



Pressure and Temperature  
Instrumentation for  
**Pharmaceutical &  
Biotechnology Applications**

# Welcome to Ashcroft

Meet strict safety requirements with pressure and temperature instruments designed to prevent product contamination.

In the pharmaceutical and biotechnology industries, strict control over facility conditions is essential to preventing product contamination and ensuring product integrity. For this reason, many pharmaceutical and biotechnology companies utilize cleanrooms when developing and manufacturing their products to protect the health and well-being of consumers.

The performance of these processes rely on accurate and reliable instrumentation, which allows developers and manufacturers to achieve and maintain the conditions needed to accommodate industry and regulatory standards.

You deserve to feel confident in your equipment. Ashcroft offers a variety of pressure and temperature measurement products such as pressure gauges, pressure switches, low differential pressure transducers, and temperature switches. These instruments are built to meet the high-performance specifications and standards in optimizing pharmaceutical and biotechnology systems.

Let us help you get reliable pressure and temperature measurements for your process.

**Contact us to help you with your next project:**

 1.800.328.8258

 [ashcroft.com](http://ashcroft.com)

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## CHAPTER 1: Common Applications

### Hygienic Processes

Pharmaceutical and biotechnology operations demand compliance with surface finish, wetted materials verification, and performance over wide temperature ranges standards. We provide measurement and control solutions engineered with hygienic design in mind. They feature electropolished stainless steel wetted material, 3-A approved Tri-clamp® connections, wetted material traceability and sterilize-in-place (SIP) and clean-in-place (CIP) capacities.



### Critical Environments

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







### **Fume Hoods**

Our ultra-low differential pressure products are highly sensitive, accurate and stable, allowing for very low flow measurement and control. They feature proven sensing technology, which provides high sensitivity at ultra-low differential pressure/low flow rates with high proof pressure capabilities and traceable calibration certificates.



### **Chemical Processes**

We offer high-accuracy instruments that help achieve and maintain the right conditions during highly automated batch processes. Ashcroft experts help identify which of our all-welded gauges, isolation devices, and other instrument offerings are right for a custom solution.



### **Calibration/Validation**

Facility/Production Calibration operations, which are required to maintain specified levels of performance and FDA compliance, need high-quality instruments to ensure accurate and reliable pressure and temperature readings when validating the performance of the system operations.



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

# 1

### ACCURACY, REPEATABILITY AND RELIABILITY

Accuracy and reliability are key to keeping your application working, but long-term repeatability is also essential. Our pressure and temperature instruments consistently work to the same requirements over time, thereby reducing risk. Ashcroft's proven design and traceable materials keep your measurements accurate.



1032 Sanitary  
Pressure Gauge



E2 Sanitary  
Pressure Transducer



A-Series Watertight  
Pressure Switch

# 2

### MATERIAL TRACEABILITY

The materials you use depend on the specific application, especially in hygienic applications, but they should be traceable to ensure reliability. Material traceability certifies that the materials used in your application have records chronicling their creation.



# 3

## PRESSURE RANGE AND MEDIA COMPATIBILITY

- The pressure reference (gauge/vacuum, absolute or differential) is the first step in determining which transducer technologies can be used in a design. Is the pressure reference to current atmospheric conditions (Gauge reference) or absolute zero pressure (Absolute reference)?
- The sensor material you choose must be compatible with your process media. If you are using the wrong materials, you may encounter instrument damage or failure.

