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GE Druck

LP 1000 Series

Low Pressure Differential/Gauge Sensors

- Ranges from 0.25mbar to 70mbar
- Full wet/wet media compatability uni or bi-directional
- With or without LCD, panel or wall mounting
- 0.5% accuracy, 0.25% optional, user damping
- Current or voltage outputs, duplicated to front (LCD models)
- Optional green or red status LEDs and square root extraction

LP 1000 Series

Low Pressure Differential/Gauge Sensors

The LP 1000 series of low differential/gauge pressure sensors is specifically designed for use in cleanroom, HVAC control and similar applications where the accurate and reliable monitoring of very low pressures is required. This includes wet/wet applications where the sensor may be exposed to aggressive and conductive fluids.

High Performance

The pressure sensing principle is variable inductance, providing maximum sensitivity for the measurement of very small pressure changes with minimal hysteresis and excellent repeatability. A low displacement diaphragm operates well within elastic and fatigue limits. For long term reliable performance it allows use over millions of pressure cycles with no zero drift and excellent resistance to shock and vibration.

The housing is a rugged yet lightweight alochromed aluminium protected from dust and water ingress to IP64.

Ease of use

All models offer 2 wire current output or a selection of 3 wire voltage outputs. Removal of the electronics cover provides access to zero and span adjustment allowing minor offsets due to mounting position effect to be corrected. Damping adjustments can also be made, allowing the user to increase or decrease sensor response time.

The base model LP 1000 is a wall mounting unit without display. Integral LCD versions are available with a choice of bezel/panel and wall mounting configurations:

- **LP 1000-DW**: Square rear face bracket (suitable for direct wall mounting)
- **LP 1000-DA**: Circular Aluminium bezel (suits panel holes 4 1/2”- 4 13/16”)
- **LP 1000-DS**: Circular Stainless Steel bezel (suits panel holes 4 1/2” - 4 13/16”)
- **LP 1000-DC**: Complete front panel installation with two non-protruding switches and pressure ports to test/calibrate sensor in-situ.

For LCD versions the output signal is also brought forward onto the front PCB. This allows output measurement without disconnection of the process wiring e.g. LP 1000-DC model.

Additional Options

- **Electrical Connections**

  - DIN 43650A Plug with free mating socket (standard for all models except the -DC model)

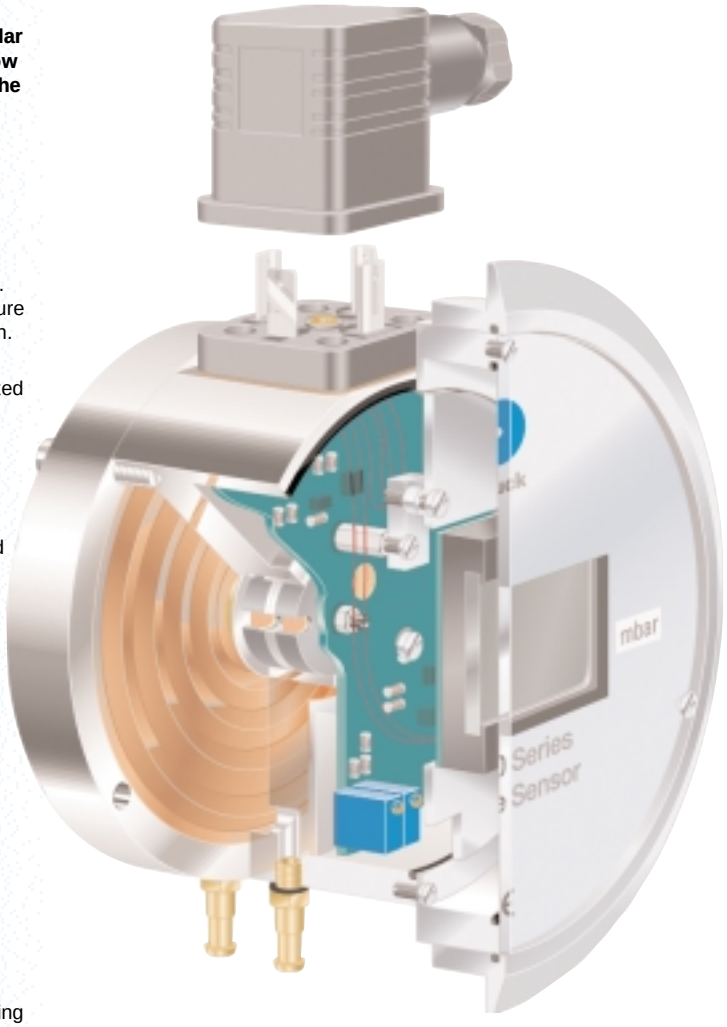
  - DIN C Plug with free mating socket (optional) for all models

  - Screw Terminal outside body (standard in -DC model, optional on all other models).

