

DPI 150

Precision Pressure Indicator

- Ranges up to 3000 psi
- Precision 0.01% FS
- Internal or external IDOS sensors
- Programmable analog output
- RS232 and IEEE 488 communications

High performance, low cost

The DPI 150 Precision Pressure Indicator is a single range instrument designed to provide high accuracy and excellent long term measurement stability at an economical price. The instrument utilizes the latest techniques in pressure measurement and manufacturing technology to combine reliability, ruggedness and accuracy with minimal cost.



Versatility

The DPI 150 offers powerful versatility in a small package and provides a range of dedicated pressure functions.

The instrument has been designed to function as a local indicator, while the digital communications provide connectivity to larger systems required to log or monitor pressure precisely.

Pressure Indication

The primary function of the instrument is accurate pressure measurement. The pressure value can be displayed in one of 24 internationally recognized standard pressure units:

Pa, hPa, kPa, MPa, mbar, bar, kg/cm², kg/m², mmHg, cmHg, mHg, mmH₂O, cmH₂O, mH₂O, torr, atm, psi, lb/ft², inHg, inH₂O (4 and 20 deg C), ftH₂O (4 and 20 deg C), inH₂O (60 deg F).

Two user configurable pressure scales are included and may be programmed as a ratio to Pascals.

Measurement precision is maintained by regular zeroing of the sensor, which is simply achieved via a front panel key press.

The Process Functions for Tare, Hold (front panel key), % Full Scale, Max/Min capture and Filter are also available in this mode.

Pressure Leak Testing

A dedicated Leak Test mode allows the user to set a test time up to 999 seconds. The instrument will calculate the leak rate over this period in current pressure units and display the results.

Airspeed

This mode converts the differential pressure from the input into Knots, mph or Km/hr.

The Process Functions for Tare, Hold (front panel key) and Filter are also available in this mode.

Airspeed Leak Testing

Similar to the pressure leak test, but will calculate the leak rate in selected airspeed units and display the results.

High contrast graphics,
backlit display

Low voltage AC/DC
operation

Simplified keypad control



Easy to use, simple menu
structure

Soft function
keys

Rugged, lightweight
construction

Instrument Status

The calibration and maintenance history of the DPI 150, along with its configuration, are stored within the instrument and can be viewed via Status screens in the instrument Set-up menu.

Analog Output (Optional)

This option can be programmed via the set-up menu screen to output a signal proportional to the instrument range selected. This allows the instrument to interface with PC or PLC I/O cards, remote displays, chart recorders or other data logging equipment.

Barometric Reference (Optional)

The DPI 150 is a gauge pressure indicator; in order to measure absolute pressures an optional barometric reference is required. The indicator will add an atmospheric reading from reference port (located on the back panel) to the gauge pressure at the positive input to provide an accurate absolute pressure reading on the display.

Barometric pressure can also be displayed by selecting the reference sensor, providing dual functionality as a pressure indicator and a lab barometer.

External IDOS Sensor

The DPI 150 rear panel has a female 5-pin socket for attaching the new IDOS external Universal Pressure Module (UPM).

The DPI 150 can be ordered without an internal pressure range if only external measurement is required. In this case no range should be specified for the DPI 150 and the appropriate IDOS UPM-S (Standard version) or IDOS UPM-P (High Precision version) sensors should be ordered. See the separate IDOS datasheet for information.

A single DPI 150 can display one pressure reading at a time, but can switch between internal and external sensors or the barometric reference (option E). Absolute ranges can also be created by adding the barometer and gauge readings.

The IDOS sensors are supplied with their own temperature compensation and calibration data, making the external IDOS fully interchangeable between IDOS compatible products such as the DPI 150 and the DPI 800 portable calibrator.



Standard Specifications

Pressure Measurement

The DPI 150 is available with the following selection of internal pressure sensor ranges. It is also available without internal pressure range for use instead with IDOS UPM-S and IDOS UPM-P external sensors.

Standard pressure ranges

10 inH₂O gauge
 1 and 3 psi gauge
 5, 10, 15, 30, 50, 100, 150, 300, 500, 1000, 1500, 2000, 3000 psi gauge

All versions available with negative gauge calibration (specify option D).
 For absolute pressure ranges specify option E, Barometric Reference.

Absolute pressure ranges as above, plus atmospheric pressure.

Over Range

1.1 x FS pressure range.

Maximum Working Pressure

1.2 x FS pressure range for 10 to 3000 psi
 2 x FS pressure range for 10 inH₂O to 5 psi

Pressure Media

Pressure range 30 psi and below:
 Silicon, Pyrex, Titanium and structural adhesive.
 Media must be non-conductive.

Pressure range 50 to 3000 psi: 316 Stainless Steel and Hastelloy C276

Reference port: Dry, non-corrosive gas only.

