



## ***Logix 505+ and 510+ Digital Positioners***

Redefining total cost of 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 500+ Series 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.

The resulting business climate has become a driving force behind a new and rapidly evolving approach to equipment purchases: **total cost of ownership**.

Equipment requiring long commissioning times, unreliable control, or frequent repairs could drive up the actual cost of ownership dramatically. Alternatively, a product that is easy to set up provides years of reliable service and has its own diagnostic warnings may significantly reduce the overall cost of ownership over the life of the product.

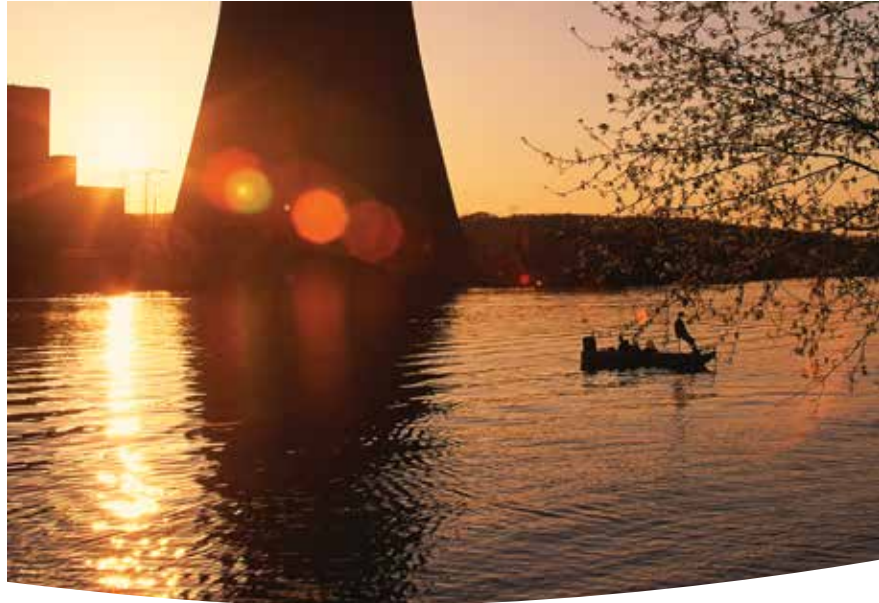
### Fast commissioning and accurate production

To minimize your total cost of ownership and maximize productivity, Flowserve developed the Logix 500+ digital positioner. The Logix 500+ digital positioner allows for fast, simple commissioning, and extremely accurate and reliable control.

To protect your company assets to the fullest, talk to your local Flowserve sales representative to learn more about true total cost of ownership.



The Logix 500+ allows for fast commissioning, accurate and reliable control, and powerful diagnostic features that provide easy ways to determine when maintenance is required.



## Available Logix 500+ Models

Part of the versatile Logix 500 positioner series the Logix 505+ and Logix 510+ digital positioners fulfill the ever growing requirements for modularity and flexibility. These positioners are designed to cover a wide range of applications. The modular design allows for the selection of a positioner with the desired options that will be most beneficial to keep your plant running at optimal efficiency. With a required voltage of less than 6V the Logix 505+ and Logix 510+ positioners are a great choice to replace traditional analog IP positioners due to their increased functionality. Each Logix 500+ positioner contains an on-board microprocessor that allows for quick and easy configuration, calibration and on-board diagnostics.

### Logix 505+

The Logix 505+ is the most basic positioner offered as part of the Logix 500 positioner series. It is designed to be able to handle most simple control loops. Configuration is easy and is accomplished by setting 4 dip switches on the positioner face. Simply push the Quick-Cal button to initiate a self-calibration and the Logix 505+ is ready to be placed into service within just a matter of minutes. Three colored LED lights continuously indicated the positioner status.



### Logix 510+

The Logix 510+ digital positioner provides additional features and enhanced capabilities that allow it to provide excellent process control for all of your control loops. Configuration is just as simple and can easily be done by setting 8 dip switches. Pushing the Quick-Cal button initiates a self-calibration and the positioner gain is also automatically set during the calibration sequence. The gain can further be adjusted by simply turning the rotary gain switch. The Logix 510+ is also available with additional features like including a Multifunctional Card that can configured as an analog output (AO) or discrete output (DO). The Logix 510+ can also be purchased with limit switches and it also has a remote mount option. In addition to the three colored LED lights that indicate the positioner status the Logix 510+ can also be purchased with an optional LCD screen which allows even greater diagnostic capabilities.



