Druck

DPI 610

Portable Pressure Calibrator

DPI 610

- Ranges -14.7 through to 10,000 psi
- Accuracy 0.025% FS all ranges
- Integral combined pressure/vacuum pump
- Dual readout: input and output
- 4 to 20 mA loop test: auto step and ramp
- Data storage with RS 232 interface

D P I 610

Portable Pressure Calibrator

A new standard for portable pressure calibrators

The technically advanced Druck DPI 610 portable calibrator is the culmination of many years of field experience with the company's DPI 600 series of calibrators.

This one self-contained, battery powered package contains a pressure generator, fine pressure control, device energizing and output measurement capabilities, as well as facilities for 4 to 20 mA loop testing and data storage. The rugged design, sealed generally to NEMA 12 (IP54), is ergonomically designed such that the pressure pump can be operated and test leads connected without compromising the visibility of the large dual parameter display. A single piece elastomeric keypad, which forms the user interface, excludes the weather and combines a high quality tactile feel with exceptional service life. The mA step and ramp outputs and built-in continuity tester extend the capabilities to include the commissioning and maintenance of control loops

A second pressure channel for remote sensors is standard on all instruments and with over 40 sensors to choose from, provides a cost-effective way of increasing the calibrator's flexibility to suit different applications.

A highly accurate and easy to use calibrator is only part of the solution for improving overall data quality and working efficiency. The DPI 610, with data storage and RS 232 interface, can reduce the calibration times and eliminate data recording errors.

Improved performance

The DPI 610 combines practical design with state of the art performance, summarized as follows:

Accuracy:	0.025% FS for all pressure ranges
Ranges:	-14.7 to 10,000 psi including gauge absolute and differential versions
Integral pneumatic pressure/vacuum source:	-22 inHg to 300 psi
Integral hydraulic pressure source:	0 to 6000 psi
Measure:	Pressure, mA, V, switch state (open/closed) and ambient temperature
Source:	Pressure, mA step, mA ramp, mA value
Energizing supplies:	10 and 24 Vdc
Data storage:	10,000 values
Remote pressure sensors:	Up to 10 digitally characterized sensors per calibrator.

Simplified operation

Druck's knowledge of customer needs, combined with innovative design, results in a high performance, multi-functional calibrator which is simple to operate.

The key to the simple operation of the DPI 610 is the Task Menu. Specific operating modes such as P-I, switch test and leak test are configured at the touch of a button by simple menu selection. This intuitive approach ensures correct set up of the calibrator for the job at hand and leaves the operator free to concentrate on his work.

The operating system can work in several languages and in 25 different pressure scales, including a special user defined unit. Process features such as max/min, filter and % span facilitate the measurement of fluctuating signals and flow parameters.

The DPI 610 which includes a new, highly reliable, pneumatic assembly and self-test routines, can be relied upon time and time again for field calibration in the most extreme conditions.


Set up key to determine default working parameters
Automatic zero correction for any input or output parameter
Input/output parameter selection keys with dedicated task key for instant access to the task menu
Documenting keys to store and recall screen 'snapshots', multi-channel data log and calibration results
Unique integral handle with compliant finger grip
Pressure input/output test point
Volume adjuster for fine pressure control
Combined pressure/vacuum pump with -22 psi to 300 psi capability
Multi-lingual firmware supported by Linkpak-W and calibration software
RS 232 and remote sensor connectors
Input and output connectors
Sealed tactile elastomeric keypad
Function keys used in response to display prompts
Range label for quick identification
Release valve allows controlled pressure venting
Rotating selector converts the pump to pressure or vacuum
Multi-purpose strap for carrying or hanging the calibrator
DPI 610
20.000
mA
300.00
psi
300 psi g

Applications

DPI 610 PORTABLE PRESSURE CALIBRATORS

The DPI 610 has been designed for ease of use while meeting a wide range of application needs including calibration, maintenance and commissioning. The dual parameter display shows the **INPUT** and **OUTPUT** values in large clear digits.

A unique integral handle provides a secure grip for on-site use in addition to a shoulder strap which is also designed to allow the instrument to be suspended for hands-free operation.

Any technician can use the DPI 610 without formal training, such as a novice on an emergency call out, or those familiar with the DPI 610. By selecting basic mode the DPI 610 is configured to source pressure and measure mA or V, with all non-essential keys disabled.