# 4

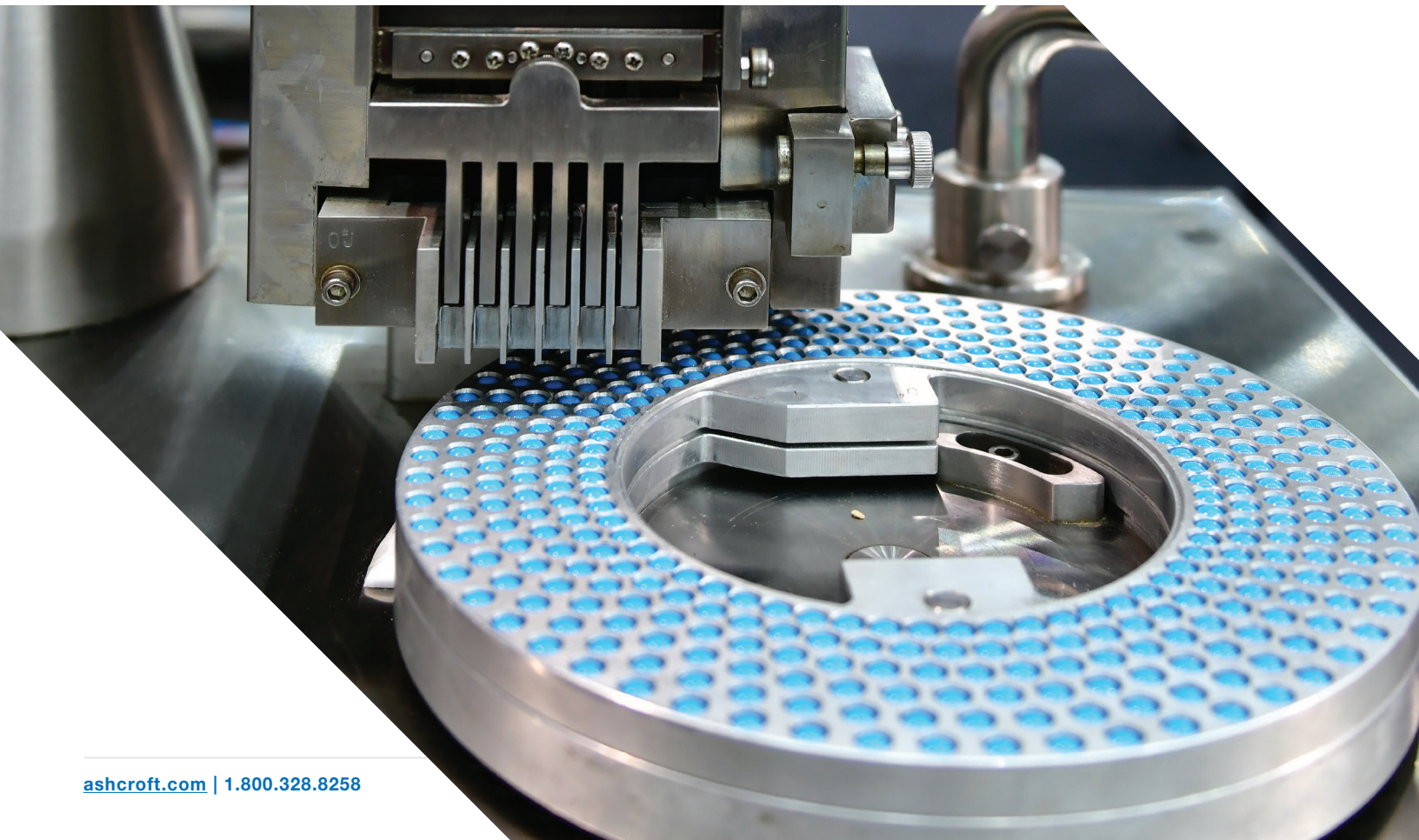
## IN-PLACE CALIBRATION AND MONITORING CAPABILITIES

- Ashcroft's ATE-2 hand-held calibrator is a reliable choice for in-place calibration of your pressure instrumentation.
- The DXLdp and GXLdp pressure transducers feature the exclusive patented Ashcroft SpoolCal® actuator, which allows the user to perform in-place system calibrations without disturbing process connections to save time and cost.

ATE-2 Handheld  
Calibrator



DXLdp Differential  
Pressure Transducer





# CHAPTER 3: Recommended Ashcroft® Products for Your Pharma/Biotech System

The pharmaceutical and biotechnology industry must meet strict sanitary requirements for safety. How can you ensure you have the right instruments for your application?

