



**Pressure Instrumentation for
Critical Environments**

Welcome to Ashcroft

Keep your critical environments running efficiently with pressure instruments designed for optimized performance.

Cleanrooms, data centers, laboratories, hospital operating and isolation rooms and other critical facilities have strict environmental guidelines requiring close monitoring and control. Does your system comply with these guidelines?

To ensure that controlled environments are not compromised, your pressure measuring instruments must be highly accurate and reliable.

Ashcroft offers a variety of differential pressure transducers that are built to meet the high-performance specifications and standards in the HVAC/R, Pharmaceutical & Biotech, Medical Health & Safety and Semiconductor industries. Our products for these applications incorporate our Si-Glas™ sensor, which features unparalleled repeatability, reliability and durability.

You deserve to feel confident in your equipment. Let us help you get reliable pressure measurements for your process.

Contact us to help you with your next project:

 1.800.328.8258

 ashcroft.com

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CHAPTER 1: Common Applications

CRITICAL ENVIRONMENTS

HVAC/R

Cleanrooms, laboratories, hospital operating and isolation rooms, data centers and other critical facilities that have strict environmental guidelines require close monitoring and control over pressure and other environmental conditions, including isolation room pressurization, HEPA filter condition (DP drop), and airflow monitoring and control.



Pharma & Biotech

Our pressure measuring and monitoring instruments help ensure the pressure within cleanrooms and other critical environments remain at optimal levels. We provide solutions that offer ultra-low pressure measurement capacities, in-place calibration and monitoring capabilities, and traceable calibration certification.



ISOLATION AND CRITICAL ROOMS

Medical Health & Safety

We offer specialized pressure instruments for positive or negative room pressure control, monitoring and verification, airflow control and monitoring, and HEPA filter monitoring.



CLEANROOM PRESSURE MEASUREMENT

Semiconductor

The amount of pressure needed to prevent contaminants from infiltrating cleanrooms and other clean spaces is highly specific. Too little pressure results in unwanted particles entering the area, while too much pressure causes excessive air movement and wasted energy. Pressure transducers integrated into the air-handling equipment must be extremely sensitive, accurate and reliable.





CHAPTER 2: Factors to Consider When Selecting Low Pressure Measuring Instruments

1 ACCURACY/PERFORMANCE

At Ashcroft, many of our pressure instruments are manufactured to our TruAccuracy™ standard, which is based on the terminal point method. Some of the products with this specification include our **CXLdp** and **DXLdp** differential pressure transducers and newly introduced **GXLdp** differential indicating pressure transducer. These products meet their stated accuracies out of the box without the need for field calibration adjustments.

DXLdp



GXLdp



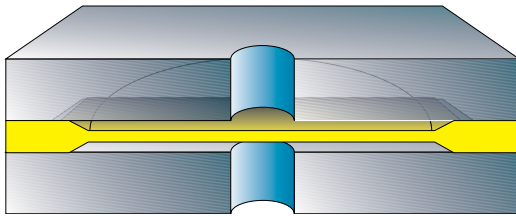
CXLdp



2 REPEATABILITY, RELIABILITY, DURABILITY

Ashcroft® proprietary Si-Glas™ sensor features:

- A Silicon Capacitive MEMS design for unparalleled repeatability, reliability and durability
- Pressure sensors that meet our TruAccuracy™ statement
- Pressure ranges as low as 0 to 0.10 in. H2O



The cleanroom classes are defined according to various standards and their planning and realization requires the highest demands on the systems used and their components.

Equipped with a highly reliable and accurate sensing element, featuring the patented Ashcroft® Si-Glas™ sensor, Ashcroft offers a range of differential pressure transducers specifically designed and developed for use in cleanroom applications. Using an ultra-thin single crystal diaphragm, Ashcroft differential pressure transducers offer inherent sensor repeatability and stability, making them highly accurate, long-term stable and reliable measurement instruments for cleanroom pressure monitoring.

The silicon diaphragm sensor has no glues or other organics to contribute to drift or mechanical degradation over time.



Ashcroft differential pressure transducers incorporate the TruAccuracy™ specification.