- **Optional status LEDs (LPX)**

  2 status LEDs (one green, one red) on LCD models. Factory set to user requirement - switch-over pressure within pressure range/ red on lower or higher pressure with switch-over pressure user-resettable by potentiometer

- **Square-root extraction (LPX)**
  available for all LCD models (where status LEDs are not required).



STANDARD SPECIFICATIONS

Operating Pressure Ranges
Standard full scale operating ranges available as below (mbar values).

Range	Overpressure	Max. Line Pressure	Range	Overpressure	Max. Line Pressure
0.25	250	2000	10.0	700	2000
0.5	250	2000	12.5	700	2000
1.0	250	2000	15.0	700	2000
1.25	250	2000	20.0	1200	2000
2.00	250	2000	25.0	1200	2000
2.5	250	2000	40.0	1200	2000
5.0	700	2000	50.0	1200	2000
6.25	700	2000	70.0	1200	2000
7.5	700	2000			

Zero and span adjustment
Site adjustable potentiometer trim:
Zero: 0.25mbar to 2.5mbar range: ±0.3 mbar
from 5mbar to 15mbar range: ±1.5 mbar
20mbar to 70mbar range: ±8 mbar
Span: ±5% F.S.

Pressure Media
Gases and liquids compatible with alodyned aluminium, beryllium-copper and brass.

STANDARD SPECIFICATIONS

Output Signal (Uni-directional)
LPM: 0 - 2.5Vd.c. (3-wire)
0 - 5Vd.c. (3-wire)
1 - 6Vd.c. (3-wire)
0 - 10Vd.c. (3-wire)
LPX: 4 - 20mA (2-wire)

Output Signal (Bi-directional)
LPM: 2.5Vd.c. ±2.5Vd.c. (3-wire)
5Vd.c. ±5V.d.c. (3-wire)
LPX: 12mA ±8mA (2-wire)

Supply Voltage
Without LCD: 10 - 30Vd.c.
With LCD standard: 15 - 30 Vd.c.
With LCD and LED: 20 - 30 Vd.c.
With LCD and square route extraction: 15 - 30 Vd.c.
Note: minimum 15 Vd.c., 0 - 10 Vd.c. output.

Load Impedance
LPM 1000:5kΩ minimum
LPX 1000: Rc <(Vs - 10)/20kΩ.
Damping of output signal
User accessible 10msec to 2 sec

Performance Specification

Accuracy
Combined Non-linearity, Hysteresis and Repeatability:
±0.5% of calibrated range (maximum).
Optional ±0.25%

Operating Temperature Range
0°C to 50°C.

Temperature Effects
Over the range of 0°C to 50°C:
Ranges 0.25mbar to 1.25mbar: ±0.02mbar
Ranges 2mbar to 2.5mbar: ±0.04mbar
Ranges 5mbar to 7.5mbar: ±0.12mbar
Ranges 10mbar to 15mbar: ±0.25mbar
Ranges 20mbar to 35mbar: ±0.5mbar
Ranges 40mbar to 70mbar: ±1.0mbar

Long Term Stability
At standard reference conditions the calibration will not change by more than ±1% of calibrated range, averaged over 1 year.

Mounting Position Effect
No effect on span. Possible zero shift, up to a maximum of 0.2 mbar/90° change in orientation, correctable by potentiometer adjustment.
Note: The LP 1000 is factory adjusted with diaphragm oriented in the vertical plane.

Supply Sensitivity
0.05%F.S./volt maximum.

Insulation Resistance
>100 MΩ at 50Vd.c.

Humidity
0 - 100% RH, non-condensing.

Physical

Pressure Connections
10/32 UNF Female, M5 Female or 4mm ID tube connector.

Electrical Connection
DIN 43650A standard (except on DC)
Optional screw terminal (standard on DC)
Optional DIN C

Housing Material
Alodyned Aluminium.

Environmental Protection
Sealed to IP64 (except screw terminal).

CE Conformity
CE marked for EMC and EMI compliance.

Weight
450g - 900g approx., dependant upon configuration.

CALIBRATION STANDARDS

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

ORDERING INFORMATION

LP 1000 without LCD

(1) Select model number:

Code	Output
LPM	Voltage
LPX	Current

Code	Pressure Range
10	Ranges from 0.25mbar to 2.5mbar
15	Ranges from 5mbar to 15mbar
18	Ranges from 20mbar to 70mbar

Code	Configuration
0	Gauge
1	Differential

Code	Pressure Connection
0	10 - 32 UNF Female to 1/8" barbed fitting
1	M5 Female
2	M5 female to 4mm barbed fitting

Code	Electrical Connection
-C1	DIN A connector
-C2	Screw terminal
-C3	DIN C connector

Code	Special Feature
-S	Standard
-Q	Square Root extraction (only LPX)

LPX	15	1	2	-C1	Q	Typical Model No.

