

Introducing **LOW** **DIFFERENTIAL** **PRESSURE** **INSTRUMENTS**

A new family of affordable instruments:

- Low DP transmitters, calibrators & manometers
- High-accuracy inductive pickup
- Long-term stability, low hysteresis
- Orange Research reliability, ruggedness and service
- For HVAC, wafer fabs, pharmaceutical clean rooms, laboratories and hospitals



FROM THE LEADER IN DIFFERENTIAL PRESSURE INSTRUMENTS

Differential pressure instruments sold by Orange Research have gained a worldwide reputation for ruggedness and reliability at an affordable price since they were first introduced more than 30 years ago. We've become known as "the differential pressure people" because of the depth of our knowledge and quality of the service we provide to our worldwide customers in the process industries. Over the years, we've sold millions of Orange Research instruments, including, more recently, flow gauges, level switches, and micro-processor-based data transmitters.

Now we have expanded our DP product family with an exciting new line of low differential pressure instruments. They have many measurement, control and calibration applications in HVAC, wafer fabs, pharmaceutical clean rooms, laboratories and hospitals.

You can be assured that our low DP product offerings are backed by the same quality and service you have come to expect from Orange Research.

Our products are sold worldwide through our central sales force and a network of sales representatives and distributors. Information about Orange Research and its products is available at our web site: www.orangeresearch.com.

LOW DIFFERENTIAL PRESSURE

Orange Research low differential pressure transmitters are designed to measure the difference in pressure between two points in a system as well as positive and negative gauge pressure. Differential pressure output can be presented on integrated digital displays or on remote displays, or used to activate limit switches and/or alarms.

These new, more sensitive instruments extend differential pressure measurement capabilities down to 10 Pa (0.04" of H₂O) to give you control over conditions found in many low DP environments. Whether you are controlling air filtration in a paint spray booth or maintaining the proper flow of air for a clean room, we have an instrument to meet your needs.

And because of an innovative, ultrasensitive and accurate transducer design, you'll benefit from advanced low DP instrumentation at an affordable price. Already used throughout the world and tested to the highest standards, we offer price/performance measurement solutions other manufacturers can't match.

Advantages

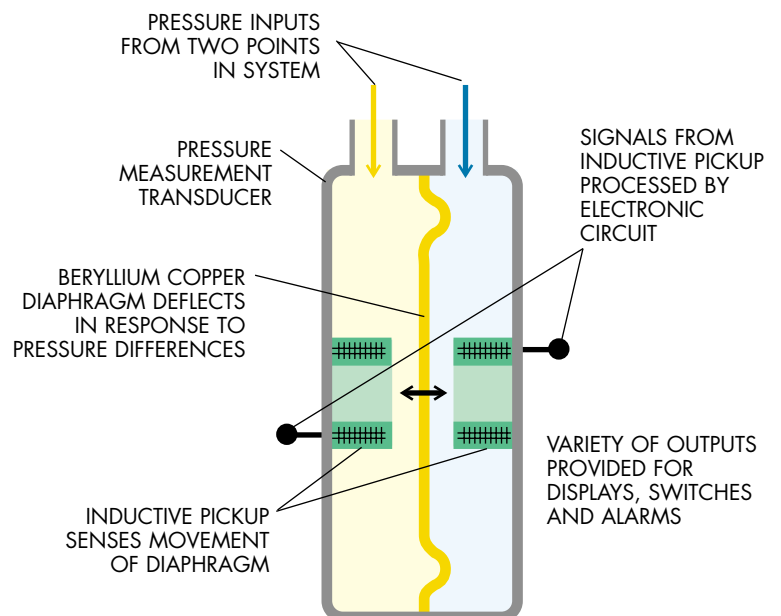
- High sensitivity:
10 Pa - 200 kPa (0.04" H₂O - 29 psi)
- High accuracy and long-term stability
- Low hysteresis, zero drift and temperature dependence
- Variety of outputs
- Proven in critical applications:
 - HVAC
 - Wafer fabs
 - Pharmaceutical clean rooms
 - Laboratories
 - Hospitals

HOW THEY WORK

Differential pressure instruments operate on the difference between two pressures (delta-P). Pressure monitored at two different points in a system acts on opposite sides of a diaphragm. Changes in the pressure difference will cause proportional changes in the output of an electronic sensor connected to the diaphragm.

