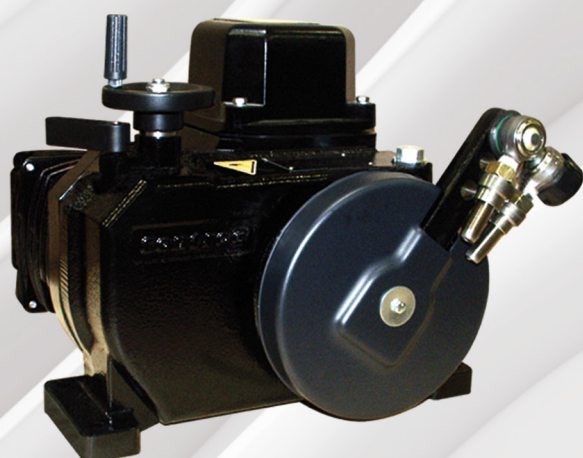

ABB MEASUREMENT & ANALYTICS

Efficient actuators

First class valve automation control



Measurement made easy

To operate any process efficiently, it is essential to measure, actuate, record and control. In selecting ABB you are choosing a partner who is offering the best measurement and analytical solution for your needs, enabling maximum return on your investment. When investing in ABB's measurement and analytical solutions you are receiving the best technology, reliability and service in the business.

Research and development is a vital source of ABB's technology leadership. ABB constantly builds on the foundation of existing technologies for new applications, and continues to develop the breakthrough technologies needed to meet the challenges of the future.

Comprehensive measurement solutions

Tailor-made for every industry

- 01 Water and waste water
- 02 Power and steam generation
- 03 Chemical and petrochemical
- 04 Oil and gas
- 05 Pulp and paper
- 06 Minerals
- 07 Metals
- 08 Food and beverages
- 09 Marine

ABB's measurement and analytical products provide world-class measurement solutions for any industry, utility or municipality. Latest innovations deliver technological solutions to make it easier for you to run your plant. ABB's measurement and analytics products are based on common technology, providing a common look and feel and method of operation. This results in products, that are easy to configure, easy to integrate, and easy to maintain.

For more information please visit:
abb.com/measurement

ABB's measurement and analytics product portfolio

- Analytical measurement
- Flow measurement
- Pressure measurement
- Temperature measurement
- Level measurement
- Actuators and positioners
- Recorders and controllers
- Device management, Fieldbus and Wireless
- Force measurement
- Service

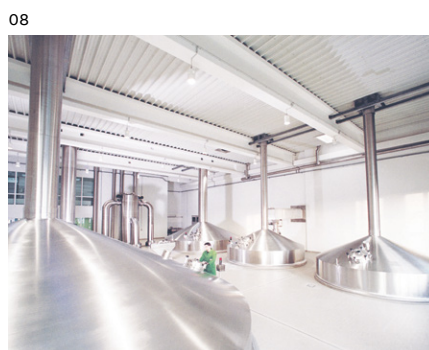
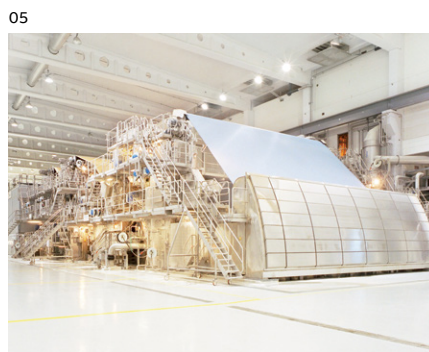
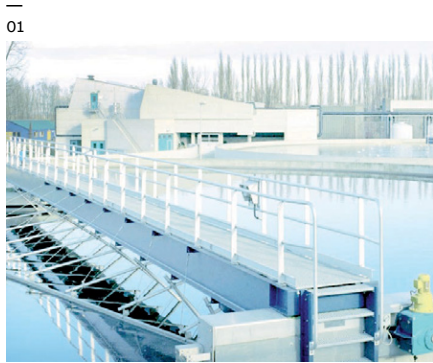


ABB actuators

Meeting your valve control needs

- 01 Rotary actuator with butterfly damper
- 02 Linear actuator with control valve

ABB's broad damper actuator line delivers quality, power and performance to a wide range of industries, especially power utility plants. They excel in applications where exact control and speed can save fuel costs or improve efficiency for example forced draft and induced draft dampers. They utilize the power of digital technology to provide exact control and built-in diagnostics.

Meeting your valve control needs

From electrical actuators, ABB provides a comprehensive range of products, designed, engineered and manufactured to deliver first class performance in your process.

ABB's extensive portfolio of actuators and positioners provides highly accurate and stable positioning of your control valves, crucial to achieve your operational targets:

- Energy efficiency processes
- High production quality
- Reliable performance
- Maximized output at lowest expense

How ABB can help you?

ABB provides you everything needed to get the most out of final control elements, including:

- Continuous electrical actuators
- Tools to select the optimum kind of actuation technology for your process
- Technical support and service

See how you can benefit!

The following pages show some of the ways in which ABB's valve automation products are being used to bring benefits in a range of different applications.

For more information please visit:
abb.com/measurement



01



02

Electrical actuators

Consideration of the lifecycle cost

03 Estimated lifecycle cost of electrical line actuators

04+05 Examples of Contrac applications under harsh environments

The solution

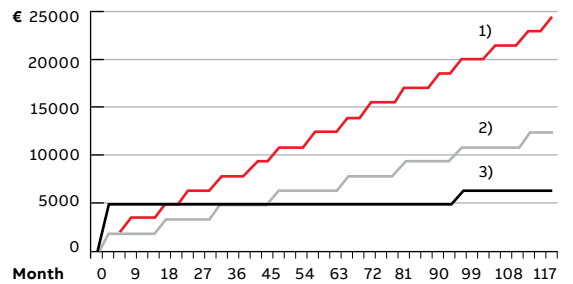
Contrac electrical actuators are designed for 10 years of maintenance-free operation. Special operating conditions like extreme ambient temperatures, however, may limit the service

life of elastomers and lubricants. As a result, the integrated maintenance microprocessor may in some cases recommend a maintenance operation after less than 10 years.

