

LP 9000 Series

Low Differential Pressure Sensors

- Ranges from 0.1 mbar to 10 bar
- Accuracy better than 0.1% FS BSL
- Line pressure from vacuum to 200 bar
- Uni-directional or bi-directional operation
- Excellent thermal and long term stability
- Full wet/wet media compatibility



The LP 9000 series accurately measure low differential or relative pressure of gases and liquids from 0.1 mbar to 10 bar full scale. With a choice of current or voltage output, they are suitable for uni-directional (e.g. 0 to 20mbar) or bi-directional (e.g. -20 to 20mbar) pressure measurements.

An innovative eddy current measurement system enables the use of low displacement sensor diaphragms operating well within elasticity limits. In addition, the "dry cell" sensor concept means no internal fluid is used. Combined with a rugged design, this ensures high performance with long term reliability, even when operating over a wide temperature range.

The LP 9000 series are therefore ideally suited to a wide range of high precision applications including leak detection, test benches and low flow measurement of liquids and gases amongst many others.

Low Differential Pressure Sensors

STANDARD SPECIFICATIONS

Pressure Measurement

Operating Pressure Ranges

Range (mbar)	0.1*	0.2*	0.5*	1	2	5	10
Overpressure (mbar)	50	50	50	100	100	500	700
Range (mbar)	20	50	100	200	500		
Overpressure (bar)	1	2	3	4	5		
Range (bar)	1	2	5	10			
Overpressure (bar)	10	10	20	30			

*Note: Beryllium Copper diaphragm only. Other pressure units may be specified.

Zero and Span Adjustment

Zero $\pm 15\%$ F.S., Span $\pm 20\%$ F.S.

Line Pressure

Vacuum to 50 bar (ranges up to 10mbar)
Vacuum to 200 bar (ranges 20mbar and above).

Pressure Media

Fluids compatible with either:-
(A) 316L stainless steel, X750/600 Inconel and Loctite Masterjoint 510 or
(B) 316L stainless, beryllium copper, brass, soft soldering and Loctite Masterjoint 510.

Supply Voltage

10 - 30 Vd.c.
15 - 30 Vd.c. (LPM with 0 - 10 Vd.c. output)
 ± 12 Vd.c. (LPM with 0 ± 5 Vd.c. output).

Output Signal

LPX (uni-directional): 4 - 20mA (2 wire).
LPX (bi-directional): 12 ± 8 mA (2 wire).
LPM (uni-directional): 0 - 5 Vd.c. (3 wire).
0 - 10 Vd.c. (3 wire).
LPM (bi-directional): 2.5V ± 2.5 V (3 wire).
0 ± 5 Vd.c. (4 wire).
5 ± 5 Vd.c. (3 wire).

Load Impedance

LPX: 0.05 (Vsupply - 10) k Ω maximum.
LPM: 5k Ω minimum.

Performance

Accuracy

Combined Non-Linearity, Hysteresis and Repeatability: $\pm 0.1\%$ F.S. BSL maximum.

Long Term Stability

At standard reference conditions, calibration will not change by more than 0.1% F.S./annum.

Temperature Range

Ambient: -40° to 100°C
Process media: -40° to 120°C
Storage: -50° to 110°C

Temperature Effects

Output deviation over -20° to 80°C will not exceed the following values:-

Zero: 0.01% F.S./°C
Span: 0.01% F.S./°C

Static Pressure Effect

Zero Effect: <0.5% F.S./50 bar
Span Effect: <0.35% of reading/50 bar.
Note: These errors are repeatable/reversible, eliminated by adjusting zero at line pressure.

Mounting Position Effect

No effect on span. Possible zero shift can be corrected via the adjustment potentiometer.

Supply Sensitivity

0.01% F.S./Volt maximum.

Vibration Effect

<0.05% F.S./g from 20Hz to 500Hz in any position.

Response Time

10 msec.

Humidity

Up to 100% RH non-condensing.

Physical

Pressure Connections

G $1/8$ female.

Purge Ports

G $1/8$ female.

Purge Screws

316L stainless steel.

Electrical Connection

Screw terminal block under cover plate except Intrinsically Safe versions which have lid-mounted Jaeger connector. Maximum wire area 4mm 2 via PG7 cable gland (cable diameter 4 to 7mm).

Housing Material

316L stainless steel.
Environmental protection: IP66.

CE Conformity

EMC Emissions: EN50081-1
EMC Immunity: EN50082-1
Certification: CE marked.

Weight

2Kg nominal.

OPTIONS

(A) Panel Mounting Bracket

(B) Remote Electronics

For severe environments such as high temperatures, very low temperatures, ionising radiation. Please refer to manufacturer.

(C) Hazardous Area Approvals

(4-20mA output only - supplied as model code GA)
CENELEC Intrinsic Safety Certification:
EEx ia IIC T6 (Ta = 60°C)
EEx ia IIC T5 (Ta = 80°C).

RELATED PRODUCTS

Druck manufacture a comprehensive range of pressure transducers, transmitters, indicators, controllers and calibrators. The range of portable calibrators also covers temperature and electrical parameters.

Please refer to manufacturer for further information and data sheets.

CALIBRATION STANDARDS

Instruments manufactured by Druck Limited are calibrated against precision pressure calibration equipment which is traceable to International Standards.

ORDERING INFORMATION

(1) Select Model Number:

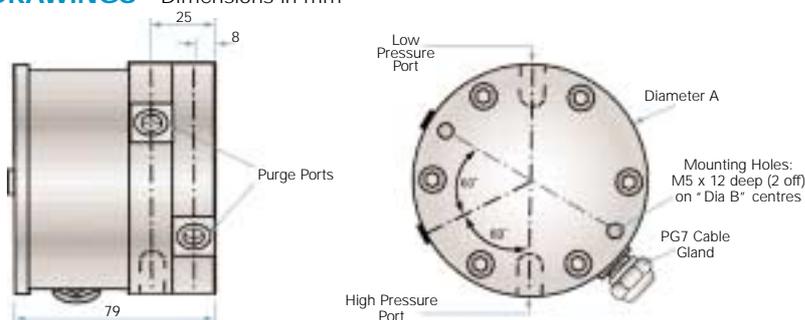
Code	Model
LPX	Current output
LPM	Voltage output
	Code
	9 Base model
	Code Diaphragm Material
	3 Inconel X 750
	4 Beryllium copper
	Code Electrical Connection
	8 Cable gland, PG7
	Code Temp.Comp
	1 -20 to 80°C
LPX	9 3 8 1

(2) State minimum and maximum pressure and corresponding output signal.

(3) State options (if required).

Continuing development sometimes necessitates specification changes without notice.

INSTALLATION DRAWINGS - Dimensions in mm



Range	Dia A	Dia B
Up to 10mbar	94	84
20mbar and above	84	68

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