DISPLAY

Panel

High-contrast, backlit LCD.

Readout

±9999999 maximum, updated 2 times per sec.

Pressure units

24 units plus two user-defined and airspeed in mph, km/h and kts.

Languages

English, Chinese, French, German, Italian, Japanese, Portuguese and Spanish.

Process Features

Hold, Maximum/minimum value, Tare and programmable filter.

PERFORMANCE

Precision

Precision 0.01% full scale from 15 to 3000 psi.*

Precision 0.03% full scale below 15 psi.*

Precision includes non-linearity, hysteresis, repeatability and temperature effect between 18°C and 28°C, for both absolute and gauge pressures.

Calibration Standard (Deadweight Tester) accuracy 0.005% of reading.

* Note: Precision assumes regular zeroing.

Negative gauge precision

Maximum error at any negative pressure value is equal to maximum error at the equivalent positive pressure value.

Measurement stability

0.01% of reading per year from 15 to 3000 psi.

0.02% of reading per year below 15 psi.

Barometric reference precision

Precision for the optional barometric reference: 0.002 psi. Includes non-linearity, hysteresis, repeatability and temperature effects between 5°C and 50°C. Long term stability 0.002 psi per year.

ELECTRICAL

Communications

RS 232 interface supplied as standard. (SCPI protocol). IEEE-48 optional.

Power supply

11V to 26 V ac or dc, 10VA, via 2.1mm Jack, supplied with AC/DC power adaptor 90 to 264 VAC, 45 to 65Hz.

ENVIRONMENTAL

Temperature

Operating 50°C to 50°C

Calibrated 23°C

Storage -20°C to 60°C

Humidity

Compliant with Def. Stan. 66-31 8.6 cat 3.

Vibration

Compliant with Def Stan. 66-31 8.4 cat 3.

Shock

Mechanical shock conforms to EN61010.

Conformity

Electrical and mechanical safety: EN61010

EMC Emission: EN61326-1

EMC Immunity: EN61326-1

Certification: CE marked

PHYSICAL

Weight

Approximately 2.2 pounds (1 kg).

Dimensions

7.2" (wide) x 3" (high) x 7.7" (depth).

Pneumatic connections

1/8 NPT female.

Options

(A) Analog Output

0 - 10V, 0 - 5V, -5V to 5V, 0/4 - 20mA outputs selectable.
Accuracy 0.05% FS, variable update rate 30 to 50 readings per second.
Programmable between minimum and full scale pressure for proportional output against pressure.

(B) IEEE 488 (GPIB) Interface

Full computer control is available via a databus using the SCPI protocol. IEEE parallel D connector is provided on the rear panel.

(C) Rack Mount Kit

Two sided plates and front panel cutout enable easy mounting to racks and panels.

(D) Negative calibration

Calibration of bi-directional channels is usually in the positive direction only. If negative direction calibrations are required this option should be requested.

(E) Barometric reference

Additional barometric sensor enables the DPI 150 to display in absolute pressures by adding atmospheric pressure to the gauge pressure. Only available on instruments with internal pressure range sensor.



Supplied as Standard

The DPI 150 is supplied complete with universal power adaptor, user handbook and calibration certificates traceable to International Standards.

External Sensors

IDOS Universal Pressure Modules are rugged, reliable and simple to use. Highly accurate Intelligent Digital Output Sensors (IDOS) are housed in tough functional cases to provide dependable pressure modules with plug and play connectivity. They represent simple cost effective solutions for expanding instrument ranges, adding pressure measurement capability and addressing wider applications. See IDOS datasheet for details.



Calibration Standards

Instruments manufactured are calibrated against precision calibration equipment traceable to international standards.

Ordering Information

Please state the following (where applicable):

1. DPI 150.
2. Pressure range, gauge or 'No range' if using IDOS UPM-S / UPM-P only
3. Options required.
4. Order IDOS UPM-S / UPM-P for external sensors.

Continuing development sometimes necessitates specification changes without notice.

Related Products

Laboratory and workshop instruments

We manufacture a comprehensive range of pressure instruments. Included in this range are industrial deadweight testers and high precision controllers and primary standard piston gauges. A selection is shown above:

Portable field calibrators

We manufacture a wide range of portable pressure, temperature and electrical field calibrators particularly suitable for use in remote outdoor conditions. A selection is shown above.

Calibration management software

Intecal-W is a Windows® based package which supports laboratory and field based calibrations. Interfacing with many popular instruments such as the DPI 515, DPI 605, DPI 610 and MCX, Intecal-W offers a complete and quality assured solution to calibration management.

Pressure transducers and transmitters

We manufacture an extensive range of pressure transducers and transmitters, including custom designed, rangeable and Smart/HART® process pressure transmitters.

Representative