Dedicated task menu

The dedicated **TASK** key gives direct access to the **TASK** menu. Select the required test, for example P-I for a pressure transmitter, and with a single key press, the DPI 610 is ready.

Use the **ADVANCED** mode for custom tasks and add to the **USER TASK** menu for future use.

Some of the capabilities

	P	mA	V	10v	24v	Switch	°F
Measure	✓	✓	✓			✓	✓
Source	✓	✓		✓	✓		

P = Pressure °F = Local ambient temperature

PRESSURE TRANSMITTER CALIBRATION

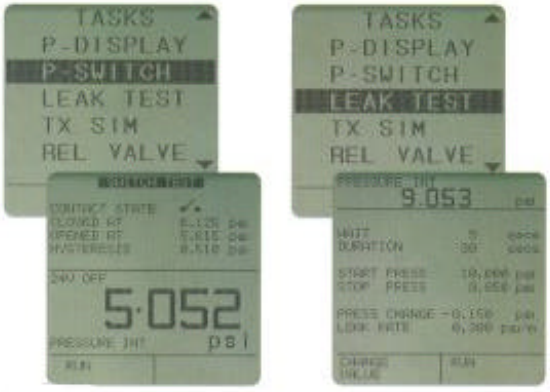
The **P-I** task configures the DPI 610 to simultaneously display the **OUTPUT** pressure and the **INPUT** current. The pressure unit can be chosen to suit the transmitter and a 24V supply is available for loop power.

For process transmitters reading in percentage use **%SPAN** to scale the pressure accordingly.

The DPI 610 Pneumatic Calibrator hand-pump can generate pressure from -22 inHg to 300 psi. The volume adjuster gives fine pressure setting and the release valve also allows gradual venting for falling calibration points.

Reduce the burden imposed by quality systems such as ISO 9000, simply **STORE** results in memory and leave both pen and calibration sheet back at the office.

PRESSURE SWITCH TESTING AND LEAK TESTING



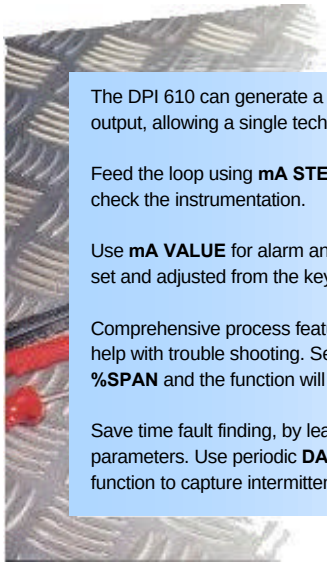
For Switch Set-up and Fault Finding, the display shows the output pressure and switch state **OPEN** or **CLOSED**. Continuity is declared by an audible signal.

Verify pressure switch performance using the automatic procedure. The DPI 610 displays the switch points and the contact hysteresis.

LEAK TEST will check for pressure leaks prior to calibration or during routine maintenance. Define the test times or use the defaults and wait … The DPI 610 will report the **START** and **STOP** pressures, the pressure **CHANGE** and the **LEAK RATE**.

Take a **'SNAPSHOT'** of the working display, all details are stored in a numbered location for later **RECALL**.

LOOP TESTING AND FAULT FINDING



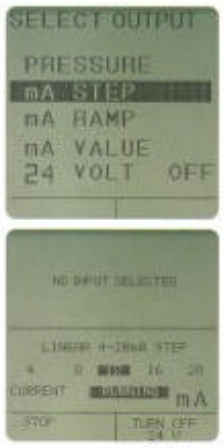
The DPI 610 can generate a continuous **mA STEP** or **mA RAMP** output, allowing a single technician to commission control loops.

Feed the loop using **mA STEP** or **mA RAMP** and at the control room, check the instrumentation.

Use **mA VALUE** for alarm and trip circuit tests. Any mA output can be set and adjusted from the keypad.

Comprehensive process features aid flow and level measurement and help with trouble shooting. Select **TARE, MAX/MIN, FILTER, FLOW** or **%SPAN** and the function will be applied to the input parameter.

Save time fault finding, by leaving the DPI 610 to monitor system parameters. Use periodic **DATA LOG** or the **MAX/MIN** process function to capture intermittent events.



REMOTE PRESSURE SENSORS

The working range of the DPI 610 can be extended by adding up to 10 external sensors (one at a time). With ranges from -14.7 to 10,000 psi and all welded stainless steel construction, sensors can be chosen to suit many applications.

