</u>			Date modifie	d	Туре
		Recent Places	🔳 Secur	ity.sec				5/23/2013 10	:50 AM	SEC File
		Desktop								
		Libraries								
		Computer								
		Network	•			III				•
		NELWOIK	File <u>n</u> ame:		*.sec			•		Save
			Save as typ	be:	SVi2FF Se	curity Files (*.se	ec)	•		Cancel

Figure 155 – Save Security Settings to File

2. Navigate to the correct directory, rename if necessary and click **Save**.

Log Configuration

Use this tab to:

- Add log files for use in monitoring and analyzing system operations.
- Configure connection and transaction timeout settings.
- Configure the data target directory.

	IONER	MASONEILA	N PRODUCTS	
a Baker Hughes business Man. ID: 0x4	REV3_1 145644 Type. ID:	8 Device ID: 8	4456440008 07310202 03 DD: 01 SW: 3.1.0.0 CSC90378	<u>é</u> t
😫 😫 😫 🖾 • 🥅 🥅 RB:AUTO	AUTO OOS TB:MA	n auto man oos 🔺 🛃 😫	Connected	
Quick Start Configuration Device States Configuration Control Configuration Extended RB Configuration Diagnostic Alerts Solution Diagnostic Clerts LCD Display Calibration Diagnostics PST and Data Collection Identification Positioner Valve Network Settings Contact and Order Device Access Parameters Change Access Parameters Change Access Parameters Change Access Procedures and Methods System Security Setting	Log Configuration Time Out Connect Request Transaction Request Disconnect Request Error Logs Log Level Log Log Location C Max File Length 1 Saved Data Settings Storage location for C Actual Location: C:\ProgramDat	600 50 60 20 og all C:\ProgramData\Dresser\SVI FF DTM\ 100000000 all DTMs C:\ProgramData\Dresser\SVI FF DTM\Data\ ta\Dresser\SVI FF DTM\Data\4456440008	s s s bytes 07310202	

Figure 156 – Log Configuration

Buttons and Fields

Time Out Settings

Connect Request	Enter the number of seconds for the system to attempt a connection request before timing out.
Transaction Request	Enter the number of seconds for the system to attempt a transaction request before timing out.

Disconnect Request	Enter the number of seconds for the system to attempt a disconnection request before timing out. A good value for this is 10 sec-onds to facilitate a reasonable disconnect time.
	Error Log Settings
Log Level	Use the pulldown to select the type of data to save to the log file:
	LOG_LEVEL_ERROR: Gathers events that are definitely problems for investigation. This is not connected to an alert creation.
	LOG_LEVEL_WARNING: Gathers events that might be an issue for review.
	LOG_LEVEL_INFO: Gathers information about normal operation.
	LOG_LEVEL_TRACE: Gathers events leading up to errors and warnings.
Log Location	Click to Browse navigate to a directory, or enter a path, to which to save the log file.
Max File Length	Enter a number of bytes for the maximum file size. After this point the older log infor- mation is backed up into another log file to maintain this size.
	Saved Data Settings
Storage location for all DTMs	Click Browse to navigate to a directory, or enter a path, to which to save DTM data. This includes all diagnostic data and test results for SVI FF DTMs.
Actual Location	Displays the present data storage location.
Apply All	Click this button to apply changes made on this tab.
Apply All button	

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License

See Registration.

15. Identification

Identification

Use this set of tabs to view and configure information about a positioner and related valve, including:

- Positioner
- Valve
- Network Settings
- Contact and Order
- Defaults

Positioner

Use this tab to view basic revision data for positioner software and hardware.

Vacanailan SVIFF POSITI	ONER	MASONEILAN PROD	UCTS	
a Baker Hughes business Man. ID: 0x4	EV3_1 45644 Type. ID: 8	Device ID: 445644000 Device Rev: 03	0807310202 DD: 01 SW: 3.1.0.0 CSC90378	<u>ét</u>
🚽 와 🧐 🖳 🧐 🚰 - 🥅 🥅 RB:AUTO	AUTO OOS TB:MAN AUTO MAN	oos 🔺 🛃 😵 🕵 🌉	Connected	
Quick Start Configuration Configuration Configuration Configuration Configuration Configuration Configuration Configuration	Positioner Manufacturer ID	0x445644]	
Extended TB Configuration Diagnostic Alerts Alerts	Device Type	SVI FF		
- 🝰 FD Alerts - 👶 LCD Display	Device Revision	03		
Calibration	DD Revision	01		
PST and Data Collection Identification Positioner	Software Revision	3.1.0.0 CSC90378		
- Xalve - Network Settings	Software Revision APP	50397184		
Contact and Order Defaults Converte	Hardware Revision	1.0.0.17		
Security	ITK Version	6		

Figure 157 – Identification: Positioner Tab

Buttons and Fields

Manufacturer ID	Displays the ID from the device settings.
Device Type	Displays the type from the device settings.
Device Revision	Displays the ID from the device settings.
DD Revision	Displays the software revision from the device settings.
Software Revision	Displays the software revision from the device settings.
Software Revision APP	Displays the application processor software revision from the device settings.

Hardware Revision Displays the revision from the device settings.

ITK Revision Displays the revision from the device settings. Displays the version of the Interoperability Tester used by the Fieldbus Foundation in certifying the device as interoperable.

Valve

Use this tab to configure a wide range of valve and actuator related data. In ValVue the project automatically saves this data. It must be saved manually in non-Masoneilan DTMs.