The key part of each low differential pressure transmitter is the pressure measurement transducer, which contains a beryllium-copper diaphragm. The difference in pressure between the transducer's two chambers deflects the diaphragm and the movement is sensed by a contactless inductive pickup. Electrical signals from the pickup indicate pressure change. The transducer contains no wearing parts.

A variety of outputs are provided. Models are available with integrated LED digital displays, square-root extraction for flow measurement, and pneumatic overload protection. Ask about our +/- measurement range units.



LOW DIFFERENTIAL PRESSURE TRANSMITTERS

20100 Series: 0.20-400 in. H₂O

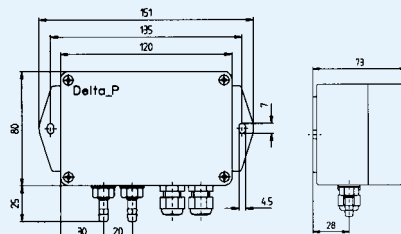
- High accuracy
- Long-term stability
- Low hysteresis

Our model 20100 series DP transmitter is the most popular of our low DP line. It finds many applications, from cleanrooms to ventilation and air conditioning systems, and also is perfect for monitoring level or the condition of your filter system.

Utilizing a beryllium copper diaphragm coupled to an inductive pickup, it achieves an accuracy of 1% or better. We offer a wide choice of measurement ranges along with a variety of output signals. Choose from voltage or current outputs.

Model	Range (in. H ₂ O)	Price
20101	0- .20	\$286.00
20102	0- .40	\$286.00
20103	0- 1.0	\$233.00
20104	0- 2.0	\$233.00
20105	0- 4.0	\$233.00
20106	0- 10	\$233.00
20107	0- 20	\$233.00
20108	0- 40	\$233.00
20109	0- 80	\$233.00
20110	0- 200	\$233.00
20111	0- 400	\$233.00

Specify These Options	Additional Price
LCD display, 3.5 digits	\$74.00
0-5 VDC output	\$ N/C
2 wire version (4-20mA output/10-32V input)	\$ N/C
±0.5% accuracy	\$30.00
±0.2% accuracy	\$89.00
1s, 2 s, 5s, time constant	\$13.00
115 V or 230 V input	\$15.00



All dimensions are in mm.
For LCD version dimensions, see 20400.

Model 20100 series differential pressure transmitter

Specifications:

Measurement range:	0–0.20 to 0–400 in. H ₂ O
Media:	Air and non-aggressive gases
Housing material:	ABS Plastic
Max. pressure limit:	10X (< 80 " H ₂ O) 2X (> 80 " H ₂ O)
Accuracy:	1% F.S.*
Hysteresis:	0.1% F.S.
Operating Temperature:	32–140° F (0–60° C)
Storage Temperature:	14–158° F (-10–70° C)
Compensated Range:	50–122° F (10–50° C)
Zero- Span Drift/ Temp.:	0.04% F.S./ K
Power supply:	24 VDC (+20%/-15%)
Output:	0–10 VDC (4-20 mA with 2 wire option)
Circuit:	3 wire (2 wire optional)
Pressure fittings:	.25" (6.5 mm)
Time constant:	20 ms

*For a lower cost, less accurate version, see our 20500 model

LOW DIFFERENTIAL PRESSURE TRANSMITTERS

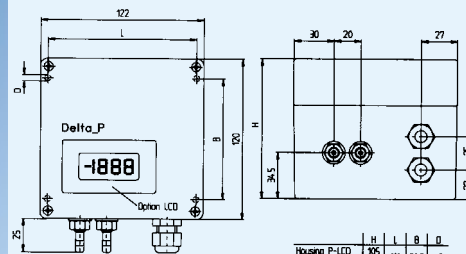
20200 Series: 0.04-400 in. H₂O

- Ultra low range
- Output dampening
- Self calibrating
- Overpressure protection

Building on the success of the 20100 series we designed the fully featured 20200 model. While maintaining the same high accuracy, we've added lower dp ranges, self calibration, output damping and overpressure protection. Appealing to those who require greater long-term stability and more functionality, our 20200 units provide the ultimate list of features in one unit. A rugged ABS plastic housing is standard. For more EMC protection we offer an aluminum housing option.