As a leading manufacturer of pressure transducers Druck has applied the latest technology and production techniques to develop these sensors. The devices give the same high accuracy and temperature performance as the internal sensors.

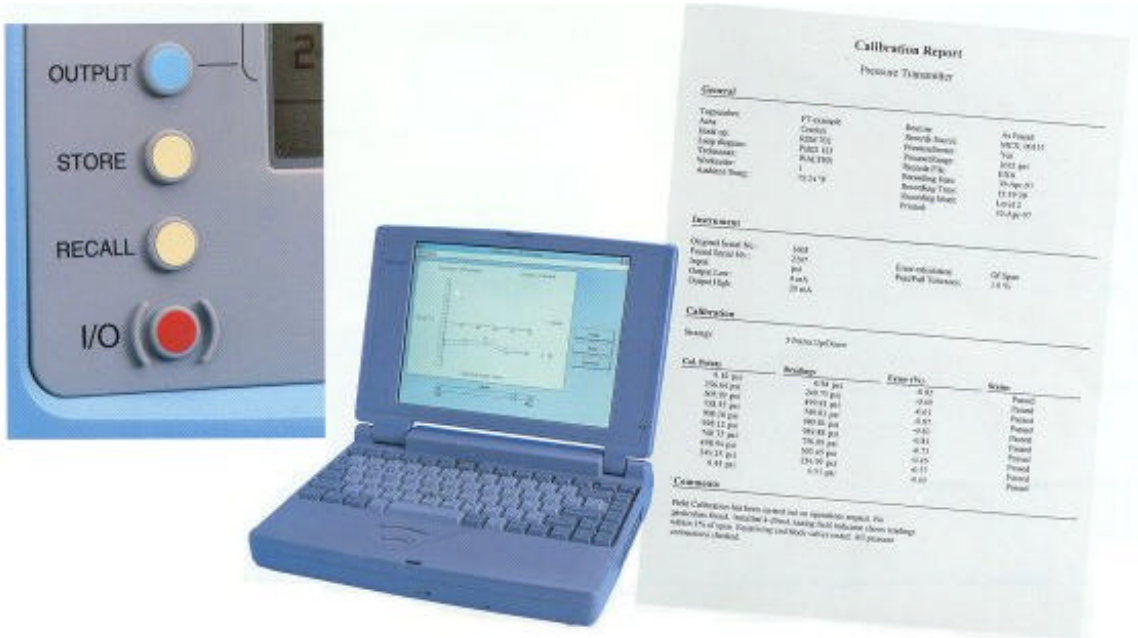
Remote sensors offer a cost effective means of expanding the capabilities of the DPI 610, for example:

- For pressure to pressure applications
- For differential applications
- To maintain high accuracy over a wide pressure range
- To configure pneumatic calibrators for use with high pressure hydraulic systems.
- To configure hydraulic calibrators for use with low pressure pneumatic systems
- For periodic monitoring at system test points

CALIBRATION FOR ISO 9000

Commercial considerations and quality systems put increasing demands on instrument technicians to be more efficient. The DPI 610 reduces calibration time and provides accurate paperless data recording. Back at the office the data can be viewed on screen for accurate analysis and documenting.

The DPI 610 has an inbuilt RS 232 interface, compatible with Linkpak W Calibration Software and Intecal Calibration Management Software. Data can be transferred directly from the DPI 610 for analysis, certificate printing and archiving. Exporting facilities are provided for wordprocessor and spreadsheet applications or in-house maintenance systems.



D P I 610

Standard Specification

Druck

PNEUMATIC CALIBRATOR DPI 610PC

Pressure/vacuum pump
-22 inHg to 300 psi capability

Volume adjuster
Fine pressure adjustment

Release valve
Vent and controlled release

Pressure port
$^{1}/_{8}$ NPT (female)

Media
Dry, non-corrosive, non-conductive gasses compatible with 316 stainless steel Hastelloy C276, BUNA-N and nylon.

HYDRAULIC CALIBRATOR DPI 610HC

Priming pump
Feeds from external source

Shut-off valve
Open for system priming

Screw press
0 to 6000 psi capability

Pressure port
$^{1}/_{8}$ NPT (female)

Media
Demineralized water and most hydraulic oils

INDICATOR DPI 610I

Release valve
Vent and controlled release

Pressure port
$^{1}/_{8}$ NPT (female)

Media
Most common fluids compatible with stainless steel and Hastelloy C276.