At Ashcroft, our measurement and monitoring solutions are custom-tailored to unique requirements and restrictions, ensuring that you receive instrumentation that fully meets your needs. For the pharmaceutical and biotechnology industries, we offer these accurate and reliable instruments:

## PROCESS/HYGIENIC APPLICATIONS:

### Pressure Gauges



		1032 Sanitary Pressure Gauge	1032 Fractional Sanitary Gauge	1036 Sanitary Pressure Gauge and 1037 Fitting	2030 Series Digital Sanitary Pressure Gauges
<b>Model</b>		<b>1032 Sanitary</b>	<b>1032 Fractional</b>	<b>1036/1037 Fitting</b>	<b>2030 Series</b>
<b>Specifications</b>	Accuracy	2 1/2" & 3 1/2": All ranges up to 100 psi: ±2% Pressure over 100 psi: ±1.5% (add ±0.5% for liquid fill and XLL) 4 1/2": 1.5%	Upscale: ±3% of span Downscale: ±5% of span	All ranges to 100 psi ±2% Pressure over 100 psi ±1.5% (add ±0.5% for liquid fill and XLL)	±0.25% of span, Terminal point
	Sizes	2 1/2", 3 1/2", 4 1/2"	2"	3 1/2"	3"
	Process Connection	1 1/2" & 2" Tri-Clamp® (Seal Surface Finish: 12-15 RA)	3/4" Tri-Clamp® (Seal Surface Finish: 12-20 RA)	1 1/2" Tri-Clamp® (Seal Surface Finish: 12-15 RA)	2032, 2132, 2232: Tri-Clamp® 2036, 2136, 2236: In-line (Seal Surface Finish: 12-20 RA)
<b>Ranges</b>	Pressure	Vacuum, compound, to 1,000 psi	Compound, 30 to 600 psi	Vacuum, compound, to 1,000 psi	Vacuum, compound, gauge to 7,000 psi
<b>Approvals</b>		CRN, RoHS, 3-A	CRN, RoHS	CRN, RoHS, 3-A	3-A

### Pressure Gauges Anti-Corrosion



		HPT - 63 mm Pressure Gauge
<b>Model</b>		<b>HPT</b>
<b>Specifications</b>	Accuracy	±2.0% of span (ranges 90 psi and below)
	Sizes	63 mm
<b>Ranges</b>	Pressure	Vacuum to 145 psi
<b>Approvals</b>		RoHS

See datasheets at [ashcroft.com](http://ashcroft.com) for complete product specifications.



## Pressure Transmitters/Transducers



		<b>E2 Sanitary Pressure Transducer</b>	<b>KS Sanitary Pressure Transducer</b>	<b>ZL91 Fluoropolymer Pressure Transducer</b>	<b>ZL92 Fluoropolymer Pressure Transducer</b>
<b>Model</b>		<b><u>E2 Sanitary</u></b>	<b><u>KS</u></b>	<b><u>ZL91</u></b>	<b><u>ZL92</u></b>
<b>Specifications</b>	Accuracy	±0.25%, ±0.50%, ±1.0% of span	±0.5%, ±1.00% of span	±1.0% of span	±1.0% of span
	Output	0-5 Vdc, 1-5 Vdc, 1-6 Vdc, 0-10 Vdc, 1-11 Vdc, 0.1-5 Vdc, 0.1-10 Vdc, 0.5-4.5 Vdc (non-ratiometric), 4-20 mA, 20-4 mA	2, 3, 10, 20 mV/V	1-5 Vdc (3 Wire) 4-20 mA (2 Wire)	1-5 Vdc (3 Wire) 4-20 mA (2 Wire)
<b>Ranges</b>	Pressure	Absolute ranges: 0 to 500 psia Vacuum to 1,000 psig	Vacuum to 1,000 psi	Gauge and compound ranges from 15 psi up to 75 psi	0-45 psi and 0-75 psi
<b>Approvals</b>		UL/cUL, CE, UKCA, RoHS	3-A	CE, UKCA, RoHS	CE, UKCA, RoHS