Comparison required maintenance instance of one electrical actuator in 10 years operating time

	Competitor			Contrac		
	simple	medium	high	simple	medium	high
Demand control						
Switching rate in c/h	300	700	> 1200	300	700	> 1200
Required maintenance instance ¹	7.2	15.4	not possible	1	1	2

¹ according to competitor datasheet



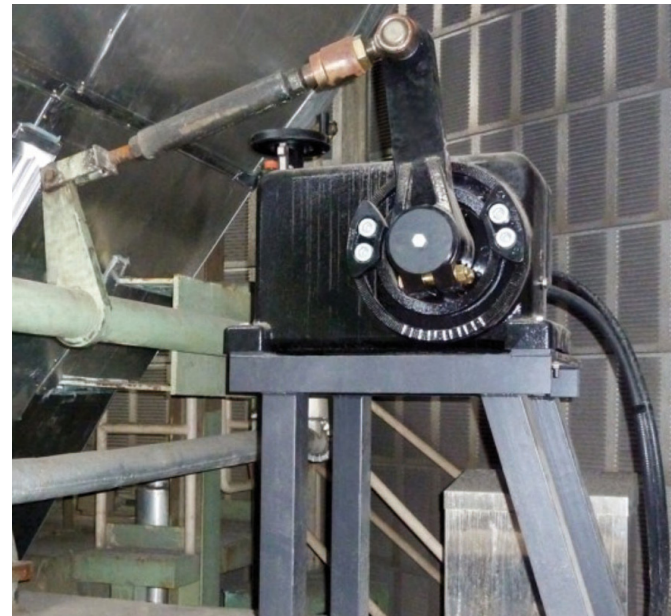
¹ at > 700 cycles/h ² at > 300 cycles/h ³ Contrac > 1200 cycles/h

03

04



05



Electrical actuators

Longest maintenance-free operation

—
01 Actuator in high pressure desuperheater control

—
02 Actuator in a feedwater control application

Longest maintenance-free operation

Superheaters are widely used to help boost the temperature of steam in boiler applications. Spraywater valves control the supply of cooling water that is injected into the superheated steam in the superheater and reheater. Close control of the cooling water supply helps to achieve the optimum steam temperature inside and at the output of the superheater.

The challenge – precise mass flow control of cooling water

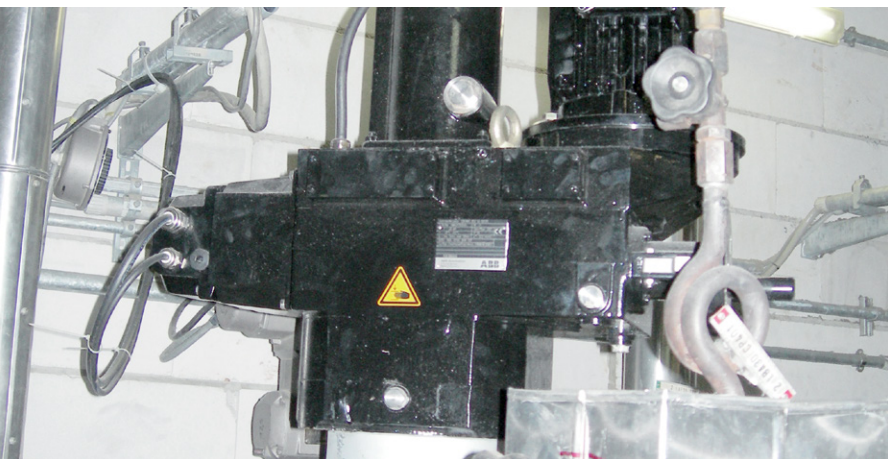
To achieve a process with minimum steam cooling, yet at the same time, with a maximum permissible steam temperature requires continuous and precise control of the mass flow of the injected cooling water in the superheater and the reheater. Injecting too much water will cause the steam to over-cool, reducing boiler efficiency. Injecting too little will result in excessively high steam temperatures and pressures, posing the risk of damage to the superheater, turbine and downstream components. In order to correct the smallest of changes in temperature, the smallest of changes to the water quantity must also be implemented in the valve's disproportionate zone. Any equipment used must be able to withstand the tough operating environment and high ambient temperatures associated with superheater applications.

The solution – highly precise, continuous positioning of spraywater valves

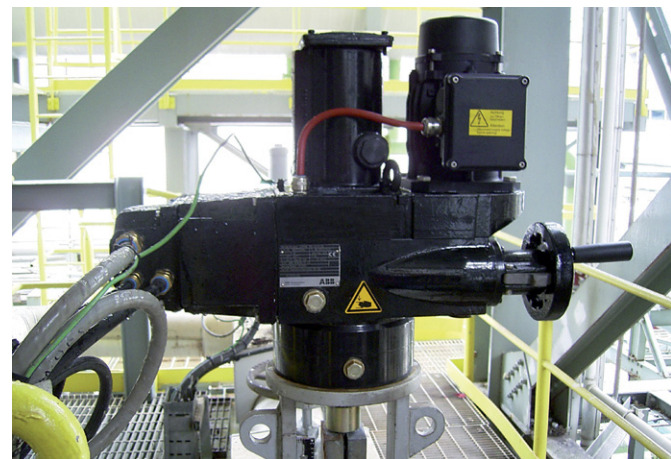
ABB's Contrac continuous electrical linear actuators provide an ideal solution for spraywater valve control applications. Capable of providing full S9-100%ED operation according to IEC 60034-1, even in ambient temperatures up to 85 °C (185 °F), Contrac actuators enable highly precise, continuous positioning of spraywater valves.

Contrac actuators feature an oil-lubricated spur gear with drive shafts supported by ball bearings. Rotary motion is converted to linear motion in the linear actuator by means of a highly efficient ball screw spindle. Contrac actuators are wear-free and are characterized by a deadband of just $\pm 0.05\%$, providing high-accuracy positioning for all valve types. With their robust design and IP66/NEMA 4X protection, Contrac actuators withstand even the most arduous operating conditions.

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01



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02



—
03 Actuator in
burner air control

—
04 Actuator in forced
draft van control

Greatly reducing your actuator lifecycle cost

The issue of service and maintenance is a controversial subject within industry. Manufacturer advice and guidance on routine maintenance often tends to be overlooked and products are run until they fail. This risky approach is not an option in hazardous area applications. Failure to service and maintain an Ex product to the manufacturer's specifications will result in its certification being invalidated.

The challenge – keeping maintenance costs under control

In many cases, the maintenance intervals for electrical actuators are specified according to load, actuator size and the average number of operating cycles per hour. For control loops averaging less than 700 operating cycles per hour, maintenance is advised every seven months. When longer maintenance intervals are required, for example every two years, the permissible number of operating cycles is reduced to 125 to 250 cycles per hour. The control algorithms of many process control systems take this into account, being designed around the permissible number of operating cycles of the used actuator technology. This can cause maintenance costs to far exceed the cost of the actuator itself.