Exclusively based on terminal point methodology instead of statistically derived methods like “best fit straight line,” TruAccuracy™ means the Ashcroft CXLdp, DXLdp and GXLdp have $\pm 0.25\%$ of span accuracy out of the box. Zero and span setting errors are already included in the $\pm 0.25\%$ of span accuracy specification and the units are ready to be installed with no additional calibration adjustments required. A unit from another manufacturer advertised as $\pm 0.25\%$ best fit straight line may actually be a $\pm 1.25\%$ to $\pm 2.25\%$ device. Using best fit straight line method, the accuracy specification does not include zero and span setting errors, which can be as much as $\pm 1.00\%$ each.

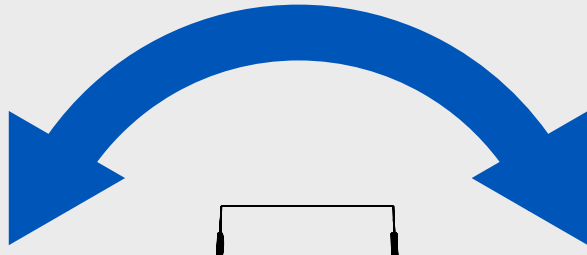


CHAPTER 3: Considerations for Validation and Calibration

ASHCROFT SPOOLCAL™ ACTUATOR

Validation & Calibration Without Separation From the Process

- The exclusive patented Ashcroft SpoolCal™ actuator allows the user to perform in-place system calibrations without disturbing process connections to save time and cost.
- Cleanrooms are qualified according to international standards before they are put into operation. As soon as changes are made to the approved system, be it only for maintenance or inspection, a subsequent cost-intensive validation is required.
- A significant change here is the simple disconnection of electrical connection wires and/or pressure measurement tubes for the differential pressure measurement technology used. Ashcroft DXLdp and GXLdp differential pressure (DP) transducers offer the plant operator a way to perform electrical and pressure checks without changing the overall system. With the optional SpoolCal™ calibration valve, the cleanroom operator and their service partners can make important measurements and adjustments directly on the Ashcroft DP transducers in no time:
 - Connection of a master test instrument to verify the current measured value
 - Calibration and adjustment of the DP transducer



MONITOR

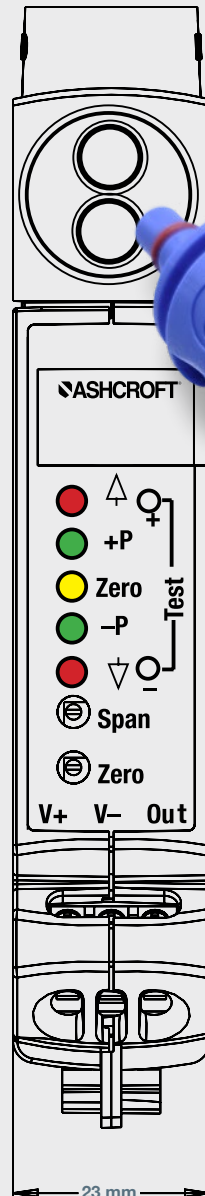
Turn 90 degrees counterclockwise to enter "monitor" mode

- Unit remains exposed to the process pressure
- Portable master test instrument can be used to validate the measured value

CALIBRATION

Turn 90 degrees clockwise to enter "calibration" mode

- Unit is disconnected from the process pressure
- Portable pressure source and master test instrument is used to calibrate the output



DXLdp LED DISPLAY

OPTION: LED DISPLAY

- Allows quick visual status or diagnostic indication inside/ outside the range
- This function includes front access test jacks for an uninterrupted signal reference

LED Indication	Typical Accuracy
Zero-Range	±3% at the nominal zero point
Pressure in the Range	within ±3% to 106% of the range
Pressure Outside the Range	outside ±106% of the range



CHAPTER 4: Recommended Ashcroft® Products for Your Critical Environment

Most cleanrooms and operating rooms require a positive pressure working environment. The pressure in the room is maintained at a higher level than the surrounding rooms or hallways to keep contaminants from entering the controlled room.

At Ashcroft, we understand that the wrong choice in instrumentation can impact your process. The pressure necessary to prevent contaminant infiltration into cleanrooms, isolation rooms and operating rooms is quite low. Specifications can vary from a differential of 0.01 to 0.15 inches of water. If pressure is too low, there won't be enough air movement to contain particles. Too high, and the air will move into places that it shouldn't, like ceiling joints, and it will become difficult to open or close doors.

