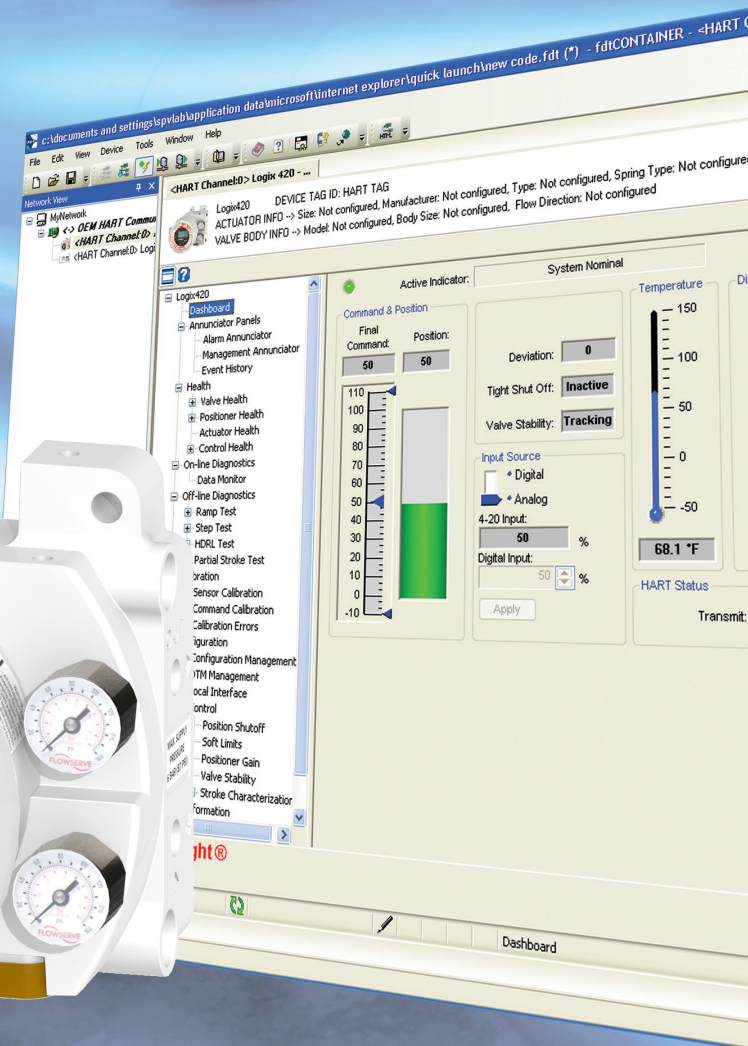




# Flowserve Logix<sup>®</sup> 420 Digital Positioner

Redefining low cost ownership for your enterprise



Experience In Motion

## Flowserve® – Solutions to keep you flowing

Flowserve is one of the world's leading providers of fluid motion and control products and services. Globally, we produce engineered and industrial pumps, valves, seals, systems, and automation equipment, and provide a range of related flow management services. Our solutions move even the most volatile and corrosive fluids safely and securely through some of the most extreme temperatures, terrain, and challenging operating environments on the planet.

Flowserve products and services are specified for use in a vast range of industries, including oil and gas, chemical, power generation, and various general industries.



### Logix® 420 Digital Positioner

In what continues to be an increasingly competitive economic environment, commercial and municipal plants are being asked to establish and maintain high quality processes while maximizing uptime, and minimizing production costs.

Any unplanned shutdown can significantly affect the economic outlook of the plant and its employees and the downsizing of trained maintenance staff has impacted the ability of plants to meet these control system challenges.

Equipment requiring long commissioning times, unreliable control, or frequent repairs could severely impact the economic success of the enterprise. Alternatively, a product that is easy to set up, provides years of reliable service and has its own diagnostic warnings may significantly improve the financial outcome for the operation. With the Logix 420 model, you get all these features at a very competitive price.