The solution – up to ten years of maintenance-free operation

Contrac electrical actuators are designed for up to ten years of maintenance-free operation, ideal for demanding applications requiring high plant availability. By using oil-lubricated spur gears rather than the worm gear pairs, where repetitive sliding movements cause greater wearing over a shorter period of time, Contrac actuators can handle more than 3600 operating cycles per hour, without significant reduction in their lifetime. Contrac offers the lowest cost of ownership of electrical actuators available on the market. Maintenance work typically requires just changing the gear oil and replacing the shaft seals and gaskets, a quick and easy process that can be performed with little cost.

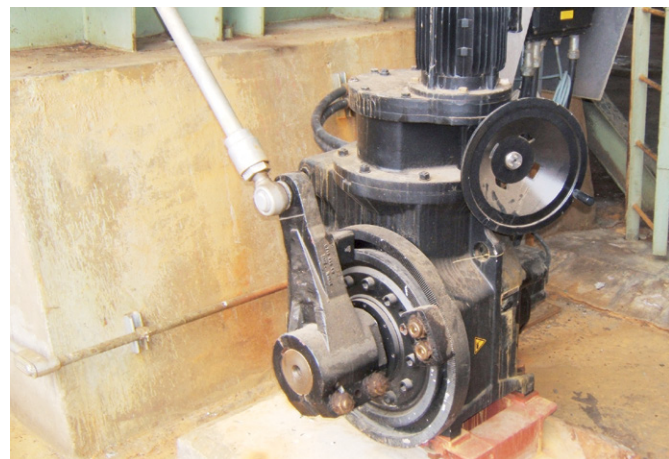
Additional features & benefits:

- Self-diagnostics for optimum maintenance interval
- Choice of integrated, field or rack mounting options for power electronics units
- Part-turn and linear actuator options

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03



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04



Electrical actuators applications

Spray drying in the food industry

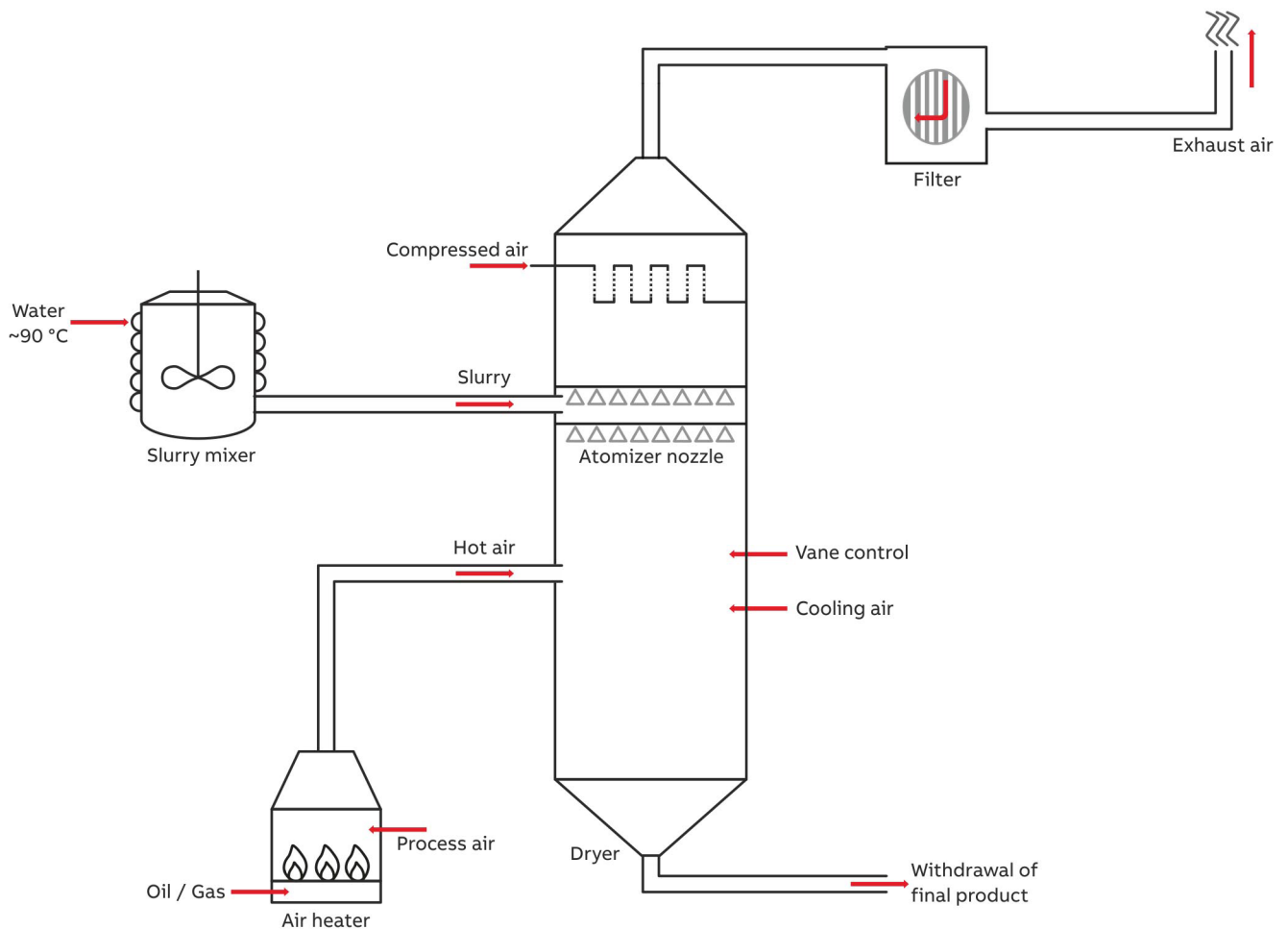
01 Contact spray drying schema

Technical description for spray drying

- Spray drying is commonly used for the production of various powders such as powdered milk, instant coffee... etc.
- The process starts with a paste-like substance (slurry)
- Pumps transport the slurry into the dryer where hot air reduces the liquid content down to 1 to 2%
- The slurry dries rapidly and leaves the dryer as a pulverulent end product
- The air temperature requires precise control and it depends on the quantity and the water percentage of the slurry

- The pressure inside the dryer is another crucial factor which influences the powder quality
- These are the requirements which Contrac actuators perfectly meet
- Regardless whether the pressure is controlled via vane control or butterfly valves – Contrac actuators with an accuracy of $\pm 0.05\%$, 100% duty cycle and a positioning time of up to 10s/90° are the perfect solution


