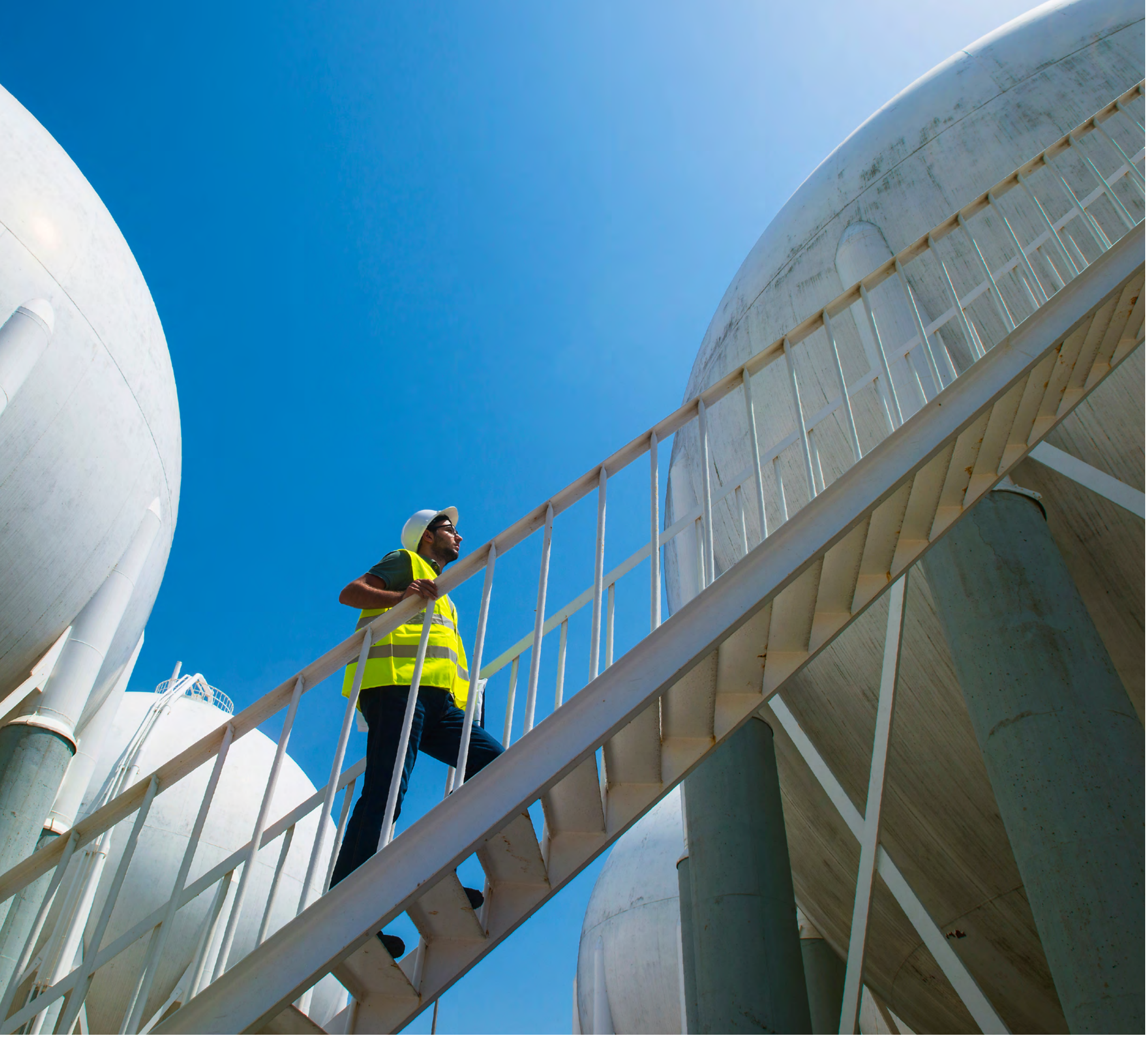

POSITIONED TO PERFORM

Choosing the Right Valve Positioner for Demanding Applications

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Choosing the Right Valve Positioner for Demanding Applications

Choosing the right valve positioner is not just based on technical requirements – it's a strategic decision that shapes plant safety, efficiency, and reliability. In chemical, oil & gas, and power applications, where every second of uptime counts, the right positioner ensures control valves perform flawlessly under even the harshest conditions.