LP 1000 with LCD

(1) Select model number:

Code	Output
LPX	Current
LPM	Voltage

Code	Pressure Range
10	Ranges from 0.25mbar to 2.5mbar
15	Ranges from 5mbar to 15mbar
18	Ranges from 20mbar to 70mbar

Code	Configuration
1	Differential

Code	Pressure Connection
0	10 - 32 UNF Female to 1/8"barbed fitting
2	M5 female to 4mm barbed fitting

Code	Electrical Connections
C1	DIN A connector
C2	Screw terminal
C3	DIN C connection

Code	Special Feature
-S	Standard
-L	Green/Red status LEDs (only LPX)
-Q	Square Root extraction (only LPX)

Code	Options
DA	LCD Indicator - Aluminium Bezel
DS	LCD Indicator - Stainless Steel Bezel
DW	LCD Indicator - Wall Mount bracket
DC	LCD Indicator - Front panel mount and in-situ calibration

LPX	10	1	2	-C2	L	DC	Typical Model No.

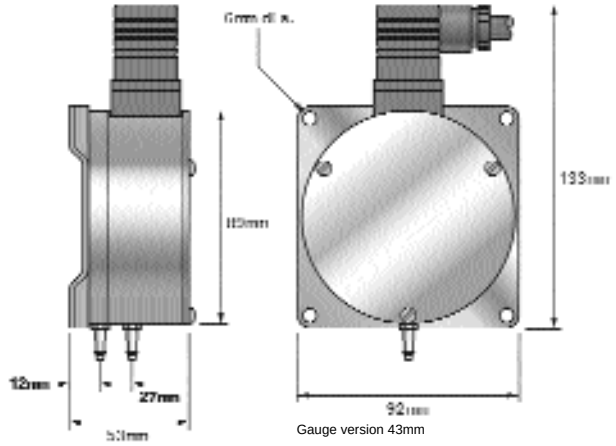
(2) State minimum and maximum operating pressure and corresponding output signal.

Continuing development sometimes necessitates specification changes without notice.

LP 1000 Series

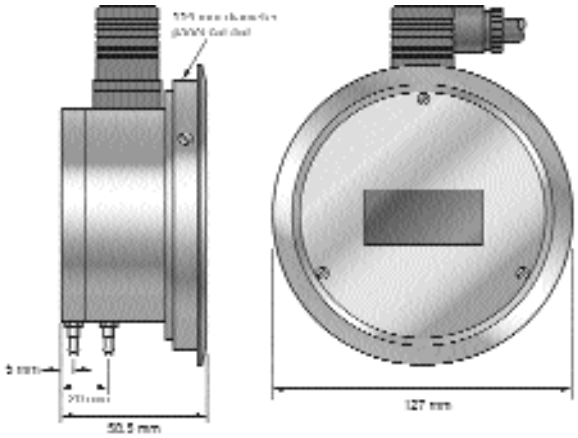
Low Pressure Differential/Gauge Sensors

Typical installation drawings

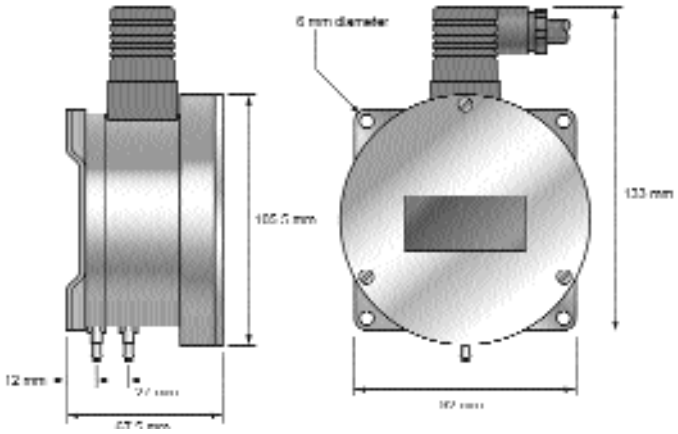


Gauge version 43mm

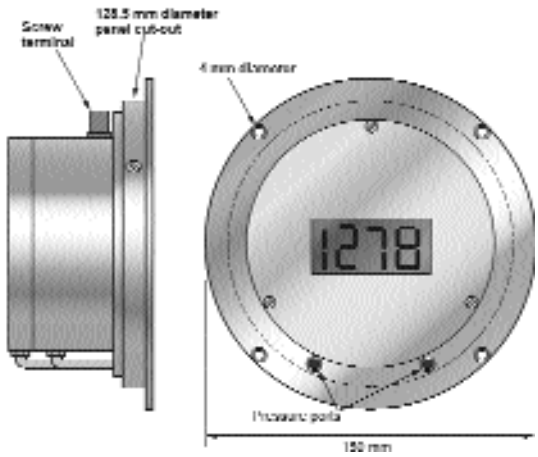
Model LP 1000 (without LCD)



Models LP 1000 DA



Model LP 1000 DW



Model LP 1000 DC

Selection of related products

Pictured from left to right:
DPI 515 High Speed low pressure controller
DPI 610/615LP Portable low pressure calibrator
LP 9000 Precision low pressure sensor
Pressurements V1600 Primary reference standard

For further information please refer to GE Druck.

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