## The Logix 500+ Series Total Cost Advantage

### Simple Installation

New mounting options for the Logix 500+ continue to expand the array of control valves that can be managed.

### Mounting Options

Mounting holes, pneumatic ports and electronic ports are offered in Metric and English threads. Reliable linkages are easy to install. The Logix 500 MD+ can be mounted on any linear or rotary valve.

### Valve and Actuator Options

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

### Powerful Features

- **Calibration:** Fast, accurate one button Quick-Cal
- **Mounting:** Versatile, including NAMUR options
- **Commissioning:** No software required
- **Interface:** Easy buttons with LCD option and high visibility LED's for operational status
- **Performance:** Superior control, high air capacity, low air consumption
- **Auxiliary Card:** Analog Out or Discrete Out (Logix 510+ only)



The Logix 510+ User Interface

## **The Logix 500+ Series 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 500+ Series 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 500+ is ready for control. The advanced tuning process optimizes the tuning parameters quickly and automatically.

### **Easy User Interface**

The Logix 500+ 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.

## **Easy to Maintain**

Logix 500+ positioners come with numerous diagnostic tools that allow the positioner to **automatically pinpoint the root cause of an issue**.

### **On-Line Diagnostics**

The Logix 510+ positioner has helpful warnings alarms that roll up into intuitive health values. These onboard diagnostics evaluate key valve, actuator, positioner, and control parameters against potential failures. Logix 510+ Series digital positioners deliver real-time data to alert you of existing and potential risks.

### **Modular Design**

The Logix 500+ positioners are designed to withstand severe environments. Should a problem arise, service is easy with a modular design that requires simple tools. Replacement kits are available for most components.

*The advanced features of the Logix 500+ give you the flexibility to work in a wide range of applications.*



## Fully Featured Design

*The Logix 500+ Series positioners integrate advanced features in a simple package. They give you the flexibility to work in a wide range of applications and the simplicity to allow you to get up and running.*

### Powerful Processor

A fast CPU with plenty of memory enables the processor to calculate diagnostic functions, and maintain precise position control.

### Environmental Sensors

Temperature and humidity sensors detect developing issues and prevent failures.



*Auxiliary Card Being Installed*

### Auxiliary Card

An auxiliary card, available in the Logix 510+ model, expands the possibilities of communication and control.

The Logix 500+ Multifunction Card (MFC) can be configured to act as an analog output (AO), or discrete output (DO). As an AO, the card reports the position of the valve with a mA current. As a DO, the card can be configured to limit output current when any of the diagnostic alarms are triggered. The LCD option must be selected when the Multifunction Card option is selected.

### Limit switches

A variety of Logix 510+ limit switch kits are available to provide you with an independent verification of the position of the feedback shaft.

### Vented Option

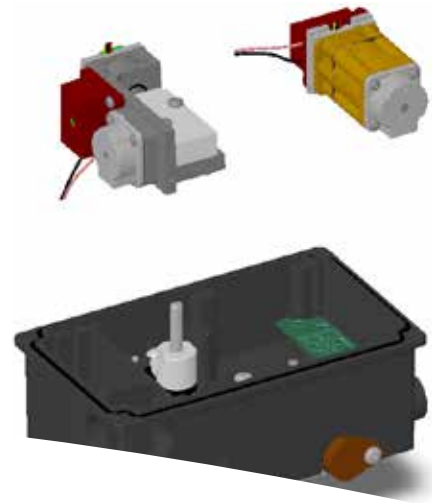
When using sweet natural gas, use threaded exhaust ports to exhaust gas to a safe environment.

### Remote Mount Option

Use the remote mount feedback option for extreme environments. This option is only available on the Logix 510+.

Shown right:

- **Heavy Duty IP65/IP66 Housing** with thicker walls, better gasket design; improved threads
- **Modular Relay Design** allows for ultra-high double acting flow or optimal single acting performance with minimal air consumption



## Accurate and Reliable Service

High quality processes rely on accurate and reliable positioners. The Logix 500+ series 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 500+ 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

The Logix 510+ has a rotary switch that allows you to instantly boost the responsiveness or stability of the valve without dealing directly with PID values.



### Two Relay Styles

Two relay options are available to optimize your valve system performance. The high capacity spool relay will quickly move large actuators with ease and are ideal for small actuators that need the fastest response. The low air-consumption poppet relay offers great performance on single acting valves when air consumption is critical.

### Heavy Duty Housing

Rated at IP65/IP66 (see table on page 10 for complete details), 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

Intrinsically safe electronics meet ATEX, IECEx and North America (cFMus).