Model	Range (in. H ₂ O)	Price
20201	0-.04	\$493.00
20202	0-.10	\$469.00
20203	0-.20	\$469.00
20204	0-.40	\$469.00
20205	0-1.0	\$416.00
20206	0-2.0	\$416.00
20207	0-4.0	\$416.00
20208	0-10	\$416.00
20209	0-20	\$416.00
20210	0-40	\$416.00
20211	0-80	\$416.00
20212	0-200	\$416.00
20213	0-400	\$416.00

Specify These Options	Additional Price
LCD display	\$74.00
Aluminum Housing	\$121.00
0-5 VDC output	N/C
RS 232 interface	\$102.00
Profibus interface	Contact Sales
24 VDC, 230 VAC input	\$15.00
±0.2% accuracy (for ranges ≥ 1.0 in. H ₂ O)	\$66.00



All dimensions are in mm.
For LCD version dimensions, see 20400.
Housing Plastic (P); Housing Metal (M)

Model 20200 series DP transmitter with LCD option

Specifications:

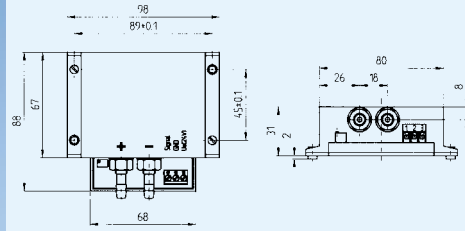
Measurement range:	0–0.04 to 400 in. H ₂ O
Media:	Air and non-aggressive gases
Housing material:	ABS plastic (aluminum optional)
Max. Pressure Limit:	30 PSI for ranges ≥ 10 in. H ₂ O 200X for ranges < 10 in. H ₂ O
Accuracy:	1% F.S.
Hysteresis:	0.1% F.S.
Operating temperature:	32–140° F (0–60° C)
Storage Temperature:	14–158° F (-10–70° C)
Power supply:	115 VAC
Output:	0–10 VDC and 0–20 mA or 2–10 VDC and 4–20 mA (selectable) (0–5 VDC optional)
Circuit:	3 wire
Pressure fittings:	.25" (6.5 mm)
Time constant:	1 s, 2.5 s, 5 s, 10 s, 20 s, 30 s, 40 s (variable)

LOW DIFFERENTIAL PRESSURE TRANSMITTERS

20300 Series: 1.0-400 in. H₂O

- Low cost
- High sensitivity
- Low zero-drift and hysteresis

Our 20300 series DP transmitter was designed as a low cost alternative to the fully featured models. Its simple, but rugged design has the features you need while still providing the performance your applications require. It is widely used in HVAC applications. The movement of its beryllium copper diaphragm is coupled to an inductive pickup to sense the smallest change in differential pressure.



All dimensions are in mm.

Model 20300 series differential pressure transmitter

Model	Range (in. H ₂ O)	Price
20301	0-1.0	\$128.00
20302	0-2.0	\$128.00
20303	0-4.0	\$128.00
20304	0-10.0	\$128.00
20305	0-20.0	\$128.00
20306	0-40.0	\$128.00
20307	0-80.0	\$128.00
20308	0-200	\$128.00
20309	0-400	\$128.00

Specify This Option	Additional Price
0-5 VDC output	N/C
0-20 mA output	N/C
4-20 mA output	N/C

Specifications:

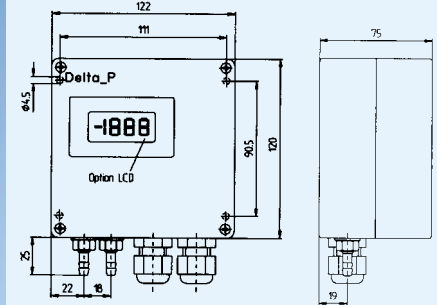
Measurement range:	0-1.0 to 0-400 in. H ₂ O
Media:	Air and non-aggressive gases
Max. pressure limit:	10X for ranges ≤ 80 in. H ₂ O 2X for ranges > 80 in. H ₂ O
Accuracy:	2.5% F.S.
Hysteresis:	0.1% F.S.
Operating temperature:	32-140° F (0-60° C)
Storage Temperature:	14-158° F (-10-70° C)
Power supply:	24 VDC (±10%) or 24 VAC (±10%)
Output:	0-10 VDC (see options)
Circuit:	3 wire
Pressure fittings:	.25" (6.5 mm)
Time constant:	20 ms

LOW DIFFERENTIAL PRESSURE TRANSMITTERS

20400 Series: 0.4-80 in. H₂O

- Flow measurements
- High accuracy
- Low zero-drift and hysteresis

One of the most popular methods of measuring flow utilizes a differential pressure meter with root extraction. The square root of a differential pressure reading on either side of an orifice plate or similar device within a system is linear with the flow rate. Our 20400 series models have integrated circuitry that extracts this flow reading for you. We present this reading as a linear voltage signal.