## Pressure Switches



		<b>A-Series Watertight Pressure Switch</b>	<b>A-Series Explosion Proof Miniature Pressure Switch</b>	<b>B-Series Pressure Switch</b>	<b>B-Series NEMA 7/9 Explosion Proof Pressure Switch</b>	<b>GP-Series NEMA 4 Pressure Switch</b>
<b>Model</b>		<b><u>A-Series Watertight</u></b>	<b><u>A-Series Explosion</u></b>	<b><u>B4</u></b>	<b><u>B7</u></b>	<b><u>GP</u></b>
<b>Specifications</b>	Enclosure	NEMA 6, IP67	NEMA 4X, 7, 9, IP 67	Watertight epoxy coated aluminum NEMA 4, 4X, IP66	Explosion proof epoxy coated aluminum NEMA 7/9, IP66	Watertight 316 Stainless Steel NEMA 4, 4X, IP66
	Function	Single setpoint - factory set or field adjustable	Single setpoint - factory set or field adjustable	Single setpoint, fixed deadband, SPDT (or) single setpoint, fixed deadband, (2) SPDT (DPDT action)	Single setpoint, fixed deadband, SPDT (or) single setpoint, fixed deadband, (2) SPDT (DPDT action)	Dual independent setpoint, fixed deadband Single setpoint, adjustable deadband Single setpoint, fixed deadband
<b>Ranges</b>	Pressure	Vacuum - 15 to 15,000 psi	Vacuum to 15,000 psi	Vacuum to 3,000 psi	Vacuum to 3,000 psi	Vacuum to 3,000 psi
<b>Approvals</b>		CRN, CE, UKCA, CSA, ROHS, SIL 3 Capable, UL	ATEX, CE, UKCA, CRN, CSA, FM, IECEx, ROHS, SIL 3 Capable, UL	FM, UL, CE, UKCA, CRN, ROHS, SIL 3 Capable	UL, CSA, ATEX, IECEx, CE, UKCA, CRN, FM, ROHS, SIL 3 Capable	UL, CE, UKCA, CRN, ROHS

See datasheets at [ashcroft.com](http://ashcroft.com) for complete product specifications.

## PROCESS/HYGIENIC APPLICATIONS (continued):

### Temperature Switches



		T-Series Watertight Temperature Switch	T-Series Explosion Proof Temperature Switch	G-Series Watertight Temperature Switch
<b>Model</b>		<b>T4</b>	<b>T7</b>	<b>GT</b>
<b>Specifications</b>	Enclosure	Epoxy coated aluminum NEMA 4, 4X, IP66	Epoxy coated aluminum NEMA 7/9, IP66	316 stainless steel NEMA 4, 4X, IP66
	Function	Single setpoint, fixed deadband, SPDT (or) single setpoint, fixed deadband, (2) SPDT (DPDT action)	Single setpoint, fixed deadband, SPDT (or) single setpoint, fixed deadband, (2) SPDT (DPDT action)	Dual independent setpoints, fixed deadband Single setpoint, adjustable deadband Single setpoint, fixed deadband
<b>Ranges</b>	Temperature	-40 °F to 750 °F (-40 °C to 400 °C)	-40 °F to 750 °F (-40 °C to 400 °C)	-40 °F to 750 °F (-40 °C to 400 °C)
<b>Approvals</b>		UL, CE, UKCA, CRN, ROHS, SIL 3 Capable	UL, CSA, ATEX, IECEx, CE, UKCA, CRN, ROHS, SIL 3 Capable	CSA, UL, CE, UKCA, RoHS

### RTDs, Thermocouples, and Thermometers



		RTD Probes	Thermocouple Probes	Bimetal Thermometer	Bimetal Thermometer
<b>Model</b>		<b>Pt 100</b> <b>Pt 1000</b>	<b>Type J</b> <b>Type E</b> <b>Type K</b> <b>Type N</b>	<b>Model E</b>	<b>Model C</b>
<b>Specifications</b>	Accuracy	Class A Class B	Class 1 Class 2 Class 3 Standard Special	±1.0% of span ASME B40.200 (B40.3 Grade A)	±1.0% of span ASME B40.200 (B40.3 Grade A)
	Size & Case Features	NA	NA	2", 3", 5" Stainless Steel Hermetically Sealed	2", 3", 5" 304 Stainless Steel
	Stem Lengths	2" to 120" 50 mm to 3,000 mm	2" to 120" 50 mm to 3,000 mm	2½" to 60"	2½" to 60"
<b>Ranges</b>	Temperature	Pt 100 -200 to +600 °C Pt 1000 -40 to +600 °C	Type J -40 to +750 °C Type E -200 to +800 °C Type K -200 to +1100 °C Type N -200 to +1100 °C	-80 °F to 1000 °F (-50 °C to 500 °C)	-80 °F to 1000 °F (-50 °C to 500 °C)