01



Electrical actuators


Product overview

Rotary actuators




Model	Rated torque	Rated speed	Model	Rated torque	Rated speed
PME120-AI/-AN	100 Nm (74 lbf.ft)	4.5°/s	RHD2500-25	2500 Nm (1844 lbf.ft)	3.6°/s
RHD250-10	250 Nm (184 lbf.ft)	9.0°/s	RHD4000-10	4000 Nm (2950 lbf.ft)	9.0°/s
RHD500-10	500 Nm (367 lbf.ft)	9.0°/s	RHD4000-40	4000 Nm (2950 lbf.ft)	2.25°/s
RHD800-10	800 Nm (590 lbf.ft)	9.0°/s	RHD8000-12	8000 Nm (5900 lbf.ft)	7.5°/s
RHD1250-12	1250 Nm (922 lbf.ft)	7.5°/s	RHD8000-80	8000 Nm (5900 lbf.ft)	1.12°/s
RHD2500-10	2500 Nm (1844 lbf.ft)	9.0°/s			

Linear actuators standard




Model	Rated force	Rated speed	Model	Rated force	Rated speed
LME620-AI/-AN	4 kN (899 lbf)	4.5°/s	RSD50-3.0	50 kN (11240 lbf)	9.0°/s
RSD10-5.0	10 kN (2248 lbf)	9.0°/s	RSD50-10.0	50 kN (11240 lbf)	3.6°/s
RSD10-10.0	10 kN (2248 lbf)	9.0°/s	RSD100-1.5	100 kN (22480 lbf)	9.0°/s
RSD20-5.0	20 kN (4496 lbf)	9.0°/s	RSD100-10.0	100 kN (22480 lbf)	2.25°/s
RSD20-7.5	20 kN (4496 lbf)	7.5°/s			

Rotary actuators in explosion proof design




Model	Rated torque	Rated speed	Model	Rated torque	Rated speed
RHDE250-10	250 Nm (184 lbf.ft)	9.0°/s	RHDE4000-10	4000 Nm (2950 lbf.ft)	9.0°/s
RHDE500-10	500 Nm (367 lbf.ft)	9.0°/s	RHDE4000-40	4000 Nm (2950 lbf.ft)	2.25°/s
RHDE800-10	800 Nm (590 lbf.ft)	9.0°/s	RHDE8000-15	8000 Nm (5900 lbf.ft)	6.0°/s
RHDE1250-12	1250 Nm (922 lbf.ft)	7.5°/s	RHDE8000-80	8000 Nm (5900 lbf.ft)	1.12°/s
RHDE2500-10	2500 Nm (1844 lbf.ft)	9.0°/s	RHDE16000-30	16000 Nm (11801 lbf.ft)	3.0°/s
RHDE2500-25	2500 Nm (1844 lbf.ft)	3.6°/s			

Linear actuators in explosion proof design



Model	Rated force	Rated speed	Model	Rated force	Rated speed
RSDE10-5.0	10 kN (2248 lbf)	5°/s	RSDE50-3.0	50 kN (11240 lbf)	3°/s
RSDE10-10.0	10 kN (2248 lbf)	10°/s	RSDE50-10.0	50 kN (11240 lbf)	10°/s
RSDE20-5.0	20 kN (4496 lbf)	5°/s			
RSDE20-7.5	20 kN (4496 lbf)	7.5°/s			

Electronic units for standard and explosion-proof actuators



Integrated	EAI823	For PME 120 AI and LME 620 AI (not für explosion-proof applications)
Field mounted	EAN823	Lower power range
	EBN853	Medium power range
	EBN861	Upper power range
Rack mounted	EAS822	Lower power range
	EBS852	Medium power range
	EBS862	Upper power range

Pneumatic actuators

Proven technology for all-round solutions

—
01 UP4 pneumatic rotary actuator on induced draft fan damper control

—
02 LP20 linear pneumatic actuator with AV positioner on a damper

Effective control for damper applications

Boiler designs vary based on energy type and engineered technology. In all cases the combustion process requires precise and repeatable positioning of the dampers, diverters and louvers to control the air to different elevations within the furnace for efficient combustion, with the goal of producing the highest possible heat rate while maintaining lowest emissions.

The challenge – providing universal pneumatic damper actuation solutions

Damper actuation may require rotary as well as linear type actuators depending on the application and damper location. The actuators used on the combustion process have to fulfill and comply to the control loop safety of the boiler in the event of power and/or signal loss, to position the damper to either the closed, open, or last position. The dynamics of the process demands high continuous duty cycle of the damper actuators with high positioning accuracy for precise control.

The solution – UP universal pneumatic rotary and LP linear pneumatic actuators

ABB's comprehensive range of linear and rotary pneumatic damper actuators fulfills and exceeds the requirement for these challenges.

For over 60 years, ABB's pneumatic actuators have established a reputation in damper drive applications for their high performance and durability.

UP series rotary actuators and LP series linear actuators are sized according to the application torque and available instrument supply pressure and incorporate all the damper control functions required by boiler applications, such as fast travel, safe control functions and manual override for the rotary actuators. These options allow boiler design engineers to select the appropriate safety control philosophy according to the combustion loop. The use of ABB's TZIDC digital positioner technology gives accurate damper positioning as well as providing advanced diagnostics to equip the user with real time positioning data with predictive maintenance information for reliable damper control.

—
01



Pneumatic actuators

Product overview

LP – Linear pneumatic actuators



Model	Force*	Cylinder size**
LP10	1.7 kN (382 lbf)	63 x 127mm (2.5 x 5 in.)
LP20	4.0 kN (907 lbf)	101 x 101mm (4 x 4 in.)
LP30	9.6 kN (2171 lbf)	152 x 2013 mm (6 x 8 in.)
LP32	9.6 kN (2171 lbf)	152 x 406 mm (6 x 16 in.)
LP40	17.5 kN (3953 lbf)	203 x 203 mm (8 x 8 in.)
LP50	17.5 kN (3953 lbf)	203 x 406 mm (8 x 16 in.)
LP60	27.4 kN (6164 lbf)	9.0°/s

*Force calculation at 6 bar (90psig)

**Cylinder dimensions = diameter x stroke

UP – Universal pneumatic actuators



Model	Force*	Speed 5 to 95% travel**	Part turn angle
UP1	122 Nm (90 lbf.ft)	2 s	90 °
UP2	610 Nm (450 lbf.ft)	10 s	90 °
UP3	1085 Nm (800 lbf.ft)	12 s	90 °
UP4	1866 Nm (1450 lbf.ft)	10 s	90 °
UP5	3796 Nm (2800 lbf.ft)	16 s	90 °
UP6	6372 Nm (4700 lbf.ft)	20 s	90 °
UP7	7326 Nm (5403 lbf.ft)	25 s	90 °

*Torque calculation at 6.9bar (100psig)

**Stroke speed with AV positioner



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ABB MEASUREMENT & ANALYTICS

Valve positioners

For marine applications



Valve positioners

For the marine industry

ABB's industry proven EDP300 and TZIDC positioners are DNV GL certified and suitable for any control valve applications in the marine industry.