In process automation, the control loop is only as strong as its weakest link. While distributed control systems and transmitters often take the spotlight, the control valve is where decisions turn into action – physically regulating flow, pressure, and temperature.

If a valve fails to respond quickly or accurately, the consequences can be significant: reduced efficiency, unplanned shutdowns, safety risks, and higher operating costs.

At the core of every control valve's performance is the positioner, the device that translates a control signal into precise valve movement and holds it steady under dynamic process conditions.

A reliable positioner ensures that the valve not only reaches the commanded position but also compensates for friction, pressure fluctuations, or mechanical wear that could otherwise degrade control accuracy.

Choosing the right positioner goes beyond checking if it "fits" the actuator. The decision directly affects plant reliability, maintenance strategy, and lifecycle costs.

In demanding industries, the right positioner can mean fewer emergency callouts, safer operation under upset conditions, and measurable improvements in process efficiency.

KEY CONSIDERATIONS FOR POSITIONER SELECTION

Selecting a valve positioner is not a one-size-fits-all decision.

The choice must account for operating conditions, valve types, and the level of diagnostics required to keep processes safe and efficient.The following considerations outline the critical features engineers should evaluate before specifying a positioner.

Ease of Commissioning and Operation

User-friendly, easy setup provides great benefit for the installation team during commissioning, thereby easily paying back the cost of the Positioner. With Auto-Adjust routines and intuitive local HMIs, ABB positioners allow rapid configuration without special tools. For field teams, this means faster commissioning and lower startup costs.

Diagnostics and Predictive Maintenance

In critical industries, diagnostics are no longer optional – they are essential:

- Leakage detection, zero shift, and positioning timeout alarms stop small issues from escalating.
- Online trending, step response tests, and friction/stiction analysis enable predictive maintenance and help avoid unexpected failures.
- Seamless integration with standalone diagnostics tools or host systems based on Field Device Integration (FDI) technology.

Robustness for Harsh Environments

Positioners in oil & gas and chemical plants must withstand vibration, corrosive atmospheres, and extreme temperatures. ABB addresses this with epoxy-coated aluminum or stainless-steel housings, a wide temperature range (−40°C to +85°C), and high shock resistance (up to 10 g at 80 Hz).

Fail-Safe Behavior

Safety-critical loops demand reliable fallback strategies. ABB devices provide both Fail-Freeze (hold last position) and Fail-Safe (drive valve to open / close) modes, ensuring the valve moves to a safe state in case of signal loss.

Universality of Application

A key strength of modern digital positioners – such as ABB's TZIDC and EDP300 – is their ability to adapt to linear or rotary actuators, single or double-acting. This universality ensures flexibility across different valve types without locking engineers into a specific vendor.

DIGITAL POSITIONER SOLUTIONS FOR ANY APPLICATION

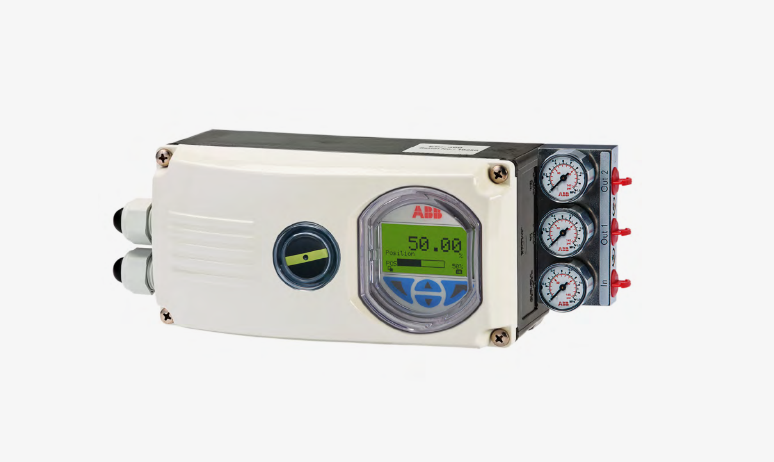
ABB's **TZIDC** and **EDP300** are proven, reliable positioners designed to meet the full spectrum of process industry needs.

While both share the brand's core strengths – robust construction and universal valve compatibility – they are tailored for different levels of application demands.

Understanding these distinctions helps engineers select the right positioner for the job, whether it's a cost-sensitive general-purpose loop or a mission-critical control point in oil & gas, power, or chemical operations.