All dimensions are in mm.

Model 20400 series DP transmitter with root extraction

Model	Range (in. H ₂ O)	Price
20601	0-0.4	\$334.00
20602	0-1.0	\$281.00
20603	0-2.0	\$281.00
20604	0-4.0	\$281.00
20605	0-10	\$281.00
20606	0-20	\$281.00
20607	0-40	\$281.00
20608	0-80	\$281.00

Specify These Options	Additional Price
3.5 digit LCD display	\$74.00
0-5 VDC output	N/C
1, 2 or 5 second time constant	\$13.00
115 V or 230 V power supply	\$15.00
0-20 mA output	N/C
4-20 mA output	N/C

Specifications:

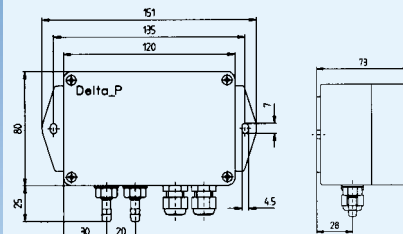
Measurement range:	0-0.4 to 80 inches H ₂ O
Media:	air and non-aggressive gases
Housing material:	ABS plastic
Max. pressure limits:	5X
Accuracy:	± 1% F.S.
Hysteresis:	0.1% F.S.
Operating temperature:	32-140° F (0-60° C)
Storage temperature:	14-158° F (-10-70° C)
Compensated range:	50-122° F (10-50° C)
Zero- span drift/ temp.:	0.05% F.S./ K
Power supply:	24 VDC (+20%/-15%)
Output:	0-10 VDC (see options)
Circuit:	3 wire
Pressure fittings:	.25" (6.5 mm)
Time constant:	20 ms

LOW DIFFERENTIAL PRESSURE TRANSMITTERS

20500 Series: 0.20-400 in. H₂O

- Low cost
- Many features and options

This 20500-series transmitter is essentially a lower cost, slightly less accurate version of the popular 20100. Housed in the same shell as the 20100, it offers you the same features and options without the cost. With 2% accuracy and 1.0% zero-span drift, this unit still outperforms many of the common transmitters in use today.



All dimensions are in mm.
For LCD version dimensions, see 20400.

Model 20500 series differential pressure transmitter

Model	Range (in. H ₂ O)	Price
20501	0-0.2	\$206.00
20502	0-0.4	\$206.00
20503	0-1.0	\$153.00
20504	0-2.0	\$153.00
20505	0-4.0	\$153.00
20506	0-10	\$153.00
20507	0-20	\$153.00
20508	0-40	\$153.00
20509	0-80	\$153.00
20510	0-200	\$153.00
20511	0-400	\$153.00

Specify These Options	Additional Price
LCD display, 3.5 digits	\$74.00
0-5 VDC output	\$ N/C
2 wire version (4-20mA output/10-32V input)	\$ N/C
±0.5% accuracy	\$30.00
±0.2% accuracy	\$89.00
1s, 2 s, 5s, time constant	\$13.00
115 V or 230 V input	\$15.00

Specifications:

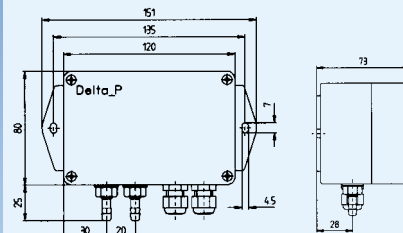
Measurement range:	0-0.20 to 0-400 in. H ₂ O
Media:	Air and non-aggressive gases
Housing material:	ABS Plastic
Max. pressure limit:	10X (< 80 " H ₂ O) 2X (> 80 " H ₂ O)
Accuracy:	2% F.S.
Hysteresis:	0.1% F.S.
Operating Temperature:	32-140° F (0-60° C)
Storage Temperature:	14-158° F (-10-70° C)
Compensated Range:	50-122° F (10-50° C)
Zero- Span Drift/ Temp.:	1.0% F.S./ K
Power supply:	24 VDC (+20%/-15%)
Output:	0-10 VDC (4-20 mA with 2 wire option)
Circuit:	3 wire (2 wire optional)
Pressure fittings:	.25" (6.5 mm)
Time constant:	20 ms