Introduction

Changing regulations in the marine industry have driven the need for ballast water treatment and measurement. Ballast water is used to stabilize vessels when not fully loaded. Water that is taken in at one port and released at another port causes the introduction of non-indigenous organisms into fragile ecosystems. Oceangoing vessels including container ships, tankers, rigs and cruise ships are major contributors to this type of pollution. The release of ballast water is now highly regulated and vessels need to install a ballast water treatment system.

ABB offers a wide portfolio of measurement products for key marine solutions – from fuel and combustion management as well as emission monitoring to ballast water treatment.

This brochure deals with the use of positioners on civil vessels and contains descriptions of ABB positioners that are suitable for valve automation in this environment. The main features of these devices are explained and the comprehensive services ABB offers for these products are presented.

Further documents are available for the positioners as described, including technical data sheets with device design and performance information.

Our sales staff will be happy to support you, even on your premises.

For more information please visit:
abb.com/measurement



Marine applications

Our solutions

ABB's positioner products have delivered reliability, accuracy and easy maintenance to customers world wide.

Ballast water treatment

Control valve automation using an ABB positioners. The comprehensive portfolio of digital positioners provide solutions for any single or double acting, linear or rotary valve actuator with fail safe or fail in place option on loss of the input signal.

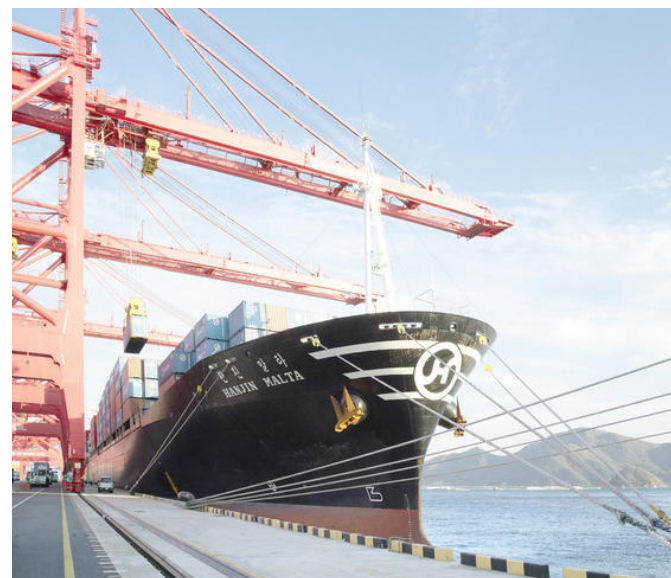
The positioners incorporate a robust design with high immunity to vibration caused by pumps and other impacts. Thanks to the unique design of the positioner's pneumatic system its instrument air consumption during steady state is less than 0.03 kg/h (0.015 scfm) providing large energy savings and cost of ownership.

Example of oil tanker

Oil tankers are an excellent example of the wide range of applications for ABB's control valve positioners.

Typical applications

- Lube oil treatment
- Fuel treatment
- Ship cooling system
- Energy recovery
- Drainage system
- Fire extinguishing system
- Ballast water distribution
- Drinking water treatment
- Hot water preparation
- Waste water treatment

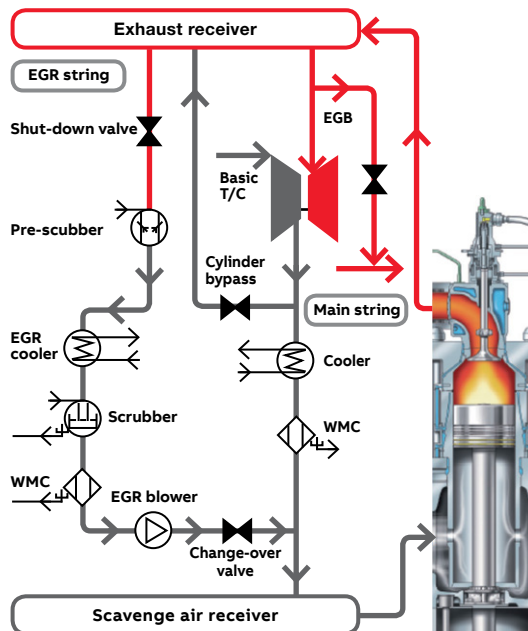


EGR (Exhaust Gas Recirculation)

— 01 EGR shema
— 02 EDP300 with remote sensor

EGR fulfills new NO_x emission Tier III limits. Continuous oxygen monitoring on EGR with AZ10 Marine.

- Robust O₂ measurement to achieve compliance with IMO pollution rules
- Close coupled solution with HART communication and diagnostic



01

Actuators and positioners

Valves, dampers and butterflies are essential devices in the plant. With expertise and experience built up over 100 years and countless applications worldwide, ABB provides a wide range of products to position and actuate any final control element, delivering best performance for every process in the marine industry.

- Marine approved
- Best in class shock- and continuous vibration immunity at 10 g
- Easy to operate through single button startup and autotune
- Adaptive tube function for realtime self-optimization
- Lowest air consumption in the market
Easy to maintain through position deviation indication



02



Digital positioners

Features



	TZIDC	EDP300
Explosion protection		
Without	●	●
Intrinsically Safe	●	●
Input / Communication		
4 to 20 mA LCI	●	
4 to 20 mA HART	●	●
PROFIBUS PA	●	
Pneumatic output		
Single acting	●	●
Double acting	●	●
Safe position		
Fail-safe	●	●
Fail-freeze	●	●
Emergency Shutdown		
ESD		●
Diagnostics		
Basic diagnostics	●	●
Advanced diagnostics		●
Valve signature		●
Partial stroke		●
Housing		
Aluminum	●	●
Stainless steel		●
Supply pressure		
Up to 6 bar (90 psi)	●	●
Up to 10 bar (145 psi)		●
Air capacity		
Up to 10 Nm ³ /h (6 scfm)	●	●
Up to 40 Nm ³ /h (23 scfm)		●
Position sensor		
Potentiometer	●	●
Contactless sensor		●
Remote version		
With HART communication	●	●

Valve positioners

Application solutions

— 01 EDP300 digital positioner

— 02 TZIDC digital positioner

— 03 EDP300 with remote sensor

— 04 EDP300 digital positioner with stainless steel housing

Standard and advanced applications

Whatever the application ABB can provide the solution. The TZIDC positioner family is ideal for a wide range of standard applications with basic valve diagnostics, while the EDP300 positioner is ideal for advanced applications providing comprehensive valve diagnostic and valve health reports.