- **TZIDC**: A cost-effective, all-purpose type standard performance positioner with modular design and a wide range of options, where ease of use and universal adaptability are priorities.
- **EDP300**: An advanced performance all-purpose type positioner for high-demanding applications where options such as stainless-steel housing, pressure-based diagnostics, high air supply pressure, and air capacity are required.

01 EDP300



02 TZIDC in a hygienic application

03 TZIDC in a gas distribution station

PRODUCT SELECTION IN PRACTICE

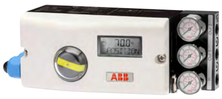
For engineers comparing options, the product selection table highlights how ABB positioners scale from standard to advanced requirements.

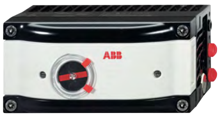
TZIDC models cover a broad range of communication protocols (HART, Profibus PA, Foundation Fieldbus) and provide modular construction and options suited for most applications.

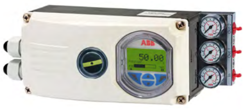
By contrast, the EDP300 adds capabilities for higher air supply pressures (up to 10 bar / 145 psi), greater air capacity, and advanced diagnostic tools such as valve signature and partial stroke testing.

Combined with stainless steel housing and contactless position-sensing options, the EDP300 is clearly positioned for environments where durability, safety, and predictive maintenance are critical.