*The Logix 420 allows for fast commissioning, as well as accurate and reliable control at a very competitive price.*

### The Logix® 420 Total Cost Advantage

#### Simple Installation

New mounting options for the Logix 420 continue to expand the array of control valves that can be managed.

#### Mounting Options

Mounting holes and electronic ports are offered in English and Metric threads. Reliable linkages are easy to install. A direct mount manifold mounting option, for most diaphragm operated Flowserve control valves, is integrated into the body so additional parts are not required. The de-clutchable shaft allows for over rotation during the initial setup without damage.

#### Valve and Actuator Options

Configurable for rotary or linear, single acting, air to open or air to close, very large to very small actuators, split range, custom characterization, precision linearization and more.

#### Configuration and Cloning Tools

Clone configuration and alarm settings. DTM software allows easy uploading of any Logix 420 configuration. Newly installed Logix 420 positioners can be configured exactly as the previous positioner, or edited as desired, with the simple click of a mouse.

#### Vented Option

When using with compatible gas service use threaded exhaust ports to exhaust gas to a safe environment.

**The Logix 420  
Total Cost Advantage**

- Simple Installation
- Fast, Easy Commissioning
- Fully Featured Design
- Accurate and Reliable Service
- Easy to Maintain
- Competitive Pricing



**Fast, Easy Commissioning**

Commissioning with the Logix 420 positioners is fast and easy. Basic set-up, calibration, and tuning do not require software or PID expertise and can be accomplished very quickly.

**Quick-Cal One-Button Calibration**

Simply set the configuration DIP switches and press the **Quick-Cal** button. In seconds the Logix 420 is ready for control. The advanced tuning process optimizes the tuning parameters quickly and automatically.

**Easy User Interface**

The Logix 420 local user interface lets you configure the basic operation, calibrate, and tune the response of the positioner with no additional tools or configurators. Blinking, high visibility LEDs allow you to see status from a distance\*.

**LCD Screen**

With the optional LCD screen, quickly use advanced functions and view the system status in 8 languages. The main LCD view shows command and position and other important information using icons and scrolling status lines – all visible without removing the cover. Directional buttons allow you to navigate the menu to locate detailed information and perform commonly used functions.

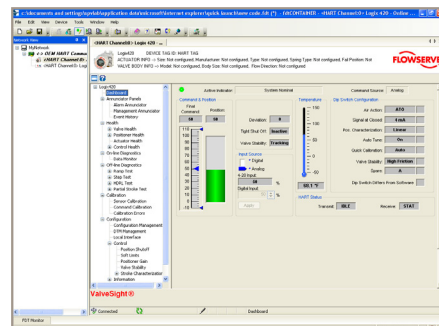
**ValveSight™ DTM Software**

Intuitive DTM software provides a powerful user interface for all positioner commissioning, monitoring and diagnostic functions and custom settings.

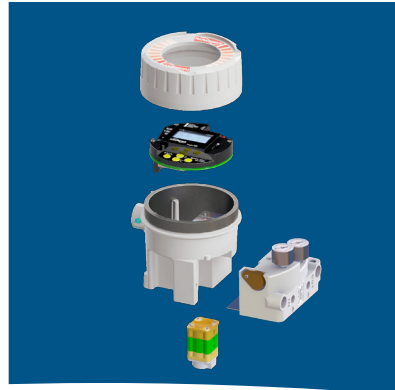
\*Only with the glass lens.



The Logix® 420 User Interface



ValveSight™ DTM Software



## Accurate and Reliable Service

High quality processes rely on accurate and reliable positioners. The Logix 420 positioners are designed with the latest technology to support precise control and keep the positioner in service for years.

### Superior Control

Precision components, inner loop control and advanced control algorithms provide Logix 420 digital positioners with the accuracy and reliability demanded by the most critical applications.

### Independent PID Gains

Independent gains for opening and closing directions are automatically set during the **Quick-Cal** and allow for optimal performance with actuators with heavy springs or process loads.

### Selectable Gain Switch

A rotary switch allows you to instantly boost the responsiveness or stability of the valve without dealing directly with PID values.