PRESSURE RANGES

The DPI 610PC, HC and I include an integral sensor, the range of which should be specified from the list below. Up to 10 remote sensors (option B1) may also be ordered per calibrator.

Pressure Range	Pneumatic DPI 610PC	Hydraulic DPI 610HC	Indicator DPI 610I	Remote Option (B1)	Accuracy % F.S.
1 psi (-1)	G		G	G or D	0.025
2.5 psi (-2.5)	G		G	G or D	0.025
5 psi (-5)	G or A		G or A	G, A or D	0.025
10 psi (-10)	G or A		G or A	G, A or D	0.025
15 psi (-15)	G or A		G or A	G, A or D	0.025
30 psi (-15)	G or A		G or A	G, A or D	0.025
50 psi (-15)	G or A		G or A	G, A or D	0.025
100 psi (-15)	G or A		G or A	G, A or D	0.025
150 psi (-15)	G or A		G or A	G, A or D	0.025
300 psi (-15)	G or A ①		G or A	G, A or D	0.025
500 psi (-15)			G or A	G, A or D	0.025
1000 psi (-15)		G or A	G or A	G or A	0.025
2000 psi		SG or A	SG or A	SG or A	0.025
2500 psi		SG or A	SG or A		0.025
3000 psi		SG or A	SG or A	SG or A④	0.025
5000 psi		SG or A	SG or A③	SG or A⑤	0.025
6000 psi		SG or A②	SG or A		0.025
10000 psi				SG or A ⑥	0.025

Values in ( ) negative calibration for gauge and differential ranges
A = Absolute, D = Differential (500 psi in pressure), G = Gauge, SG = Sealed Gauge
①, ② and ③ refer to over pressure.

Accuracy is defined as non-linearity, hysteresis and repeatability

Span Shift
0.5%/500 psi of line pressure for differential ranges.

Temperature Effects
±0.002% reading/°F averaged over 15° to 105°F and w.r.t. 68°F.

Remote sensor media
Stainless steel and - compatibility.
Negative Differential: Stainless steel and quartz compatibility.

Overpressure
Safe to 2 x F.S (except ① 500 psi max. ② 9000 psi max. ③ 5000 psi max.
④ 4600 psi max. ⑤ 7250 psi max. ⑥ 13000 psi max).
①, ②, ③, ④, ⑤, and ⑥ refer to pressure range table.

ELECTRICAL INPUTS

Input	Range	Accuracy	Resolution	Remarks
Voltage*	±50Vd.c.	±0.05% Rdg. ±0.004%F.S	100µV max	Autoranging, >10MΩ
Current*	±55mA	±0.05% Rdg. ±0.004%F.S.	0.001mA	10 Ω, 50V max.
Temperature	15° to 105°F	±2°F	0.1°F	Case ambient
Switch	Open/Closed			5mA whetting

* Temperature coefficient ±0.004% reading/°F w.r.t. 68°F

ELECTRICAL OUTPUTS

Output	Range	Accuracy	Resolution	Remarks
Voltage	10Vd.c.	±0.1%		Max. load 10mA
	24Vd.c.	±5%		Max. load 26mA
Current*	0 to 24mA	**±0.05%Rdg. ±0.01%F.S.**	0.001mA	

*Temperature coefficient ±0.004% reading/°F w.r.t. 68°F.

SPECIAL FEATURES

Pressure units
25 scale units plus one user defined.

mA step
Continuous cycle at 10 sec intervals.

Function	mA Output						
4 to 20mA linear	4	8	12	16	20		
o to 20mA linear	0	5	10	15	20		
4 to 20mA flow	4	5	8	13	20		
0 to 20mA flow	0	1.25	5	11.25	20		
4 to 20mA valve	3.8	4	4.2	12	19	20	21

mA ramp
Continuous cycle with configurable end values and 60 sec travel time.

Data log
Multi-parameter with internal memory for 10,000 values. Variable sample period or log on key press.

Snapshot
Paperless notepad. Stores up to 20 complete displays.

Computer interface
RS 232.

Process functions
Tare, max/min, filter, flow, % span.

Language
English, French, German, Italian, Portuguese and Spanish.

Power management
Auto power OFF, auto backlight OFF, battery low indicator and status on key press.

DISPLAY

Panel
2.36 x 2.36 inch graphic LCD with backlight.