— 01



— 02

Remote mount positioners

For difficult to reach valve applications the EDP300 with remote position sensor provides the ideal solution. The sensor is mounted on the control valve while the electronics with the user access interface is located in an easy to reach location, the typical distance between the positioner and the remote sensor is 10 meters (32 ft.).



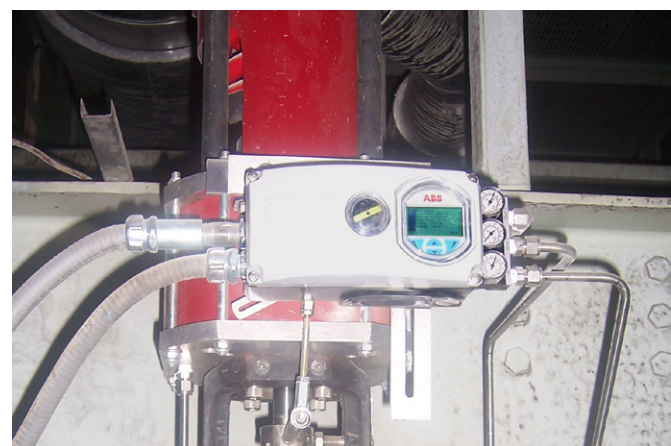
— 03

For harsh and corrosive environments

The EDP300 positioner is available in a robust stainless steel housing suitable for harsh and corrosive applications. Thanks to its HART communication capability remote access is possible via the user friendly FDI PC based Field Information Manager for programming and valve health monitoring.



— 04



Benefits covered by ABB positioner

For us is relationship a partnership

The aim of a ship-owner is to make the vessel as economical as possible while ensuring maximum safety. The initial investment costs of the control equipment on the ship play an important role to ensure reliability and high performance under any condition, the equipment should be easy to operate and maintain.

When looking at the total lifetime, further factors are economically relevant. In particular, the operating and maintenance costs that is essential for the competitiveness of a ship and crucial to the success of the fleet.

The ABB digital positioners meets the requirements providing robust design, user friendly functionality and low cost of ownership with its unique low air consumption design.

Competence always close to you

As soon as a task becomes a little more complex, and positioners are components of systems of varying complexity, nothing replaces direct consultation with one of our sales staff. This ensures that the correct positioner is selected. ABB has a global distribution network with subsidiaries and agencies across the world. ABB sales staff are kept up to date on the latest developments in regular sales training courses.

Your advantage

Competent advice is available all over the world on the ABB products and device selection assistance – within your reach.

Comprehensive service

What applies to advice applies equally to service. Our sales network is also a service network. We leave you with our devices.

Our service technicians know the ABB devices inside out and hardly any technical facts in the operational environment of the devices are unknown to them. And if such a case does arise, then the ABB service network contains the collected 'Best Practice'-treasure at your disposal. The ABB service offers our customers worldwide comprehensive services for positioners.

Our wide range of services accompanies you from installation and commissioning to training, maintenance and repair through to worldwide spare parts dispatch. We guarantee the availability of spare parts for at least ten years after the discontinuation of a product.

In the right place at the right time

Downtime is costly. Here, service calls have to be carried out exactly plan. When a ship moors in port, the ABB service technician is at your service. Already ready, equipped with the necessary permits, the right spare parts and the necessary tools.



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ABB MEASUREMENT & ANALYTICS

Efficient positioners and I/P converters

First class valve automation



Measurement made easy

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Comprehensive measurement solutions

Tailor-made for every industry

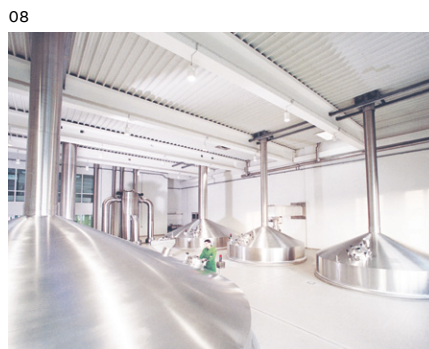
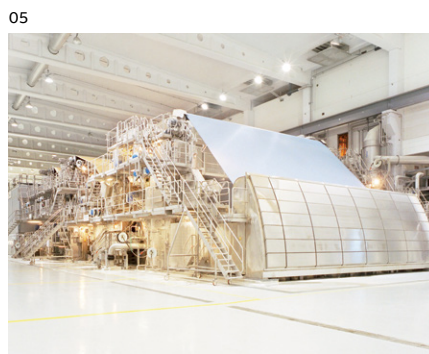
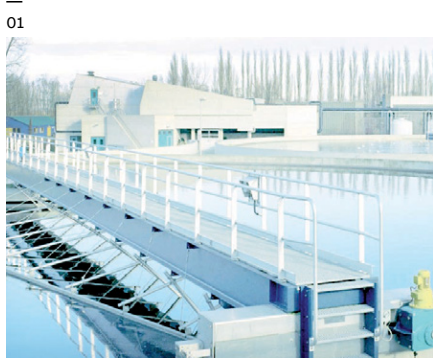
- 01 Water and waste water
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ABB's measurement and analytics product portfolio

- Analytical measurement
- Flow measurement
- Pressure measurement
- Temperature measurement
- Level measurement
- Actuators and positioners
- Recorders and controllers
- Device management, Fieldbus and Wireless
- Force measurement
- Service



Digital positioners

Performance for harshest environments

—
01 TZIDC digital positioner

—
02 TZIDC-200 digital positioner in explosion proof design

—
03 TZIDC in a gas distribution station

—
04 TZIDC in a hygienic application

The TZIDC and EDP300 series digital positioners provide flexible and cost-effective valve management and control. Their durability and unmatched shock and vibration immunity up to 10 g and 80 Hz means that they are suitable for use even under harsh conditions.

The challenge – handling over 100,000 strokes a year

Most control valves in many processes will rarely have to move, commonly enabling operators to opt for positioners with lifetimes of less than 100,000 strokes. However, there are some applications where valves will need to handle frequent changes in process conditions. In such applications, where 100,000 strokes may occur in a single year alone, there is a need for a positioner that can handle these changes with minimal need for maintenance.

The solution – unrivalled performance performing 1,000,000 strokes

The answer is ABB's TZIDC positioner. In a four month trial, an ABB TZIDC positioner underwent a customer durability test which saw it perform 1,000,000 strokes without any deterioration in performance or fault or interruption.

Offering remote communication via 4 to 20 mA HART, PROFIBUS PA or Foundation Fieldbus, the TZIDC sets the standard for safe and economic control of industrial processes. Its built-in intelligence enables it to adapt itself to any control valve at the push of a button, while a host of service, diagnostic and safety functions, including fail-freeze and fail-safe action, help to provide a high level of operational performance.