### High Capacity Relay

The unique configuration of the relay produces high flow capacity while maintaining low air consumption.

### Heavy Duty Housing

Rated IP66, the housing provides tough protection from dust, liquids and impact in the most demanding environments. Anodized aluminum and epoxy powder paint minimize corrosion in wet, salt-water environments.

### Purge Option

Configure the positioner to purge the spring area with instrument air to avoid corrosion in single acting low bleed actuators.

### Certified for Hazardous Areas

The Logix 420 is certified by Factory Mutual for explosion proof Class I Division 1 and ATEX Ex d installations. The Intrinsically Safe design is certified for Class I Division 1 and Ex ia applications. Additionally, the Logix has non-incendive approvals giving it a global approval for most end user requirements.

### Designed for Safe Shut-Down

Engineered with quality and reliability built in. Designed to move to the fail-safe position when current drops below 3.6 mA per IEC 61508 Safety Integrity Level 3 (SIL3) requirements.

## Easy to Maintain

Logix 420 positioners come with numerous diagnostic tools that allow the positioner to **help pinpoint the root cause of an issue**. Should the issue be in the positioner, the Logix 420 modular design makes it easy to change components using standard tools.

### Comprehensive On-Line Diagnostics

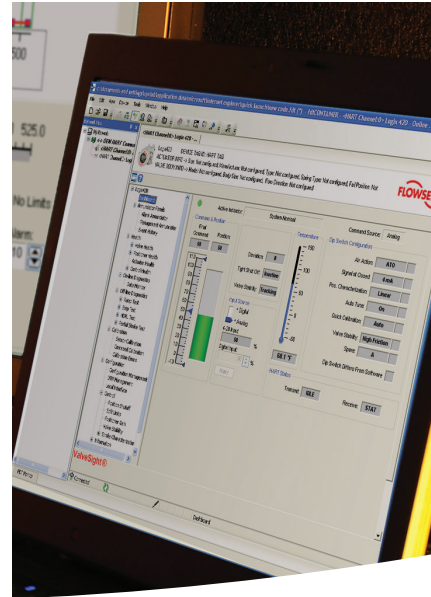
The Logix 420 positioner has over 37 helpful warnings alarms that roll up into intuitive health values. These onboard diagnostics evaluate key parameters against potential failures, Logix 420 digital positioners deliver data to alert you of existing risks, reduce the number and frequency of unplanned shutdowns, and help minimize exposure to loss.

### Intuitive Health Display

All alarms and warnings are shown on an annunciator panel in the DTM. Built in management of alarms and warnings automatically help pinpoint the root cause of the issue. Health pages show detailed information about issues and possible solutions to quickly pinpoint the root cause of the issue. Or, quickly adjust the alarm settings to more helpful limits.

Shown right:

- **New Embedded Code Features** provide extensive diagnostics, helpful histograms, and detailed signatures
- **Intuitive Health Displays** show issues and severity at a glance. Possible solutions to the root cause are at your fingertips



### Overview of Current Alarms

View all current alarms, warnings and other states using the annunciator panels in the ValveSight™ DTM or scrolling status feature on the LCD. All alarms can be masked to allow easy management.

### Extensive Alarm History

A 200-event on-board history of all alarms, warnings and calibrations make it easy to see a progression of events.

### Possible Solutions

Every alarm includes a concise statement of its meaning along with list of possible solutions. This can be found quickly in the Instruction Manual\* or with a few clicks in the ValveSight™ DTM.

\*See document number LGENIM0106

### Data Monitor

The data monitor is a log for many positioner parameters and is displayed on the ValveSight™ DTM. It logs data over HART communications and is used to view and track the current state of the valve system.

### Off-Line Analysis

Detailed off-line signatures help you determine which valves need repairs and prevent expensive unnecessary equipment maintenance and replacement costs. Viewed with an intuitive, easy to use user interface, valve signatures are filled with detailed performance information. This allows maintenance engineers to pinpoint valves with potential issues during shut-down.