Iaconoilan svirriosi	IONER	MASO	NEILAN PRO	DUCTS	
Tag: SVIFF	REV3_1	Device	ID: 4456440	00807310202	6
a Baker Hughes business Man. ID: 0x4	145644 Type. ID: 8	Device	Rev: 03	DD: 01 SW: 3.1.0.0 CSC	90378
👰 👰 👰 🍊 - 🥅 🥅 RB:AUTO	AUTO OOS TB:MAN AUTO MAN	N 005 🛆 🛃 🕻	8 😰 🕷	Connected	
Quick Start Configuration Device States Configuration	Actuator Information			Valve Information	
Control Configuration Extended RB Configuration Extended TB Configuration	Actuator Manufacturer Id			Valve Manufacturer Id	
Alerts	Actuator Model Number			Valve Model Number	
Calibration	Actuator Serial Number			Valve Serial Number	
Diagnostics PST and Data Collection Identification	Actuator Style	Single Acting		Valve Type	Linear ~
Positioner Valve Network Sattings	Actuator Fail Action	Air To Open 🛛 🗸		Valve Service	Water
Contact and Order	Relay Type	Standard Relay		PID Number	1
Security	Maximum Supply Pressure	100.00	psi	Body Size	2
	Maximum Control Supply Practices	13.20		Packing	
	Maximum Conditi Supply Pressure	13.20	ря	Plug Type	
	Minimum Control Supply Pressure	3.57	psi	Seat Ring Type	
	Descriptor			Descriptor	
	Message			Message	
	Date(mm/dd/yyyy)	01/01/2012		Date(mm/dd/yyyy)	01/01/2012
	Specification Sheet			Specification Sheet	

Figure 158 – Identification: Valve Tab

Buttons and Fields

Actuator Information

For all fields not listed below, refer to Actuator Information in Extend TB Configuration.

Network Settings

Use this tab to set the positioner networks settings and set whether it is a link master or not.

Maconoilan SVIFF POSIT	IONER	MASONEILAN PRODUCTS		
a Baker Hughes business Man. ID: 0x	REV3_1 445644 Type. ID : 8	Device ID: 4456440008 Device Rev: 03 DD: 01	07310202 SW: 3.1.0.0 CSC90378	<u>é</u> te
🛚 📚 🧏 😫 🍊 • 🥅 🥅 RB:AUTC	AUTO OOS TB:MAN AUTO MAN	DOS 🔺 🛃 🤔 🧝 🌆 Connected		
Quick Start Configuration Device States Configuration	Network Settings			
Control Configuration Extended RB Configuration Extended TB Configuration	Device Tag	SVI FF REV3_1	Change PD Tag	
Signostic Alerts Signostic Alerts Signostic Alerts Signostic Alerts	Device Address	18	Change Address	
- X Calibration M Diagnostics	Current Link Master Configuration	Basic Device		
PST and Data Collection Identification Positioner	Link Master Configuration	Basic Device O Link Master	Restart Device	
- Walve - Wetwork Settings - Wetwork and Order	ті	15.00 sec		
⊢ 🖗 Defaults ⊢ 🔋 Security	T2	90.00 sec		
	тз	45.00 sec		

Figure 159 – Identification: Network Settings Tab

Buttons and Fields

Device Tag

Use this field to change the tag name.

click the button, a dialog appears for confirmation.

Change PD Tag

Change PD Tag button

Device Address Displays the address.



Click once you have entered a new *Device Address* to update it on the system. When you click the button, a dialog appears for confirmation.

Click once you have entered a new Device Tag to update it on the system. When you

Change Address button

ID E	Enter the ID.
aster C uration . •	Click a radio button to determine if the device is a: <i>Basic Device:</i> An FF device that functions on an H1 segment. <i>Link Master:</i> An FF device that functions on an H1 segment. Additionally, an LM class device has a capability to work as the Link Active Scheduler (LAS).
t Device C	Click once you have changed the <i>Link Master Configuration</i> to update it on the system.
E	Inter a preset value for the system management step timer
E	Inter a preset value for the system management set address sequence timer.
E	Enter a preset value for the set address wait timer.
E Device C	Click once you have changed the <i>Link Master Configuration</i> to update it on the system Enter a preset value for the system management step timer Enter a preset value for the system management set address sequence timer. Enter a preset value for the set address wait timer.

Contact and Order

Use this tab to enter information about the local representative, the order number for the positioner, actuator and valve and to attach PDF or text document with the order information.

The text document is shared to a common location for all DTMs - e.g. shared drive on the server.

This location for these documents is set during the installation of the DTM. The location for these documents appears in the log information of find stops/autotune/diagnostic tests.

Agonoilan SVIFF POSITI	ONER	MASONEILAN PRODUCTS		
VIUSOIICIIUII Tag: SVIFF F	EV3_1	Device ID: 4456440008	07310202	6
a Baker Hughes business Man. ID: 0x4	45644 Type. ID: 8	Device Rev: 03 DD: 01	SW: 3.1.0.0 CSC90378	
😥 🧐 💁 🧐 🍊 - 🗖 🗖 RB:AUTO	AUTO OOS TB:MAN AUTO MAN OOS) 🛃 😵 😰 🌉 Connected		
Quick Start Configuration Device States Configuration Scontol Configuration Extended RB Configuration Extended RB Configuration Extended TB Configuration Diagnostic Alerts Configuration Diagnostic Alerts LCD Display Calibration Diagnostics PST and Data Collection Definition Positioner Valve Network Settings Contact and Order Defaults Security	Contact and Order Contact Information Company Name Baker Hughes First Name Email Location Order Information Order Number for Positioner Order Number for Actuator Order Number for Valve	Last Name		

Figure 160 – Identification: Contact Order Tab

Buttons and Fields

Contact Information

- *Company Name* Enter the company name.
- *First Name* Enter the first name of the company contact.