LOW DIFFERENTIAL PRESSURE TRANSMITTERS

20600 Series: 1.0-120 in. H₂O

- Over pressure protection
- High accuracy
- Low zero-drift and hysteresis

In order to satisfy those conditions where over pressure is a concern we offer the 20600 series low DP transmitter. If for any reason pressure reaches less than 50% or greater than 150% of nominal, a valve will interrupt the pneumatic circuit between the hose connection and the pressure sensor, while at the same time both sensor inputs will be short circuited. The transducer will revert to its normal condition 5 seconds after the excess pressure no longer is present.



All dimensions are in mm.
For LCD version dimensions, see 20400.

Model 20600 series differential pressure transmitter

Model	Range (in. H ₂ O)	Price
20601	0-1.0	\$319.00
20602	0-2.0	\$319.00
20603	0-4.0	\$319.00
20604	0-10	\$319.00
20605	0-20	\$319.00
20606	0-40	\$319.00
20607	0-80	\$319.00
20608	0-120	\$319.00

Specify These Options	Additional Price
LCD display:	\$74.00
0-5 VDC output	N/C
115 VAC, 230 VAC or 24 VAC input	\$15.00

Specifications:

Measurement ranges:	0-1 to 0-120 inches H ₂ O
Media:	Air and non-aggressive gases
Housing:	ABS plastic
Accuracy:	±1% F.S.
Hysteresis:	0.1% F.S.
Operating temperature:	32-140° F (0-60° C)
Storage temperature:	14-158° F (-10-70° C)
Compensated range:	50-122° F (10-50° C)
Zero-span drift/ temp.:	0.04% F.S./ K
Time constant:	20 ms
Power supply:	24 VDC (+20%/-15%)
Output:	0-10 VDC
Circuit:	3 wire
Pressure fittings:	.25" (6.5 mm)

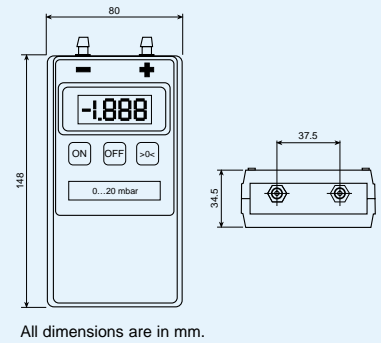
PORTABLE DIGITAL MANOMETER

20700 Series: 0.8-800 in. H₂O

- Low cost
- Battery powered
- 3.5 digit display
- Measure positive, negative and differential pressures

Our 20700 Portable Digital Manometer utilizes the same sensitive diaphragm sensor as our most accurate low dp instruments. Housed in a rugged, easy-to-use case, it is ideal for common maintenance and installations. With its large, easy-to-read 3.5 digit LCD display and tactile membrane keypad, any measurement is effortless. An optional analog output allows you to send a voltage, linear to the reading, to another readout device or instrument.

Model	Range (in. H ₂ O)	Max. Pressure	Price
20701	0-2.0	20X	\$245.00
20702	0-20	20X	\$245.00
20703	0-200	10X	\$245.00
Specify These Options		Additional Price	
0-2 V analog output:		\$18.00	
Carrying case:		\$81.00	



Model 20700 portable digital manometer

Specifications:

Measurement ranges:	0-0.8 to 0-800 inches H ₂ O
Media:	air and non-aggressive gases
Controls:	Tactile membrane keypad, On, Off and Zero Set
Accuracy:	±1% F.S.
Hysteresis:	≤0.1% FS
Operating temperature:	32-140° F (0-60° C)
Storage temperature:	14-158° F (-10-70° C)
Power supply:	9 V battery (duration approx. 120 hours)
Output:	3.5 digit LCD display (optional 0-2 V analog)
Pressure fittings:	.25" (6.5 mm)
Dimensions:	148 x 80 x 34.5 mm

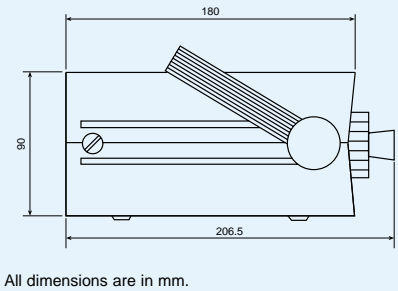
PORTABLE PRESSURE CALIBRATOR

20800 Series: 0.4-400 in. H₂O

- High accuracy
- Generate pressure/calibrate instruments
- High accuracy and repeatability