- **Ramp Tests** evaluate thrust and friction values over a length of stroke.
- **Step Tests** shows immediate responsiveness of the valve.
- **Partial Stroke Tests** evaluates the responsiveness with pass/fail criteria. The positioner stores settings and results of the last 20 tests.
- **HDRL Tests** determines hysteresis, deadband, repeatability, and linearity with the click of a button.

Using ValveSight™, print test reports, compare signatures, and export data.

### Modular Design

The Logix 420 positioners are designed to withstand the severe environments. Should a problem arise, service is easy with a modular design that requires simple tools. Replacement kits are available for circuit boards.

### Easy Return Policy

Logix 420 positioners are warranted for 1 year from the time of shipment. See Flowserve **Worldwide Terms and Conditions of Sale** for restrictions and details.

## Logix<sup>®</sup> 420 Specifications and Certifications

Product Range	
Resolution	≤ 0.25%
Linearity	+/-1.25%
Repeatability	≤ 0.25%
Hysteresis	≤ 1.0%
Deadband	≤ 0.3%
Sensitivity	≤ 0.25%
Stability	≤ 0.4%
Long Term Drift	≤ 0.5%
Supply Pressure Effect	≤ 0.2%

Output Air Capacity
20.8 Nm <sup>3</sup> /h @ 4.1 bar (12.2 SCFM @ 60 PSI)

Air Consumption
0.082 Nm <sup>3</sup> /h @ 4.1 bar (0.048 SCFM @ 60 PSI)

Temperature Range*	
Operating, Storage	-52 to 85°C (-61.6 to 185°F)

\* *Reduced performance at low temperatures*

Hazardous Area Certifications
ATEX, ICEx, North America (cFMus)

Safety Certifications
Meets Safety Integrity Level 3 (SIL 3) per IEC 61508

Communications Certifications
DD and DTM certification by the HART Communications Foundation

For more information see document number **LGENIM0106**

## Communications

### ValveSight™ FDT/DTM Technology

ValveSight™ DTM software utilizes FDT/DTM technology and HART protocol to give you 24/7 access to monitor any Logix 420 positioner on your network – all from a single workstation or DCS.\*

ValveSight™ streamlines and simplifies your ability to quickly and accurately assess the health of any attached Logix<sup>®</sup> device, allowing you to calibrate, configure and deal with existing problems directly and other important system metrics. Store configuration and calibration histories and view event logs for each digital positioner on your network. Even create reports for configuration, calibration, and event data.

### Common Interfaces

Logix 420 positioners are supported by a fully functional DD. They work with handheld communicators and all major Distributed Control Systems (DCS).

\* *AMS Snap-On™ also available.*

### The ValveSight™ Dashboard

Open the Dashboard window to gain real-time feedback on the status of your valve including valve stem position, control signal, health indications and active alarms, basic positioner configuration, and positioner temperature.

- **ValveSight™ DTM** priority status area indicates root cause of active alarm or warning.
- **ValveSight™ DTM Annunciator** panels show the current status of all alarms and warnings.
- **ValveSight™ DTM Health pages** show detailed alarm status, list implications and possible solutions and allow you to configure the alarm limits.
- **ValveSight™ DTM On-Line Diagnostics pages** allow you to monitor and log the positioner sensors, see long term trends and configure the continuous stroke test.
- **ValveSight™ DTM Off-Line Diagnostics pages** allow you to run Ramp, Step, HDRL and Partial Stroke Tests.
- **ValveSight™ DTM calibration and configuration screens** fully support Logix 420 functionality.