## Logix 500+ Specifications and Certification

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	
Single Acting Relay	20.8 Nm <sup>3</sup> /h @ 4.1 bar (12.2 SCFM @ 60 PSI)
Double Acting Relay	30.6 Nm <sup>3</sup> /h @ 4.1 bar (18.0 SCFM @ 60 PSI)


Air Consumption	
Single Acting Relay	0.082 Nm <sup>3</sup> /h @ 4.1 bar (0.048 SCFM @ 60 PSI)
Double Acting Relay	0.637 Nm <sup>3</sup> /h @ 4.1 bar (0.375 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, IECEx, North America (cFMus)	



<b>Feature List</b> <b>Logix® 510+</b> <b>Logix® 505+</b>			
		<b>Logix® 500+ Series Positioner</b>	
		505+	510+
<b>Hardware</b>	Quick-Cal Button	✓	✓
	3 Menu Select Buttons		✓
	3 LEDs (Red, Yellow, Green)	✓	✓
	Configuration DIP Switches	4	8
	Live Gain Adjust Settings	2	10
	LCD Option		✓
	Multi-Function Cards (Optional) (Configurable Analog Output or Discrete Output)		1 <sup>1</sup>
	Limit Switch Option		✓
	Remote Mount Option		✓
	Terminal Voltage	<6.0 V	<6.0 V
<b>Configuration</b>	Eight Standard Flow Characterization Curves		✓
	Local Interface Valve Control		✓
	Custom Units of Measure		✓
	All-Variable Editor		✓
	Tight Shutoff	✓	✓
	Soft Limits		✓
<b>Calibration</b>	Stroke Calibration (Quick-Cal)	✓	✓
	Analog Input Calibration		✓
	Analog Output Calibration		✓
<b>On-Line Diagnostics</b>	Deviation	✓	✓
	Position Alerts		✓
	Pilot Relay		✓
	Piezo Voltage		✓

<sup>1</sup> No advanced diagnostic information

## How to Order

500+ Positioner Configurations			
Selection	Description	Code	Example
<b>Base Model</b>	Logix 500+ Series	5	5
<b>Type</b>	Analog Only; 4DIP-Set-Up	05+	10+
	Analog Only; 8DIP-Set-Up with LCD Option; Limited Diagnostics	10+	
<b>Certifications</b>	General Purpose	14	37
	Intrinsically Safe, North America, IP66, Class I, Div 1 Groups A-D T4/T6	37	
	Intrinsically Safe, North America, IP66, Class I, Zone 0, AEx ia IIC T4/T6 Ga		
	Intrinsically Safe, North America IP66, Class I, Zone 0, Ex ia IIC T4/T6 Ga		
	Non-Incendive, North America, IP65, Class I, Div 2, Groups A-D T4/T6		
	Non-Sparking, North America, IP65, Class I, Zone 2 AEx nA IIC T4/T6 Gc		
	Non-Sparking, North America, IP65, Class I, Zone 2 Ex nA IIC T4/T6 Gc (T4@Ta=-20°C to +85°C, T6@Ta=-52°C to +45°C)		
	Dust Ignition, North America, IP65, Zone 21, AEx tb IIIC T100°C Db (Ta=-52°C to +85°C) NEMA Type 4X		
	IECEx FMG 12.0001X, IP66, Ex ia IIC T4/T6 Ga		
	IECEx FMG 12.0001X, IP65, Ex nA IIC T4/T6 Gc (T4@Ta=-20°C to +85°C, T6@Ta=-52°C to +45°C)		
	IECEx FMG 12.0001X, IP65, Ex tb IIIC T100°C Db (Ta=-52°C to +85°C)		
	ATEX FM15ATEX0002X II 3 G, IP65, Ex nA IIC T4/T6 Gc (T4@Ta=-20°C to +85°C, T6@Ta=-52°C to +45°C)		
ATEX FM12ATEX0009X II 1 G, IP66, Ex ia IIC, T4/T6 Ga (T4@Ta=-20°C to +85°C, T6@Ta=-52°C to +45°C)			
ATEX FM12ATEX0009X II 2 D, IP65, Ex tb IIIC T 100°C Db (Ta=-52°C to +85°C)			
<b>Positioner Configuration</b>		-	
<b>Housing</b>	Aluminum - Black Base with White Cover	W	W
	Aluminum - Black Base with Yellow Cover	Y	
	Aluminum - Black Base with Black Cover (Automax)	B	
	Aluminum - Black Base with Black Cover (Accord)	A	
<b>Threaded Connections</b>	Mounting: 5/16" 18 UNC, Pneumatics: 1/4" NPTF, Conduit: 1/2" NPTF, Vents 1/4" NPTF	1	1
	Mounting: M8 x 1.25, Pneumatics: 1/4" NPTF, Conduit: M20 x1.5, Vents 1/4" NPTF	2	
	Mounting: M8 x 1.25, Pneumatics: G1/4", Conduit: M20 x1.5, Vents G1/4"	3	
<b>Feedback Shaft</b>	D - 316 Stainless Shaft (Valtek Standard)	D	D
	NAMUR - 316 Stainless Steel Shaft (VDI/VDE 3845)	R	
<b>Action</b>	Three-way (Single-Acting), Poppet Style Relay	1	1
	Three-way (Single-Acting), Spool Style Relay	2	
	Four-way (Double-Acting), Spool Style Relay	3	
<b>Position Indicator</b>	No Indicator	0	F
	Flat Indicator	F	
	Domed Indicator	D	
<b>Special Options</b>	No special options	0	0
<b>Optional Mechanical Add-Ins</b>		-	
<b>Manifold</b>	No Manifold	0	GM
	Gauge Manifold - Aluminum (required for gauges)	GM	
<b>Pressure Gauges</b>	No Gauges	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>Optional Electronic Add-Ins</b>		-	
<b>Display</b>	No LCD	0	1
	LCD <sup>4</sup>	1	
<b>Auxiliary Card Slot 1</b>	Slot 1 - No Card	0	1
	Slot 1 - Multi-Function Card <sup>1,4</sup>	1	
<b>Auxiliary Card Slot 2</b>	Slot 2 - No Card	0	0
<b>Limit Switches or Remote Mount</b>	No Switches	0	3
	Mechanical Limit Switch <sup>2,4</sup>	1	
	Reed Switch <sup>4</sup>	2	
	NAMUR V3 type proximity switch, P+F NJ2-V3-N <sup>2,4</sup>	3	
	Slot Type NAMUR Sensor, P+F SJ2 S1N <sup>2,4</sup>	4	
	Slot Type NAMUR Sensor, P+F SJ2 SN <sup>2,4</sup>	5	
	NAMUR V3 type proximity switch, P+F NBB2-V3-E <sup>2,4</sup>	6	
Remote Mount Feedback <sup>3,4</sup>	7		