Last Name	Enter the last name of the company contact.
Email	Enter the email for the company contact.
Location	Enter a location for the contact.
	Order Information
Order Number for Positioner	Enter the order number.
Order Number for Actuator	Enter the order number.
Order Number for Valve	Enter the order number.
Attach Order Information File	Click to open an attach an information file. You can attach any type of source file for reference. See <i>Attach Order Information File</i> .

Attach Order Information File

1. Click Attach Order Information File ... and a dialog appears.

Look in:	🚞 Data	~	G 🗊 📂 🖽 🕶	
	Name	^	Date modified	Туре
X	0047450008	07240383	1/4/2022 7:42 PM	Filet
uick access	0047450008	08420251	12/23/2021 11:36 PM	File
_	0047450008	13130227	12/23/2021 11:47 PM	File
	4456440008	02110061	1/7/2022 4:16 AM	Filet
Desktop	4456440008	07190134	12/24/2021 1:01 AM	Filet
-	AttachedOrderFile	s	1/11/2022 4:47 AM	Filet
	Devices		1/3/2022 10:34 PM	Filef
Libraries	custom_settings		1/11/2022 4:40 AM	XML
	Default.sviff		12/14/2021 12:57 PM	SVIF
	Security.sec		5/23/2018 6:01 PM	SEC
This PC	SecurityDeltaV.sec		9/27/2014 10:22 PM	SEC
9	SecurityGeneric.se	c	12/10/2014 2:21 PM	SEC
Network				
	File name:		C	pen

Figure 161 – Attach Order Information File

2. Navigate to the required file, click **Open** and the file is attached.

Defaults

Use this tab to identify the source of default valve parameter settings. The existing source for default data appears and a new source can be selected.

Control configuration starts with default parameter values. By default, these parameters are stored is an XML file (extension *.sviff*), and are installed with the DTM installation.

You can:

- Reload the default settings (Load Values).
- Load a different file by browsing the disk and selecting a different file (Load Values).
- Store the current configuration (Save Values to File).



Figure 162 – Identification: Defaults Tab

Buttons and Fields

Load From	CI
Load From	ac
	CO

lick this button to load default values from file (.sviff). See *Load Values*. This can also ccess another non-default saved settings file. Use *User Interface Access Defaults* to portrol the user rights to this button.

Save To ...

Click this button to save present values as default values to file or as another group of non-default settings. See *Save Values to File*. Use *User Interface Access Defaults* to control the user rights to this button.

The default name is set to the tag of the device. If the default name is changed, the new name is preserved.

Load Values

1. Click Load From ... and the dialog appears.

🐱 Load default o	lata file		×
Look <u>i</u> n:	📔 ValVue3 🗸 🗸	g 🤌 📂 🛄 -	
Recent Places Desktop Libraries Computer Network	Name DeviceStatusDefinitions FDT XML Schemas Help Layout Log Projects Report xst	Date modified 3/21/2013 11:22 AM 4/9/2013 10:49 AM 3/20/2013 2:19 PM 4/9/2013 10:49 AM 3/20/2013 2:19 PM 3/21/2013 11:22 AM 4/9/2013 10:49 AM	Type File folder File folder File folder File folder File folder File folder
	Files of type: SVi2FF Data Files (*.sviff)	•	Cancel

Figure 163 – Load Default Data File

2. Navigate to the required directory, click **Open** and the values are loaded. These can be verified on the various *Control Configuration* tabs.

Save Values to File

1. Click Save To ... and the dialog appears.

😼 Save default d	lata file			×
Save įn:	🐌 Data	•	G 🤌 📂 🛄 -	
9	Name Default.sviff	*	Date modified 5/23/2013 10:50 AM	Type SVIFF File
Recent Places	test.sviff		5/23/2013 10:50 AM	SVIFF File
Desktop				
Network	•			×
NELWOIK	File <u>n</u> ame:	*.sviff	-	Save
	Save as type:	SVi2FF Data Files (*.sviff)	•	Cancel

Figure 164 – Save Default Data File

2. Navigate to the required directory, click **Save** and the values are saved.

16. Continuous Valve Diagnostics Concept

Since its introduction about 20 years ago, FOUNDATION fieldbus has been well accepted by customers for the opportunity it provides for device diagnostics. The device health and status are even more important for the final control elements used in a controlled process – positioners, and analog and discrete output devices.

This document describes the diagnostic features integrated in the SVI FF positioner and provides some guidelines how they can be used in applications.

Introduction

Evaluation of the valve/positioner state requires:

- 1. Appropriate conditions to collect informative data
- 2. Data collection
- 3. Data processing

Different measures to estimate the valve health may require different conditions, rate of data collection and often put special requirements on the amount of data collected and speed of data processing. In order to provide the best information, the SVI FF provides three different diagnostic approaches:

- Offline Diagnostics: Off Line diagnostics are used when the application process is not running. Offline diagnostics procedure execution requires significant changes of valve setpoint, which disturbs the application process.
- Online Diagnostics: On Line diagnostic procedures collect data while the valve is running and do not disturb the application process. Special tools are used to collect the data from the valve, evaluate performance and present the information.
- Continuous diagnostics: Gives a detailed descriptions on how continuous diagnostics can be used for estimation of the device status.

Offline Diagnostics

Offline diagnostics are used when the application process is not running. Offline diagnostics procedure execution requires significant changes of valve setpoint, which disturbs the application process.

When Offline diagnostic procedures are executed, the data is collected in the SVI FF positioner at a very high rate (e.g. between 10 and 60 times per second) and then it is uploaded and presented by the SVI FF DTM.