Readout
± 99999 capability, 2 readings per second.

ENVIRONMENTAL

Temperature
Operating: 15° to 120°F
Calibrated: 15° to 105°F

Humidity
0 to 90%, non-condensing.

Sealing
Generally to NEMA 12 (IP54).

Conformity
EN61010, EN50081-1, EN50082-1, CE marked.

Physical
6.6 lb, 11.8 x 6.7 x 5.5 inches.

Power supply
Battery powered 6 "C" cells, 65 hours nominal use at 68°F. The unit will operate with 110 Vac 60 Hz and allow battery pack to recharge. When batteries become exhausted, a low battery appears on the display.

D P I 610

Options and related products

Druck

OPTIONS

(A) Spare rechargeable batteries and charger
Rechargeable battery pack (P/N 191-A022) and 110 Vac charge/adapter (P/N 191-A023). A 220 Vac charger/adapter is also available (P/N 191-129).

(B1) Remote pressure sensor
The DPI 610 has a second pressure channel which can be configured with up to 10 remote sensors (one at a time). For ease of use the sensors are fitted with an integral electrical connector and ¼ NPT (female) pressure ports.
Please refer to specifications for ranges and associated accuracy. At least one mating cable is required per DPI 610 when ordering remote pressure sensors - see Option (B2).

(B2) Mating cable for remote sensors
A 6 ft mating cable for connecting remote sensors to the DPI 610. At least one cable should be ordered when ordering Option (B1).

(C1) Linkpak-W calibration software
Linkpak-W calibration software has been developed to help meet the growing demand on industry to comply with quality systems and calibration documentation. Test procedures are created in a Windows based application and devices due for calibration are reported and grouped into work orders for transfer to one of three calibrators, the DPI 610, TRX-II and the MCX. Calibration results, including files from the DPI 610, are uploaded to the PC via the RS 232 interface for analysis and to print calibration certificates.

Note: TRX-II, TRX-II I.S. and MCX require PCMCIA release card kit.

(C2) Intecal-W calibration database software
Intecal-W Windows based software builds on the basic concept of Linkpak-W supporting both portable field calibrators and on-line workshop calibrators. Manual data entry is also a key feature for recording data. Intecal-W is an easy to learn and easy to use calibration management software for process plants, workshops, contractors, manufacturers and service companies. It offers high productivity of calibration scheduling, calibration work and documentation. Device information, calibration procedures and calibration results are stored in an instrument database and multiple databases can be created for organizing client accounts, processes or areas. Extensive management features are provided including a database search engine, time based calibration due queries and standard reports.

Note: TRX-II, TRX-II I.S. and MCX require PCMCIA release card kit.

ACCESSORIES

The DPI 610 is supplied with carrying case, test leads, user guide, calibration certificate, rechargeable battery pack and charger as standard. The DPI 610HC also has an 8 oz polypropylene fluid container and priming tube.

CALIBRATION STANDARDS

Instruments manufactured by Druck are calibrated against precision equipment trac
National Institute of Standards and
Technology (NIST). **Druck is an ISO 9001 registered company.**

RELATED PRODUCTS

Laboratory and workshop instruments
Druck also manufactures a comprehensive range of pressure indicators and controllers. Included in this range are the Pressurements industrial deadweight testers and the Ruska high precision controllers and primary standard piston gauges.

Portable field calibrators
Druck manufactures a wide range of portable pressure, temperature and electrical field calibrators. A selection of these are shown below.

Pressure transducers and transmitters
The DPI 610 is the ideal calibration and maintenance tool for Druck transducers and transmitters, utilized in a variety of aerospace, automotive, depth/level and process applications.
Please refer to manufacturer for further information on related products.

ORDERING INFORMATION

Standard complete packages are available for ranges 5, 30, 100 and 300 psig. These include user guide, test leads, pressure/vacuum pump, volume adjuster, release valve, carrying case, rechargeable battery pack and charger. When ordering, please state type, pressure range and “complete”, e.g. DPI 610PC, range 30 psig complete.

Please state the following (where applicable):

1. DPI 610 type number e.g. DPI 610PC.
2. Integral pressure range gauge or absolute.
3. Options, including range for remote sensors.
   Note: Options B and D should be ordered as separate line items.
4. Preferred language of user guide. (Refer to specifications for available languages).

Continuing development sometimes necessitates specification changes without notice.