Model 20800 Portable Pressure Calibrator is an accurate instrument designed to both generate pressure and calibrate pressure sensors. Its high accuracy and repeatability meets the most demanding requirements of low pressure applications. Its robust, yet sensitive, components are enclosed in a metal housing with handle. An AC adapter and rechargeable battery are supplied, making the instrument appropriate for laboratory or field applications. A hand wheel allows the user to generate and apply the required pressure while the instrument under test is connected to the calibrator. The resulting reading is adjusted to the correct value.

Model	Range (in. H ₂ O)	Price
20801	0-0.4	\$793.00
20802	0-4	\$793.00
20803	0-40	\$793.00
20804	0-400	\$793.00
Specify This Option		Additional Price
Carrying case		\$81.00



Model 20800 portable pressure calibrator

Specifications:

Measurement ranges:	0-0.4 to 0-400 in. H ₂ O
Media:	air and non-aggressive gases
Housing material:	aluminum
Display:	4.5 digit LCD
Linearity:	±1% (20801) ±0.5% (20802, 3, 4) ±0.2% optional
Hysteresis:	0.1% FS
Response time:	variable (20 ms, 100 ms, 1 s)
Analog output:	0-1V
Power supply:	115 VAC and 9 V rechargeable battery
Pressure connections:	.25" (6.5 mm)
Weight:	6.5 lbs

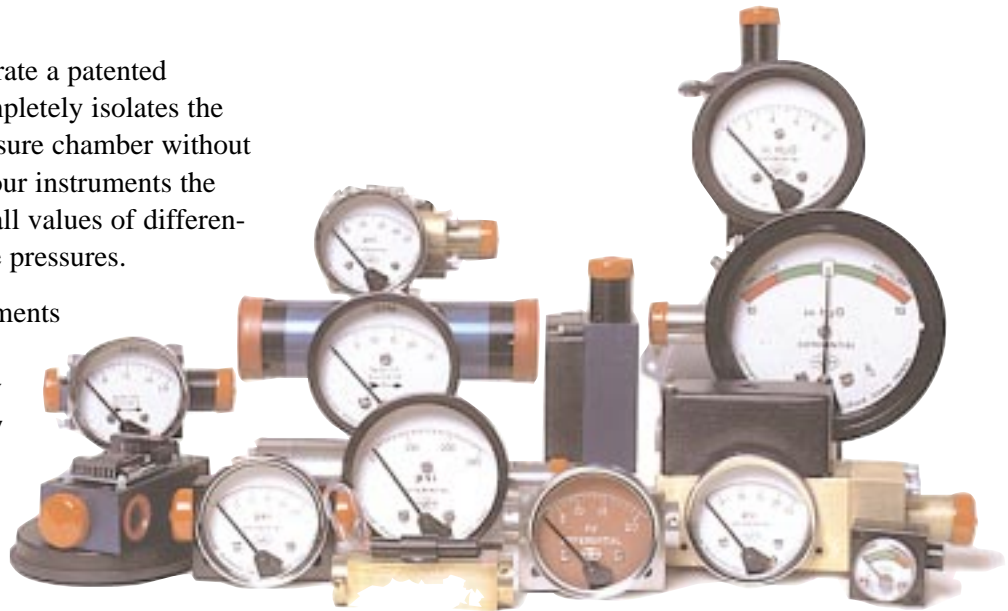
OTHER ORANGE RESEARCH PRODUCTS

In addition to new, low differential pressure transmitters, the Orange Research product family includes standard differential pressure, level, and flow instruments and switches. They are used in a variety of industrial processes to provide reliable, instantaneous and continuous information about system conditions.

Our DP instruments incorporate a patented magnetic movement that completely isolates the gauge function from the pressure chamber without mechanical seals, and gives our instruments the unique ability to indicate small values of differential pressure even at high line pressures.

Orange Research flow instruments use rugged piston or piston-diaphragm sensors to directly measure a wide range of flow rates. Unlike fragile rotameters, our flow gauges can operate with dirty or opaque liquids.

- **Differential pressure gauges and switches**
- **Explosion-proof differential pressure models**
- **Miniature differential pressure instruments**
- **Reliable flow gauges and switches**
- **Microprocessor-controlled transmitters**
- **Level switches**



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