Step Test

Step test evaluates how the positioner is responding on a request to change in the set point significantly for a short time. It gives a good measure of the actuator/valve speed.

Ramp Test

Ramp test measures the relationship between the set point and actual actuator/valve position, when the setpoint is changed at a limited rate.

Signature

Valve Signature provides a relationship between the actuator pressure and the actuator/valve actual position.

Online Diagnostics

Online diagnostic procedures collect data while the valve is running and do not disturb the application process. Special tools are used to collect the data from the valve, evaluate performance and present the information.

DTM

The SVI FF DTM can provide a basic level of online diagnostic by presenting the data from the positioner in numeric or graphical form. You can also export the data for further analysis with external tools.

Valve Aware

Valve Aware provides advanced diagnostic procedures. It collects data from the positioner on a regular basis and stores it for further evaluation without any human interaction. The processing and storage power provided by the contemporary computers detects:

- · Change in valve/positioner friction
- Stick slip in the valve
- Changes in dynamic behavior, etc.

Continuous Diagnostics

Continuous diagnostics are executed in the device and continuously evaluate the status of the positioner, the actuator and the valve.

The diagnostics described in this section are implemented in the firmware or in the positioner hardware. Resource and Transducer blocks are used to implement and report the results of the calculations. The problem detection algorithms are running continuously and provide immediate notification for detected events. The SVI FF positioner can detect two basic groups of events:

Problems in the positioners performance Problems in the actuator/valve control

Positioner Diagnostics

Positioner diagnostics are used to evaluate the state of the positioner itself. The positioner is designed so that it continues to communicate on the fieldbus if the detected problem so allows. A limited number of severe failures detected in the hardware and the positioner may not be able to report when a failure is detected. In this case, the positioner continues to control the valve if possible. If control of the valve is not possible, the positioner de-energizes its output, driving the valve to de-energized position, as defined by the actuator.

Processor Failure

Failures in the processor program execution are reported in this group of alerts. Examples of this kind of failure include:

- Program execution failure detected by a watch dog
- Program memory failure
- NV memory failure, etc.

Sensor Failure

This failure is reported when the diagnostic procedures detects problem in the supporting sensors, embedded in the positioner. These are:

- Supply pressure sensor
- Temperature sensor, etc.

Valve Control

Problems detected with valve control are reported in this group. If the actual position cannot be driven to follow the setpoint, a valve control failure is reported. There may be multiple reasons for this failure:

- · Problem with the supply pressure
- Obstacle in the valve movement, etc.

Commissioning

This problem is reported if the positioner has not been calibrated. The Find Stops procedure must be executed to clear the problem. If the positioner is shipped installed on the valve, it is factory calibrated and this problem won't occur.

Air Supply

This problem is reported if the supply pressure is out of the spec (most likely too low).

Supporting Hardware

This problem is reported if a failure in one of the supporting accessories is detected:

- Local LCD display
- Remote Position Sensor, etc.

Valve/Actuator Diagnostics

The SVI FF positioner collects information from multiple sensors. This information is used to evaluate the quality of valve and actuator control and the working conditions.

Valves and applications may have significant differences in the expected behavior – e.g. small valves usually are fast and are able to reduce the error between the setpoint and actual position within seconds, valve wear may be significantly impacted by the content and temperature of the fluid being processed or by the material used to make the valve.

To adjust to the variety of applications, SVI FF positioners provide a set of parameters, which can be modified to adjust to the specifics of the process being controlled. Adjustable alert points and dead bands (where applicable) are provided for the monitored parameters and can be modified from default settings to reflect the specifics of the application.

An alert is set when the monitored value crosses the point defined by the Alert Point and stays active until the alert is cleared or the monitored value is restored to within the expected limits. Dead band can be used to avoid multiple notifications for the same event.

CAUTION

In the Transducer Block each alert has an Active and Historical bit. Active bit presents the current state of the condition. Historical bit indicates whether the condition occurred in the past. Both are user clearable.

For each alert the SVI FF provides two additional parameters:

- Historic Alert a flag indicating if the alert happened since the alert has been cleared.
- Alert Counter a counter indicating how many times the alert happened in the past.

Deviation

Deviation alert is set if the error between the set point and actual position is bigger that the alert limit for the time defined in the alert configuration.

Deviation error can be caused by high valve friction, improper valve tuning, obstacle in the valve movement, etc.

Position

Position alerts is set if the actual valve position is out of the expected alert limit. The alert is cleared when the position is within the limits again (including Dead band).

Position alert is used to detect if the valve is in a Tight Open or Tight Close condition, to detect position sensor slippage or valve plug wear.

If the alert is set to detect a Tight Open or Tight Close condition, the alert count is used to understand how many times the Tight Open or Tight Close was activated.

SVI FF allows configuration of the following position alerts:

- HI HI
- HI
- LO
- LO LO

Travel Accumulation Alert

Accumulated travel is a good indication for valve wear. SVI FF provides two alerts, which are used to report two different conditions:

- Travel Accumulation A
- Travel Accumulation B

Combined with the travel accumulation trend, this alert is used to schedule valve maintenance procedures.

Cycle Counter

Cycle Counter is another good indication for valve usage and the SVI FF provides two alerts, which are used to report two different conditions:

- Cycle Counter A
- Cycle Counter B

Combined with the Cycle Counter Trend, this alert is used to schedule valve maintenance procedures.

Set Point Timeout

When the Transducer block is in Auto mode, a new setpoint is expected from the FOUNDATION fieldbus protocol on a regular basis. This alert is used to detect FF communication problems.