### Thermowells

		Sanitary Thermowell
<b>Model</b>		<b>Sanitary</b>
<b>Specifications</b>	Process Connection	1", 1 1/2" or 2" Tri-Clamp®
	Overall Length	Min U dimension 2"
	Materials	Variety of metallic materials

See datasheets at [ashcroft.com](http://ashcroft.com) for complete product specifications.



## ENVIRONMENTAL CONTROL/CLEANROOM:

### Pressure Transmitters/ Transducers



		GXLdp Differential Indicating Pressure Transducer	CXLdp Differential Pressure Transducer	DXLdp Differential Pressure Transducer
<b>Model</b>		<b>GXLdp</b>	<b>CXLdp</b>	<b>DXLdp</b>
<b>Specifications</b>	Accuracy	±0.25%, ±0.5%, of span	±0.25%, ±0.4%, ±0.8% of span	±0.25%, ±0.5%, or ±1.0% of span
	Output	0-10 Vdc 0-5 Vdc 1-5 Vdc 1-6 Vdc 4-20 mA	0-10 Vdc 0-5 Vdc 4-20 mA	0-10 Vdc 0-5 Vdc 1-5 Vdc 1-6 Vdc 4-20 mA
<b>Ranges</b>	Pressure	Bidirectional: ±0.05 in. H <sub>2</sub> O to ±25.00 in. H <sub>2</sub> O (±15 Pa to ±5.00 kPa) Unidirectional: 0.10 in. H <sub>2</sub> O to 25.00 in. H <sub>2</sub> O (25 Pa to 6.00 kPa)	Bidirectional: ±0.05 in. H <sub>2</sub> O to ±50.00 in. H <sub>2</sub> O Unidirectional: 0.10 in. H <sub>2</sub> O to 100.00 in. H <sub>2</sub> O	Bidirectional: ±0.05 in. H <sub>2</sub> O to ±25.00 in. H <sub>2</sub> O Unidirectional: 0.10 in. H <sub>2</sub> O to 50.00 in. H <sub>2</sub> O
	Operating Temperature	(-4 °F to 158 °F) (-20 °C to 70 °C)	0 °F to 160 °F (-17 °C to 71 °C)	(-20 °F to 160 °F) (-29 °C to 71 °C)
<b>Approvals</b>		CE, UKCA, RoHS	CE, UKCA, RoHS	CE, UKCA, RoHS

### Calibrators



		ATE-2 Handheld Calibrator
<b>Model</b>		<b>ATE-2</b>
<b>Specifications</b>	Accuracy	±0.025% to ±0.1% of span
	Pressure	0.25 in. H <sub>2</sub> O up to 10,000 psi
<b>Range</b>	Operating Temperature Range	-4 °F to 120 °F (-20 °C to 49 °C)
	Storage Temperature Range	-4 °F to 158 °F (-20 °C to 70 °C)
<b>Approvals</b>		CE, UKCA, FCC (CFR47), UL 61010-1

See datasheets at [ashcroft.com](http://ashcroft.com) for complete product specifications.

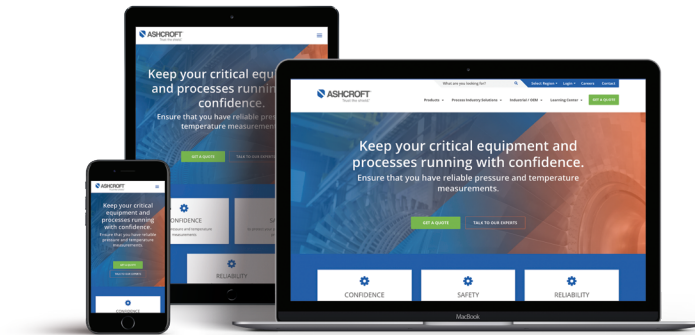
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