The TZIDC and EDP300 is suitable for use with linear, part-turn, and single or double-acting actuators and is protected to IP65/NEMA 4X, making it ideal for harsh environments. You can rely on the TZIDC and EDP300 to provide the highest levels of availability, enabling you to maximize the profitability of your process through improved plant uptime.

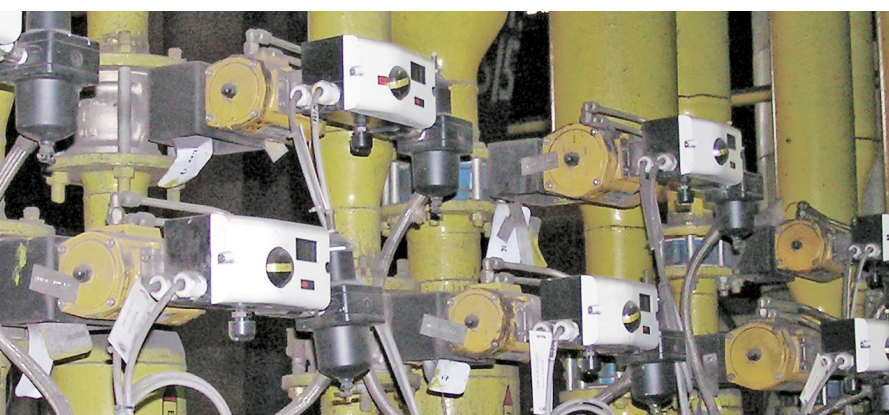


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05 EDP300 digital
positioner

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06 EDP300 digital
positioner with
stainless steel housing

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07 The EDP300 on a
linear actuator

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08 The EDP300
in a remote sensor
installation

The EDP300 digital positioner feature a high air capacity of 50 kg/h (23 scfm) at 10 bar (145 psi) and is equipped with advanced pressure-based diagnostic functions.

Why are they used?

Compliance to environmental regulations

In any production process, it is critical to ensure stable and constant process conditions to achieve optimum product quality and process efficiency. Any control equipment must be capable of eliminating any variations in the process variables that could cause the process to consume both more energy and consumables than normal, pushing up production costs. The stability of the downstream control loop may also be affected, impacting on both product quantity and quality. With the compressed air used by valve positioners being around ten times more expensive than electricity, accurate control is essential to minimizing plant overheads as well as eliminating potential problems in the downstream process.

The solution – accurate measurements for maximum energy efficiency

Thanks to an innovative control algorithm taken from the field of robotics, the EDP300 positioner stands out thanks to its speed and accuracy. Overshooting and slow recovery times are both prevented, allowing the EDP300 to significantly optimize compressed air consumption, energy efficiency and the 'ecological footprint' of pneumatic control circuits.

Subsequently, the EDP300 is able to help reduce cost with its unique electro-pneumatic system, providing unsurpassed low air/gas consumption at steady state. The EDP300 can also be used in applications with natural gas as the supply energy, eliminating the need for compressed instrument air.

ABB is the only supplier able to offer customers a premium positioner that features these pneumatic properties.

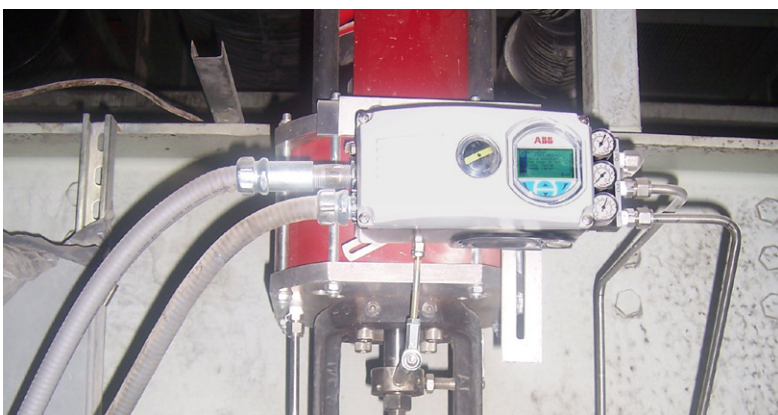


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Remote sensor application

Solutions for difficult applications

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01 EDP300 with
remote sensor
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02 EDP300 remote
sensor unit on actuator
—
03 Remote EDP300
control unit mounted
in cabinet with
attached sensor cable

Remote sensor solutions is necessary for applications that are difficult to reach, or when the ambient temperature at the control actuator is high. In these cases the remote mount positioner solution provides safety and ease of use.

The challenge – applications where there is poor accessibility, increased vibrational loading or particularly harsh environmental conditions

These kinds of applications often involve higher costs due to gaining access especially during unexpected failures.

The solution – using TZIDC or EDP300 positioners featuring a separate position sensor housing, which can be up to 10 m (32 ft) away from the device

Easier and safer access to the positioner in hard-to-reach valve installations.

Available as options:

- Enhanced vibration immunity up to 2 g at 300 Hz for higher frequency applications
- Advanced IP67 protection class for challenging applications
- Optional modules and mechanical feedback for the valve position
- Stainless steel housing for offshore use
- Increased temperature resistance of up to 100 °C (212 °F)



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Digital positioners

Features



	TZIDC	TZIDC-200	EDP300
Explosion protection			
Without	●		●
Intrinsically Safe	●		●
Flameproof / Explosion-proof		●	
Input / Communication			
4 to 20 mA LCI	●	●	
4 to 20 mA HART	●	●	●
PROFIBUS PA	●	●	
FOUNDATION Fieldbus	●	●	
Pneumatic output			
Single acting	●	●	●
Double acting	●	●	●
Safe position			
Fail-safe	●	●	●
Fail-freeze	●	●	●
Emergency Shutdown			
ESD			●
Diagnostics			
Basic diagnostics	●	●	●
Advanced diagnostics			●
Valve signature			●
Partial stroke			●
Housing			
Aluminum	●	●	●
Stainless steel			●
Supply pressure			
Up to 6 bar (90 psi)	●	●	●
Up to 10 bar (145 psi)			●
Air capacity			
Up to 10 Nm ³ /h (6 scfm)	●	●	●
Up to 40 Nm ³ /h (23 scfm)			●
Position sensor			
Potentiometer	●	●	●
Contactless sensor			●
Remote version			
With HART communication	●		●

I/P converter

Improved process control

—
01 I/P converter
with field housing

—
02 I/P converter for
rail mounting

—
03 Robust field mount
I/P converters for valve
position control

—
04 Compact panel
mount I/P converters

The challenge – dealing with particles blocking a valve

Certain types of enzyme production processes have traditionally posed a problem for accurate valve control where particles of a certain size can cause valves to become blocked, resulting in unplanned downtime to trace and rectify the problem. In the enzyme production processes, problems can arise from the presence of larger cellulose particles in the process fluids. Planned downtime can arise as a result of troubleshooting and correcting the faults.