Supply Pressure

Having a steady source of air is essential for the valve/positioner performance. The actual value of the supply pressure is monitored and an alert is set if it is out of the limits. The following limits provide different alerts:

- HI Alert triggered by HI Alert Limit
- LO Alert triggered by LO Alert Limit
- · LO LO Alert triggered by LO LO Alert Limit

Temperature

Temperature alerts monitor the positioner temperature and can generate a separate alert if the temperature crosses the High or the Low limit.

IP Current

IP current is used by the pressure control loop to regulate the actuator pressure. Two alerts are user configurable for the application:

- HI IP Current
- LO IP Current

When the valve is in steady state the IP current is in the middle of the expected working range, balancing the supply and exhaust of pressure to the actuator. Having very high or very low values of IP current for long time may be indication of a problem in the pressure control loop – e.g. relay degradation.

Working Time

Working Time is another good indication for valve usage. The SVI FF provides an alert, which is used to report when the valve has been working longer than the value indicated in the Working Time Alert Limit.

Combined with the Travel Accumulation and Cycle Accumulation, this alert is used to schedule valve maintenance procedures.

Supporting Information for Diagnostic Configuration

The SVI FF provides a set of unique parameters, which can assist in diagnostic configuration.

Alert Counters

Alert Counters were briefly discussed in the previous section. A total of 25 counters are provided (one for each alert) to register each alert's occurrences.

The Alert Counters are writable – You can clear all or each counter individually. Clearing the alert counters may be useful if the alert configuration is changed.

Transducer Block Mins and Maxs

A set of parameters are provided in the Transducer block to register the maximum and minimum value of most dynamic parameters. The extreme values are cleared if the valve is rebooted. *Valve Position Values Monitored* though *IP Current Related Values Monitored* provides the values being monitored in various areas.

	114-POSITION_EXTREMES	DESCRIPTION
1	FINAL_VALUE_MAX	Max value of Position Setpoint
2	FINAL_VALUE_MIN	Min value of Position Setpoint
3	FINAL_POS_VALUE_MAX	Max value of Actual Position
4	FINAL_POS_VALUE_MIN	Min value of Actual Position
5	WORKING_SP_MAX	Max value of Characterized Position Setpoint
6	WORKING_SP_MIN	Min value of Characterized Position Setpoint
7	WORKING_POS_MAX	Max value of Characterized Actual Position
8	WORKING_POS_MIN	Min value of Characterized Actual Position

Table 1 Valve Position Values Monitored

Table 2 Pressure Related Values Monitored

	PRESSURE_EXTREMES	DESCRIPTION
1	SUPPLY_PRESSURE_MAX	Max value of the Supply Pressure
2	SUPPLY_PRESSURE_MIN	Min value of the Supply Pressure
3	ACTUATOR_A_MAX	Max value of the Actuator A Pressure
4	ACTUATOR_A_MIN	Min value of the Actuator A Pressure
5	ACTUATOR_B_MAX	Max value of the Actuator B Pressure

Table 2 Pressure Related Values Monitored

6	ACTUATOR_B_MIN	Min value of the Actuator B Pressure
7	PILOT_MAX	Max value of the Pilot Pressure
8	PILOT_MIN	Min value of the Pilot Pressure

Table 3 Temperature Related Values Monitored

	TEMPERATURE_ EXTREMES	DESCRIPTION
1	TEMPERATURE_MAX	Max value of the temperature in the positioner
2	TEMPERATURE_MIN	Min value of the temperature in the positioner

Table 4 IP Current Related Values Monitored

	IP_CURRENT_ EXTREMES	DESCRIPTION
1	IP_CURRENT_MAX	Max value of the IP current
2	IP_CURRENT_MIN	Min value of the IP current

Alert Log

The SVI FF keeps a log of the detected diagnostic events embedded in the firmware. The last 32 events are logged in the event log, which can be used to understand the sequence of diagnostic events. For example:

- 1. Event --> Low supply pressure
- 2. Event --> Position deviation
- 3. Event --> Position LO
- 4. Event --> Position LO LO

A timestamp is provided for each event. The time for the event depends on the time distributed on the fieldbus.

When the SVI FF DTM is used to read the events, the DTM extends the number of listed events as it does not overwrite the oldest existing events when it reaches the 33rd event (*Device vs. DTM Event Log*).



Figure 165 – Device vs. DTM Event Log

Application Specific Categorization

The SVI FF provides another level of configuration, which allows mapping of diagnostic events to one of the following categories of actions:

- Device Failure You need to take immediate action the device is failing or may be failing at any moment.
- Device Needs Maintenance Now You need to schedule maintenance procedure now.
- Device Needs Maintenance Soon You should schedule maintenance procedure.
- No Action You have decided that no action should be taken if this alert condition is detected.

Configuration for ALERT_ACTION Parameter illustrates the default configuration for the ALERT_ACTION parameter.



Figure 166 – Configuration for ALERT_ACTION Parameter

You can modify the alert actions related to valve and actuator diagnostic events. As indicated in *Configuration for ALERT_ACTION Parameter*, the positioner specific alert actions are not configurable – they are hard wired to the corresponding notification.

The transducer BLOCK_ERR parameter is used to show the mapping results. For the hosts that do not support Transducer blocks, a special configuration is provided, so that the report is duplicated in resource BLOCK_ERR parameter. This is done though the Alert Action parameter configured to map to the Resource block.

Reporting Diagnostic Condition to the Host

All parameters related to the diagnostic alerts are described in the DDs and can be read by the host at any moment. The SVI FF DTM also provides a detailed graphical presentation about the current and historic diagnostic conditions detected by the device.