### HART 6 or 7 Protocols

- ValveSight and Logix 420 Positioners support HART 6 and 7 protocols.
- Logix 420 positioners are shipped standard with HART 6.
- Easily change protocols with the flip of a switch

## How to Order

Logix 420 Positioner Configurations			
Selection	Description	Code	Example
<b>Base Model</b>	Explosion proof, IP-66	4	420
<b>Communications</b>	HART 6 (HART 7 configurable)	2	
<b>Diagnostics</b>	Standard (Basic Functionality)	0	
<b>Positioner Certifications</b>		-	
<b>Certifications</b>	General Purpose	14	14
	IP66		
	cFMus/ATEX/IECEX Explosion Proof CI I Div 1 Gr. B,C,D, / Ex d IIB+H2 14	40	
	cFMus/ATEX/ IECEX Intrinsically Safe CI I Div 1 Gr. A,B,C,D / Ex ia IIC	44	
<b>Positioner Configuration</b>		-	
<b>General Options</b>	Housing: Aluminum; Paint: White; Static Seals: Buna-N; Dynamic Seals: Fluorosilicone (Standard)	W	W
	Housing: Aluminum; Paint: White; Static Seals: Buna-N; Dynamic Seals: Buna-N (Sweet Natural Gas)*	N	
<b>Threaded Connections</b>	Mounting: 5/16" 18 UNC and M6; Pneumatics: 1/4" NPTF; Conduit: 1/2" NPTF; Vent 1/4" NPTF	1	1
	Mounting: 5/16" 18 UNC and M6; Pneumatics: 1/4" NPTF; Conduit: M20 x 1.5; Vent 1/4" NPTF	2	
<b>Feedback Shaft</b>	"D" - 316 Stainless Steel Shaft (Valtek Standard)**	D	D
	NAMUR VDI/VDE 3845 Stainless Steel Shaft**	R	
<b>Optional Add-Ins</b>		-	
<b>Gages</b>	No Gages	0	1
	Nickel Plated with Brass Internals, psi (bar/kPa)	1	
	Nickel Plated with Brass Internals. psi (kg/cm2 )	2	
	SS with SS Internals. psi (bar/kPa)	3	
	SS with SS Internals. psi (kg/cm2 )	4	
	UCC Press Test Plug, 1/8" NPT	A	
	Valve, Tank, Schrader 645A	B	
<b>Display</b>	No LCD; Solid Cover	0	1
	LCD; Window Cover	1	
	No LCD; Window Cover	2	

\* Not for use below -30°C

\*\* When viewing the front of the positioner, the feedback shaft spring bias is as follows:  
D - counterclockwise  
R - clockwise

Feature List for Logix 420 & ValveSight™ DTM		
<b>Overview</b>	Dashboard	✓
	All-Alarm Annunciator	✓
	Alarm and Calibration History	✓
<b>Configuration</b>	Quick Configuration DIP Switches	✓
	Configuration Management Tool	✓
	Custom Stroke Characterization	✓
	Local Interface Control & Blocking	✓
	All-Variable Editor	✓
	Tight Shutoff at Both Ends of Travel	✓
<b>Calibration</b>	Soft Limits	✓
	Custom Units of Measure	✓
	Quick-Cal One Button Stroke Calibration	✓
<b>Calibration</b>	Analog Input Calibration	✓
	Independent Open & Closed Gains	✓
<b>Off-Line Diagnostics</b>	Ramp Test	✓
	Step Test	✓
	HDRL Test	✓
	Partial Stroke Test	✓
	Test Comparisons	✓
	Test Reports & Printing	✓
<b>On-Line Diagnostics</b>	Test Data Exporting	✓
	DTM Dashboard	✓
	Organized Health Information	✓
	All-Alarm Annunciator	✓
	Alarm & Calibration History	✓
	Data Monitor	✓
<b>On-Line Diagnostics</b>	Deviation	✓
	Position Alerts	✓
	Valve Cycles and Travel	✓
	Positioner Temperature	✓
	Root Cause Indication	✓

## Optimal Control Valve – Logix® 420 Combinations



### Valtek® GS

The Valtek GS product line is low cost, compact and lightweight. Yet, it is rugged and can be used safely and confidently in a wide range of less-than-critical applications plant-wide. Its modularity provides trim and material options to suit most service situations with off-the-shelf availability. Simplicity of design reduces maintenance and parts inventory costs.

For more information see document number VLENTB0300



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