The solution – using I/P signal converters for valve position control

The solution to this problem is to use an I/P signal converter as part of an open loop control system. The converter regulates the position of a small diaphragm valve with a 15 mm (0.59 in) stroke. The valve controls the flow over a range of 50 to 2,000 l/h (13.20 to 528.34 gph), with an accuracy of ± 3 to 5 l/h (± 0.79 to 1.32 gph). By responding less quickly to changes on the process side of the valve, the signal converter introduces a delay in the valve response so that it effectively ignores any short term deviations caused by cellulose particles passing the valve.

This helps to prevent the valve from becoming blocked, even when it is only slightly open. The consequent reduction in unplanned plant downtime and associated production disruption help boost profitability and increase plant availability.

Key features & benefits

- Compact design and variable mounting positions for maximum installation flexibility
- Output signal from 0.2 to 1 bar (3 to 15 psi)
- Robust design with IP65 field housing enables use in arduous and hostile environments
- High functional stability helps maximize control accuracy
- Vibration immunity up to 10g / 80Hz provides unsurpassed performance



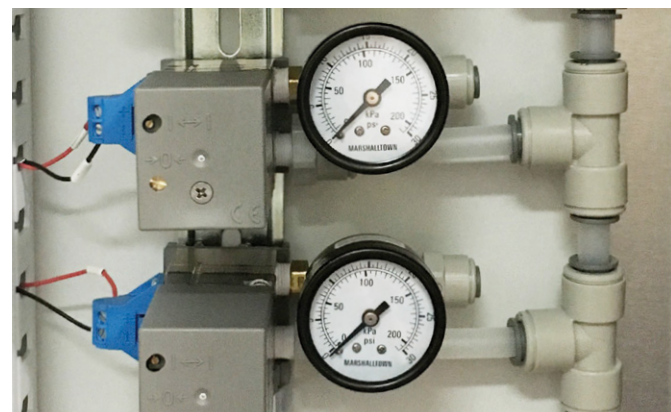
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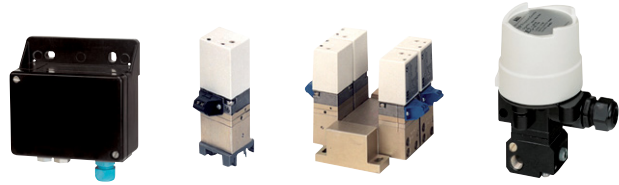


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I/P converters

Features



	TEIP 11	TEIP 11-PS
Input (additional ranges available upon request)		
0 to 20 mA	●	●
4 to 20 mA	●	●
Output (additional ranges available upon request)		
0.2 to 1 bar (3 to 15 psi)	●	●
Housing		
Control room housing – DIN rail mounting – IP 20	●	●
Control room housing – manifold mounting – IP 20		●
Plastic – IP 54		●
Aluminum – IP 65	●	●
Stainless steel – IP 65	●	●
Explosion protection		
Without	●	●
Intrinsic safe	●	●
Explosion proof	●	●
Influence of vibration	< 1 % up to 10 g and 80 Hz	
Ambient temperature range	–40 to 85 °C (–40 to 185 °F) Optional –55 to 85°C (–67 to 185°F)	
Supply pressure	1.4 to 10 bar (20 to 145 psi)	1.4 bar (20 psi) Optional: 2.5 bar (36 psi)
Air capacity at 6 bar (90psi)	0.16 kg/h = 0.3 Nm ³ /h = 0.12 scfm @ 6 bar (90 psi)	≥kg/h = 4.1 Nm ³ /h = 2.4 scfm
Air consumption – Maximum	0.16 kg/h = 0.3 Nm ³ /h = 0.12 scfm @ 6 bar (90 psi)	≤0.2 kg/h = 0.16 Nm ³ /h = 0.1 scfm

Analog positioners

Reliable solution for basic applications

- 01 AV1 pneumatic positioner
- 02 AV27 electro-pneumatic positioner
- 03 AV1 on Control valve application
- 04 AV2 on Control valve application

The AV series analog positioners provide flexible and cost-effective valve automation solutions for any control valve application.

Why are they used?

The AV series provides the highest throughput air capacity in the industry without changing the spool valve. With its rugged design, these positioners have built a widespread reputation for providing long-life service. The AV is standard for either single or double acting fail safe applications suitable for linear or rotary type actuators. An optional position feedback transmitter is available for further flexibility.

AV1 pneumatic positioner

Accepts a pneumatic input signal 0.2 to 1 bar (3 to 15 psi) to provide sensitive and accurate positioning of a pneumatic final control element via its integral spool valve. A high temperature option is available for applications up to 121 °C (250 °F).

AV2 and AV27 electro-pneumatic positioner

Accepts a 4 to 20 mA input from a controller and converts the signal to an pneumatic output via its integral I/P and spool valve to provide sensitive and accurate positioning of a pneumatic final control element. The model AV27 is an explosion proof solution with press-fit I/P mounted to the outside of the positioner housing.

The result: a complete integrated explosion proof positioner.

Key features & benefits

- High supply pressure applicability – up to 10 bar (145psi)
- High throughput capacity – up to 49 Nm³h (29 scfm) at 6 bar (90 psi) air supply pressure
- Characterizable output – large positioning cam contains linear, square and square root relationships
- Accurate calibration – independent zero and span adjustments eliminate interaction and provide fast, accurate calibration
- Split range service – split range capability allows sequencing of multiple actuators using a single control signal



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Analog positioners

Features



	AV1	AV2	AV27
Explosion protection			
Without	●	●	
Intrinsically Safe (FM/CSA)	●	●	
Flameproof / Explosion proof			●
Compliance			
CE	●	●	●
Input signal			
0.2 to 1 bar / 3 to 15 psi	●		
4 to 20 mA		●	●
Position feedback			
4 to 20 mA	●	●	
Housing			
Aluminum	●	●	●
Supply pressure			
Up to 10 bar (145 psi)	●	●	●
Air capacity @ 6 bar (90 psi)			
Up to 49 Nm ³ /h (29 scfm)	●	●	●
Ambient temperature			
-40 to 82 °C (-40 to 180 °F)	●	●	●
-20 to 121 °C (-4 to 250 °F)	●		

Trademarks

HART is a registered trademark of HART Communication Foundation
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