Monitoring a significant number of parameters and conditions can create a significant traffic on the bus and may not be convenient. To avoid this, the SVI provides several levels of simplification, which allows reporting the device status to the operator in the plant, but also provides additional details to the device specialists.

Diagnostic Events Reported by Block Error

Setting the parameters in the Block Error parameter provides a good level of abstraction. The detected failure is mapped to one of the bits in BLOCK ERR as follows:

- Device Needs Maintenance Now
- Device Needs Maintenance Soon
- NV Memory Failure, etc.

All hosts monitor the errors reported by the BLOCK_ERR parameter and the information is immediately indicated to the operator with the level of urgency required.

For the hosts that do not support Transducer blocks, the diagnostic indication is duplicated in the resource BLOCK_ERR parameter.

Some DCSs monitor the status of the BLOCK_ERR parameter and automatically generate notification alarms to the operator. Similar device status alarms are also generated if the communication to the device is disturbed or if the DCS detects other device failures.



Figure 167 – Diagnostic Events Block Errors

This approach provides a simple and reliable way to monitor the device status. The Block Error parameter is part of the Resource or Transducer block dynamic views and most hosts read the dynamic parameters on a regular basis.

The BLOCK_ERR parameter reports also FF standard errors, including:

- Block Configuration
- Simulate Active
- Memory Failure
- Static Data Lost, etc.

The disadvantage of this approach is that it creates additional traffic on the bus – the host is polling the device on a regular basis.
Diagnostic Events Reported by Alarms

In hosts, that support Foundation Fieldbus alarms, the standard block alarm (provided through BLOCK_ALM parameter) is reported when a failure is detected in the device. The block alarm is used for all configuration, hardware, connection failure or system problems in the block and in this case also reports the diagnostic events detected by the positioner. The first alert to become active sets the Active status in the Status attribute. As soon as the Unreported status is cleared by the alert reporting task, another block alert may be reported without clearing the Active status, if the sub code has changed.

Diagnostic Events Reported by Alarms illustrates how BLOCK_ALM is generated when a problem is detected in the SVI FF positioner.



Figure 168 – Diagnostic Events Reported by Alarms

If the failures, detected in the positioner, are mapped to the Resource block, the standard for resource block alarm summary (ALARM_SUM) parameter can be used to enable or disable the alarm notifications.

The SVI FF supports multi-bit alarm notification, which allows for reporting multiple simultaneous alarms, such as Block Alarm/Block Error. Each alarm of a multi-bit alarm is referred to as a *bit-alarm*. Support for multi-bit alarms is specified using the Resource block FEATURES and FEATURES_SEL parameters. When not selected, the behavior of a multi-bit alarm parameter is the same as that specified for the simple alarm parameter behavior of the Block Alarm parameter.

The device status reported through block alarms provides significantly less traffic on the bus – the alarm is reported only when the diagnostic condition is detected.

The BLOCK_ALARM is generated when other standard FF errors are detected, including:

- Block Configuration
- Simulate Active
- Memory Failure
- Static Data Lost, etc.

In practice you must pay special attention to the way alarms are processed by the application. Often, a single device failure triggers a set of application and device alarms (sometimes referred as alarm explosion) and it may be difficult to find the source of the event. Client/ Server services are often used to provide additional information.

Diagnostic Events Reported According to FF-912 Field Diagnostic Profile Specification

FF-912 – Field Diagnostic Profile specification was created recently to enhance and standardize the device status reporting to the host. It creates a single group of parameters to aggregate all device status and diagnostics so that a Host system can integrate this information into its infrastructure.

Basic Field Diagnostic from the FF Specification illustrates the basic Field Diagnostic.



Figure 169 – Basic Field Diagnostic

The SVI FF monitors the specific conditions, as described in *Continuous Diagnostics*. These conditions are classified by the corresponding MAPs in four different categories and indicated in four different parameters:

- Fail FD_FAIL_ACTIVE
- Off Spec FD_OFFSPEC_ACTIVE
- Maintenance Required FD_MAINT_ACTIVE
- Check Required FD_CHECK_ACTIVE.

You can then filter the detected condition (FD_XXX_MASK) and the SVI FF populates the corresponding alarm.

The standard Field Diagnostics Profile allows diagnostic conditions to be polled or to be reported as multi-bit alarms if the host system supports that specification.

Host Field Diagnostic Profile Parameters illustrates how Field Diagnostic Profile parameters can be used in host that polls for diagnostic conditions.



Figure 170 – Host Field Diagnostic Profile Parameters

If the host supports alarms, it can create a publisher subscriber connection to receive alarm notifications when an interesting diagnostic condition is detected. *SVI FF Response to Detected Conditions* illustrates how SVI FF reports the detected conditions.



.....

Multiple conditions may be reported when device status is reported by Field Diagnostics parameters at the same time.

Discrete Switch Configuration

The SVI FF has a discrete switch (contact) DS1, which can be used to drive external equipment (up to 24V/1A). Discrete Switch 1 can be activated if one of the following diagnostic conditions is detected:

- A failure in position control algorithm and the actuator is in Fault (de-energized) State
- The position control algorithm is not In Normal state
- Device Need Maintenance Soon
- Device Needs Maintenance Now
- Air Supply Alert HI, LO or LOLO alert condition is active
- Travel Deviation Alert
- Position HI Alert
- Position LO Alert
- · Position control algorithm has been re-initialized
- Tight cutoff is active

This switch can be used (with minimal external equipment – e.g. one solenoid and no additional logic) to keep the value in place when the supply pressure drop or when the value position is above the High Limit and Hi Position Alert is reported.