1. Can configured As Analog Output or Discrete Output. Available only with LCD option.  
 2. Only available for general purpose (certification option 14).

3. Includes adapter board (installed in the positioner) and the low profile remote mount unit (which may be shipped separately).  
 4. Only available on 510+



## Optimal Control Valve – Logix 505+ and 510+ Combinations



### Mark One

The Mark One control valve is the industry choice for a simple, reliable, tough globe valve. This control valve handles a wide selection of process control applications for flow, pressure, and temperature, including corrosive fluids, cryogenics, steam, water, gases, multiphase, high temperatures, erosion, and high pressure drops. For more information see document number VLENTB0001.



### Trunnion Mounted Control Ball Valve (TMCBV)

The TMCBV is an ideal solution for loading arms, gas storage, compressor anti-surge, natural gas regulation and fuel gas applications. For more information see document number VBENTB0068.



### MaxFlo 3

The MaxFlo 3 high-performance general service control valve is designed for applications demanding higher rangeability, precision control, and higher flow capacity. For more information see document number VLENBR0052.



### FlowTop

The FlowTop high-performance control valve is a proven performer in the chemical, refinery, power, HVAC, and food and beverage industries. Zero emissions application options are achieved through the bellows seal solution. FlowTop is TA-Luft certified for fugitive emission leakage class greater than 10<sup>-8</sup> mbarl/s. For more information see document number SAEEBRV740.



### Setball

The Setball is a V-port ball sector valve with excellent control valve characteristics. A proven design in the pulp and paper industry, the Setball is a high-capacity, versatile, precision control valve suitable for general applications such as service water, steam (with optional "Z" noise-reducing trim) and slurries in non-pulp industries, such as pollution control and power applications.



### TotalFlow – 035000

The TotalFlow - 035000 are General Service Valves for almost all requirements. Ranging from 1" (DN25) to 6" (DN150) this valve series offers many possibilities. Designed in special materials such as Hastelloy, Inconel, Nickel, Alloy 20 or other high alloy materials, the Series 035000 becomes the solution for your application from low pressure classes up to CL2500 or PN400. TotalFlow – 035000 is also available in standard materials stainless steel or carbon steel.



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