With such a tight tolerance of a miniscule differential pressure required, the DP measuring device controlling the air handling equipment must be extremely accurate, sensitive and stable.

We believe that you deserve to spend more time focused on your business and less on your pressure measurements. Ashcroft is committed to providing instrumentation with the technology you need to keep up with the demand for continuous performance improvement.

We offer these exceptional pressure measuring instruments for critical room environments.

Recommended Ashcroft® Products

Pressure Transducers



		CXLdp Differential Pressure Transducer	DXLdp Differential Pressure Transducer	GXLdp Differential Indicating Pressure Transducer	IXLdp Differential Pressure Transducer	XLdp Differential Pressure Transducer
Model		CXLdp	DXLdp	GXLdp	IXLdp	XLdp
Specifications	Accuracy	±0.25%, ±0.4%, ±0.8% of span	±0.25%, ±0.5%, ±1.0% of span	±0.25%, ±0.5% of span	±0.25%, ±0.5% of span	±0.25%, ±0.5% of span
	Output	0-10 Vdc 0-5 Vdc 4-20 mA	0-10 Vdc 0-5 Vdc 1-5 Vdc 1-6 Vdc 4-20 mA	0-10 Vdc 0-5 Vdc 1-5 Vdc 1-6 Vdc 4-20 mA	± 2.5 Vdc ± 5.0 Vdc 0-5 Vdc 1-5 Vdc 1-6 Vdc 4-20 mA	1-5 Vdc 1-6 Vdc 4-20 mA
Ranges	Pressure	Bidirectional: ±0.05 in. H ₂ O to ±50.00 in. H ₂ O Unidirectional: 0.10 in. H ₂ O to 100.00 in. H ₂ O	Bidirectional: ±0.05 in. H ₂ O to ±25.00 in. H ₂ O Unidirectional: 0.10 in. H ₂ O to 50.00 in. H ₂ O	Bidirectional: ±0.05 in. H ₂ O to ±25.00 in. H ₂ O (±15 Pa to ±5.00 kPa) Unidirectional: 0.10 in. H ₂ O to 25.00 in. H ₂ O (25 Pa to 6.00 kPa)	Bidirectional: ±0.05 in. H ₂ O to ±100.00 in. H ₂ O Unidirectional: 0.10 in. H ₂ O to 200.00 in. H ₂ O	Bidirectional: ±0.05 in. H ₂ O to ±50.00 in. H ₂ O Unidirectional: 0.10 in. H ₂ O to 50.00 in. H ₂ O
	Operating Temperature	0 °F to 160 °F (-17 °C to 71 °C)	-20 °F to 160 °F (-29 °C to 71 °C)	-4 °F to 176 °F (-20 °C to 80 °C)	-20 °F to 185 °F (-29 °C to 85 °C)	-20 °F to 160 °F (-29 °C to 71 °C)

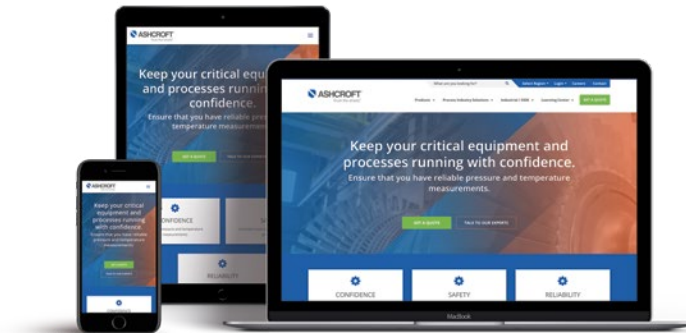
If you have additional questions about instrumentation for critical environment applications or would like to discuss your unique requirements with one of our experts, please [contact us today!](#)

Contact us to help you with your next project:

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Learn more about critical environments, and the associated Ashcroft® instrumentation by visiting our website:



[ashcroft.com](https://www.ashcroft.com) 



Watch Video: [Ashcroft Sensor Technology – Si-Glas™ Silicon Capacitive MEMS](#)



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