PRODUCT SELECTION



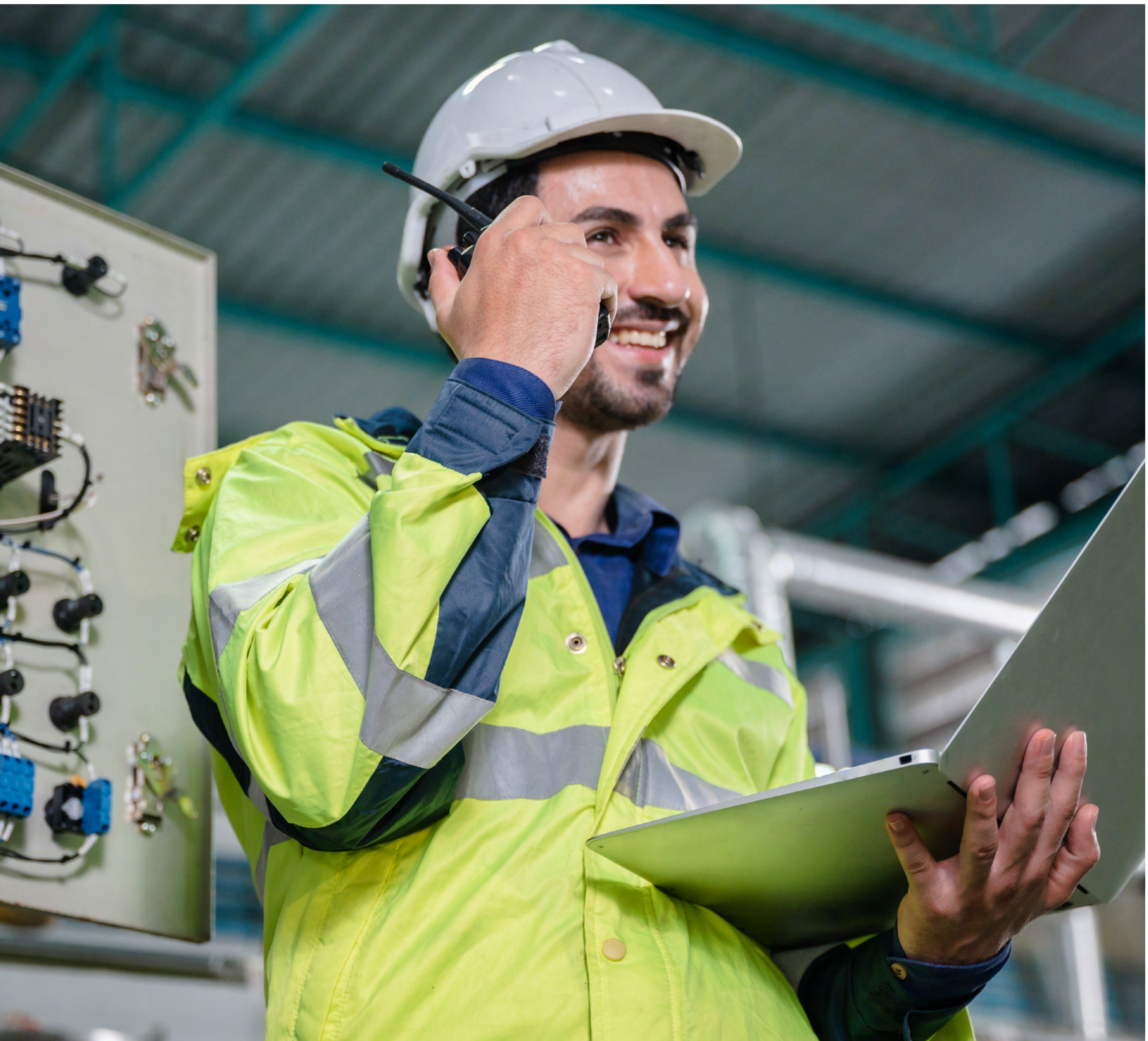




Feature / Model		**TZIDC/-110/-120**	**TZIDC-200/-210/-220**	**EDP300**
EXPLOSION PROTECTION	Without	☑	☐	☑
	Intrinsically Safe	☑	☑	☑
	Flameproof / ExplosionProof	☐	☑	☐
INPUT / COMMUNICATION	4 to 20 mA LCI	☑	☑	☐
	4 to 20 mA HART®	☑	☑	☑
	PROFIBUS PA®	☑	☑	☐
	FOUNDATION Fieldbus®	☑	☑	☐
DIAGNOSTICS	Basic 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 (Standard)	☑	☑	☑
	Contacless sensor (Optional)	☑	☑	☑
REMOTE VERSION	HART® Communication	☑	☐	☑

FIELD ENGINEER'S CHECKLIST: SELECTING A POSITIONER

- ✓ **Valve Type**
  Linear or rotary? Single or double acting?
- ✓ **Operating Environment**
  Extreme temperatures, vibration, or corrosive atmosphere?
- ✓ **Diagnostics Level**
  Basic alarms (TZIDC) or advanced trending & performance analysis (EDP300)?
- ✓ **Commissioning Needs**
  Quick Auto-Adjust vs. full HMI with text-guided setup.
- ✓ **Air Supply Requirements**
  Standard range (TZIDC) or high-capacity / high-pressure for large actuators (EDP300)?
- ✓ **Safety Mode**
  Fail-Safe (drive open/close) or Fail-Freeze (hold last position)?
- ✓ **Integration**
  Required protocol: HART, Profibus PA, or Foundation Fieldbus?
- ✓ **Maintenance Strategy**
  Is predictive diagnostics needed to prevent costly downtime?



WHY ABB?

Unlike competitors who also sell control valves, ABB focuses purely on automation, ensuring compatibility with any valve supplier.

This neutrality makes ABB a strategic partner for OEM valve manufacturers and EPCs who need reliable positioners without vendor conflicts.

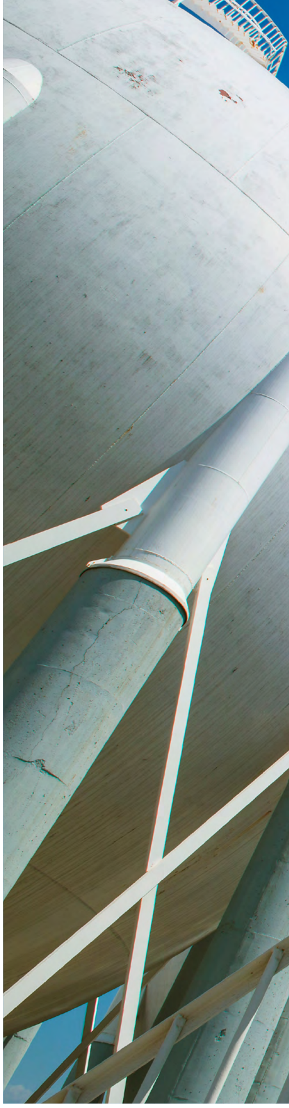
Combined with global service support and a long-standing industry reputation, the company offers both technical depth and security of supply.

CONCLUSION

In chemical, oil & gas, and power applications, the cost of a valve failure far exceeds the price of the positioner.

Choosing a device with universal compatibility, robust diagnostics, and field-proven reliability is an investment in process stability.

For many engineers, ABB's TZIDC and EDP300 provide the balance between performance, simplicity, and lifecycle cost that modern plants demand.



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