Processing to DI Block

If you want to detect a discrete condition, but do not want to drive the external contact, a Virtual Switch, VS2, is available in the SVI FF device. VS2 can be configured in a similar way as Discrete Switch 1, the difference being that no physical contact changes - just an internal boolean.

Discrete Switch DS1 or Virtual Switch VS2 can be provided on the fieldbus and additional actions can be taken by the DCS application. For more information see the table *Channels for Discrete Input Blocks* in the *SVI FF Function Blocks Instruction Manual* (31248).

Conclusion

The SVI FF provides a comprehensive mechanism for positioner self-diagnostics and an extensive number of user-configurable procedures for valve and actuator diagnostics.

The detected conditions can be reported to the host in multiple ways, providing flexibility and easy integration of the SVI FF positioner in any host application.

17. Configuring Frame Application to Work with the SVI FF DTM

Applicable To:

• FF, Registration Module, PRM 3.10, PRM 3.02, FieldMate 2.03, FieldMate 2.01, PACTWare 3.6 or other DTMs

Topic: Software

Problem: When trying to access the licensing functionality an error message appears. This occurs as the SVI FF DTM has .net compatibility issues with some of frame applications.



Figure 172 – Registration dll Error

Solution:

Each product commonly used in conjunction with the SVI FF DTM and each version has a unique solution, which are given in the following sections.

- PRM 3.10
- PRM 3.02
- FieldMate 2.03
- Fieldmate 2.01
- PACTware 3.6 or Above

PRM 3.02

- 1. Open the PRM3.02 installation folder; default path is C:\PRM\Program.
- 2. Open the FMFdtContainer.exe.config using Notepad. Change:

<startup>

```
<supportedRuntime version="v1.1.4322"/>
```

to

<startup useLegacyV2RuntimeActivationPolicy="true"> <supportedRuntime version="v4.0" /> and save the file.

3. Launch DTM works in PRM3.02 again and the registration dialog successfully opens.

PRM 3.10

- 1. Open the PRM3.10 installation folder; default path is C:\PRM\Program.
- 2. Open the *FMFdtContainer.exe.{036D1490-387B-11D4-86E1-00E0987270B9}.config* using Notepad. Change:

<startup>

<supportedRuntime version="v1.1.4322"/> to

<startup useLegacyV2RuntimeActivationPolicy="true">

<supportedRuntime version="v4.0" />

and save the file.

3. Launch DTM works in PRM3.10 again and the registration dialog successfully opens.

PRM 3.02

1. Open the PRM3.02 installation folder; default path is C:\PRM\Program.

2. Open the FMFdtContainer.exe.config using Notepad. Change:

<startup>

```
<supportedRuntime version="v1.1.4322"/> to
```

```
<startup useLegacyV2RuntimeActivationPolicy="true">
```

<supportedRuntime version="v4.0" />

and save the file.

3. Launch DTM works in PRM3.02 again and the registration dialog successfully opens.

FieldMate 2.03

This procedure uses FieldMate Basic R2.03.00 Lite Edition as example.

- 1. Open the *FieldMate 2.03* installation folder; default path is C:\FM\Program.
- 2. Open the *FMFdtContainer.exe.{036D1490-387B-11D4-86E1-00E0987270B9}.config* using Notepad. Change:

<startup> <supportedRuntime version="v1.1.4322"/> to <startup useLegacyV2RuntimeActivationPolicy="true"> <supportedRuntime version="v4.0" /> and save the file.

3. Launch DTM works in *FieldMate* and the registration dialog successfully opens.

Fieldmate 2.01

- 1. Open the *FieldMate 2.01* installation folder; default path is C:\FM\Program.
- 2. Open the FMFdtContainer.exe.config using Notepad. Change:

<startup> <supportedRuntime version="v1.1.4322"/> to <startup useLegacyV2RuntimeActivationPolicy="true"> <supportedRuntime version="v4.0" /> and save the file.

3. Launch DTM works in *FieldMate* and the registration dialog successfully opens.

PACTware 3.6 or Above

- 1. Open the PACTware 3.6 installation folder; default path is C:\Program Files\PACTware Consortium\PACTware 3.6\App.
- 2. Open the PACTware.exe.config using Notepad. Change:

<startup>

<supportedRuntime version="v1.1.4322"/> to

<startup useLegacyV2RuntimeActivationPolicy="true">

<supportedRuntime version="v4.0" />

and save the file.

3. Restart *PACTware3.6*, launch registration from SVI FF DTM and the registration dialog successfully opens.

18. Using ValVue 3 and the SVI FF DTM to Change Link Master Configuration

This section gives instructions for changing the Link Master configuration of an SVI FF from Link Master to Basic Device or vice versa. This is useful if another device on the segment has been designated the Link Master or when the SVI FF is selected as the Primary or Secondary Master.

Most DCS systems control/change the Link Master configuration of the device according to network settings. We recommend to follow that procedure; therefore, this procedure is not often used.

Instructions

This procedure should be done before the valve is put in service. If done later:

If the positioner is the active link master, switching to basic device will stop the control. Take all necessary steps to protect a running process and personnel. This proce-dure impacts on a running process. Isolate the valve if it is in service.

Ensure the Resource and Transducer blocks are in OOS mode.

- 1. Ensure you have taken all precautions in the *Warning* above.
- 2. Open ValVue 3, select the required SVI FF device and connect.

3. Select Security > Procedures and Methods and Figure 173 appears.

All Pressure	A					
- 🚯 Pressure Range	Proced	lures and Methods				
🖓 Pressure Alerts						
🚓 Temperature			Observer	Operator	Maintenance	Planning Engineer
📣 IP Output	F	DT Functions	[m]		V	
💥 Extended RB Configuration						
		Save			V	
🚯 Alerts						
- 📣 LCD Display		Upload			\checkmark	
Calibration		Developed				
		Download			V	V
X Auto Tune		Change Tag				
Quick Wizard		change rag				
		Change Address				
Diagnostics						
- Step Test		Restart Device				
- Step Test - Ramp Test		Restart Device	[]		V	
- Step Test - Step Test - Step Ramp Test - Stepature Test	F	Restart Device				7
- Step Test - Ramp Test - Signature Test - Histograms - Test	F	Restart Device				V
Gigliotate G	F	Restart Device Procedures Find Stops			V V	V
Step Test Step Test Signature Test Signature Test Histograms Trends Identification	F	Restart Device Procedures Find Stops			V	V V V
Step Test Gamma Test Signature Test Signature Test Histograms Trends Identification Positioner Yokyoe	F	Restart Device Procedures Find Stops Autotune			V V V	V V V
Step Test Step Test Signature Test Signature Test Histograms Identification Signature Test Identification Signature Test Signature Signatur	F	Restart Device Procedures Find Stops Autotune Signature			V V V V	V V V V
Generation Generation Generation Generation Generation Generation	F	Restart Device Procedures Find Stops Autotune Signature			V V V V V	V V V V
Step Test Step Test Step Test Signature Test Sign	F	Restart Device Procedures Find Stops Autotune Signature Ramo Test			V V V V V	2 2 2 2 2 2 2 2
Step Test Step Test Step Test Signature Test Histograms Trends Joanture Test Substrature Test Subs	F	Restart Device Procedures Find Stops Autotune Signature Ramp Test			V V V V V	V V V V
Generation	F	Restart Device Procedures Find Stops Autotune Signature Ramp Test Step Test			2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	V V V V V
Step Test Step Test Step Test Signature Test Security Security Security Security Security Secures Parise Access Seameters Change Access	F	Restart Device Procedures Find Stops Autotune Signature Ramp Test Step Test			2 2 2 2 2 2 2 2 2 2 2 2	V V V V V
Generation Step Test Generation Signature Test Generation Histograms Tends Joantification Positioner Valve Contact and Order Security Security Device Access Parameters Change Access Parameters Change Access	F	Restart Device Procedures Find Stops Autotune Signature Ramp Test Step Test Save Signature			V V V V V V V	V V V V V V
Generation G	F	Restart Device Proceedures Find Stops Autotune Signature Ramp Test Step Test Save Signature In Device			2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	V V V V V V
Generation Step Test Generation Signature Test Generation Generation Generation Generation Signature Test Generation Generatio	F	Restart Device Procedures Find Stops Autotune Signature Ramp Test			V V V V V	V V V V

Figure 173 – Procedures and Methods

4. Click all boxes for Restart Device.

5. Select Security > Parameter Change Access and Figure 174 appears.



Figure 174 – Parameter Change Access

Note: To assign these privileges a person with ValVue 3 Administrator privileges. See the ValVue 3 software user manual (31426 Masoneilan Products ValVue 3 Software Manual) or the online help.

6. Select Network Settings and then Link Master Configuration.

- 7. Select **Identification > Network Settings** (Figure 175). To access this tab you must be have *Planning Engineer* level privileges.
- 8. Change from *Basic* to *Link Master* by:
 - a. Putting Resource block and Transducer block in OOS by clicking **OOS** in the icon bar for both.

Network	k Settings					
	Device Tag	0047450008	02170068		Change PD Tag	
	Device Address		32		Change Address	
	Current Link Master Configuration	Link Master				
	Link Master Configuration	Basic Device	Link Master		Restart Device	
	T1		15.00	sec		
	T2		90.00	sec		

Figure 175 – Network Settings

b. Clicking the Link Master radio button and the message in Figure 176 appears.



Figure 176 – Change Link Master Configuration

c. Clicking **OK**.

9. Select Identification > Network Settings and Restart Device button.

Note: To avoid accidental changes in the Link Master configuration, change user privileges back after the procedure is complete.

10. Restore original security settings.

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19. Advanced Usage

Technology to Maximize Savings and Process Performance

This section shows examples of techniques for achieving superior process results by using ValVue with SVI FF to simplify maintenance and to achieve the benefits of SVI FF's advanced diagnostics capabilities. It is assumed that you are using HART[®] communications with a modem and ValVue.

Tight Shutoff Application to Protect from Seat Erosion

Program the Tight Shutoff feature to prevent valve seat erosion using the full actuator force to eliminate damaging leakage. At a position setpoint of 2%, for example, this function allows full thrust to occur when the input signal is less than 2%. This solves a common cause of valve repair. Do not use tight shutoff if it is necessary to throttle the valve at very small flows.

Tight Shutoff Application to High Pressure Liquid Letdown Valve Trim

When staged trim is used in High Pressure Liquid Letdown Valves, adjust the Tight Shutoff to move the valve from the seat to begin throttling at the minimum operable CV level. Using the tight shut-off feature in SVI FF prevents valve seat damage that can occur when throttling at clearance flows. See recommended Tight Shutoff settings in Table 5. Adjust Tight shutoff using front panel pushbuttons, with ValVue or a HART[®] communicator.

Masoneilan Valve Type	Valve Trim Type	Set Tight Shutoff	Positioner Characteristics
Lincoln Log	Any	15%	Linear
41000 VRT Type S	Partial Stack	6%	Linear
41000 VRT Type S	Full Stack	3.5%	Linear
41000 VRT Type C	Cage	6%	Linear
28000	Varilog	5%	Linear
Any	Class V Shutoff	2%	Linear

Table 5 Tight Shutoff Parameters for High Pressure Liquid Letdown Trim

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